# PROCEEDINGS

# of the 3<sup>rd</sup> International Conference on Entrepreneurs, Innovation and Regional Development - ICEIRD 2010

May 27 – 29, 2010 Novi Sad, Serbia

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UNIVERSITY OF NOVI SAD - FACULTY OF TECHNICAL SCIENCES Department for Industrial Engineering and Management UNESCO Chair in Entrepreneurial Studies & CISCO Entrepreneur Institute, Training Centre Serbia

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### Dr Zoran Anišić

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#### Title

#### PREFACE

The 3<sup>rd</sup> International Conference ICEIRD 2010 is organized as a continuation of the previous conferences in Skopje and Thessaloniki, supported by 14 universities/institutions, gathered with the aim of promoting entrepreneurship, innovation and the idea of regional development, namely the University of Novi Sad, the Faculty of Technical Sciences (Serbia), the University of Ss.Cyril and Methodius Business Start-up Centre in Skopje, (Macedonia), CITY College and SEERC (Greece), the University of Sheffield (UK), George Washington University (USA), Georgia Southern University (USA), the S.C.ICTCM S.A. Mechanical Engineering and Research Institute (Romania), Urenio – Urban and Regional Innovation Research Unit (Greece), Tilburg University (Netherlands), Cardiff's Metropolitan University (UK), the University of Tampere (Finland), Sophia University (Bulgaria), the University of Liverpool (UK) and GEA –College (Slovenia).

The global economic situation, as well as the economic condition of the surrounding countries is anything but enviable, however, this conference does not have the aim of solving complex economic problems. The aim of this event is to gather entrepreneurs, researchers, and policy makers and provide a venue for exchange of experience and knowledge in order to be able to adjust to the current situation and overcome problems common in this field. So that the best effect and the most efficient work is achieved at the conference it is necessary to assemble a large number of participants from a wide range of scientific areas, which was precisely the goal of the organizers. The power is in the numbers and these will lead to constructive, competent conclusions and direction in the main theme of this conference:

#### Entrepreneurship beyond crisis – channeling changes to advantage!

Bearing this aim in mind, the conference promotes the participation of experts and practitioners from outside academic circles who are willing to share their experiences in the form of a presentation (case study contribution, practitioner contribution, institutional contribution). These contributions are included in a separate chapter within the Conference Proceedings. Of the initial 196 submissions, authors from more than 30 countries, the proceedings contain 114 full papers and 22 abstracts, which is a considerable success in terms of popularizing the main goals of the conference, aiming to:

- bridge the gap between academia and industry through applied research on technology, innovation and entrepreneurship and regional economic development.
- foster knowledge transfer and collaboration between the academic and industrial sectors in emergent technology, system and model contexts.
- understand barriers that prohibit the blooming of entrepreneurship in the global economy,
- publish results of projects in eminent academic and professional journals, books, handbooks, proceedings, and reports.
- facilitate regional partnerships and innovation networks.

We sincerely hope this publication will answer some of the questions concerning this field.

I wish to express my sincere gratitude to all institutions and businesses who have provided financial support in the organization of this conference. Also, a special "thank you" to the University of Novi Sad and the Faculty of Technical Sciences for accepting the role of host, as well as my fellow organizers who have worked tirelessly on this event.

Novi Sad, May 2010

Dr Zoran ANIŠIĆ Chairperson of ICEIRD 2010

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27 – 29 May 2010 - Novi Sad, Serbia "Entrepreneurship beyond crisis - channelling changes to advantage"







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- Vojin Senk
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# Entrepreneurial behaviour and management attitude towards external business advice – experience of BAS Programme in Moldova, Caucasus and the Balkan region

### Natalia Meylunas

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Management practices are strongly associated with corporate enterprise performance, and differences across countries in corporate enterprise performance play a very important role in explaining differences in economic growth. A recent EBRD/World Bank study of management practices in the EBRD region shows large variations across countries and substantial gaps to advanced economies in most countries. The "management deficit" relative to Western Europe is particularly large for medium-sized and smaller companies. The evidence also suggests that management quality is closely linked to corporate governance.

Since inception in 1993, the TAM Programme and subsequently the BAS Programme have been valuable instruments for the promotion of good management in the SME sector, providing consultancy advice at enterprise level. As one of the three pillars of the EBRD's MSME strategy TAM and BAS are essential components of the EBRD transition toolkit, as well as of the donor programmes which support them.

The Presentation covers Business Advisory Service (BAS) Programme experience in supporting small and medium-sized enterprises in some of the EBRD countries of operation (Caucasus, Moldova and the Balkan region). BAS acts as a facilitator for the use of private-sector consultants by MSMEs to obtain a diverse array of services, with the objective of improved MSME performance and developing a sustainable infrastructure of local business advisory services.

Typical projects supported fall within four main categories:

- to improve market performance (eg Market analysis & planning, Development planning, Feasibility studies, Partner Search )
- to improve management effectiveness (eg Reorganisation/restructuring, Computerised financial/management Information Systems)
- to reduce costs (eg Computerised Manufacturing Systems, Engineering Studies)
- to introduce Quality Management & Certification

The Presentation looks at the difference in BAS project types portfolio in the following countries: Moldova, Armenia, Azerbaijan, Georgia, Serbia, Bosnia and Herzegovina, Croatia and Montenegro, and explores the extent to which this difference is attributable to differences in management culture and entrepreneurial behaviour.

# **Creative Industries as an Engine for Growth in South Eastern Europe**

### Panagioths Ignatiadis

Technology Manager, Foundation for Research and Technology Hellas, Greece <u>ignatiadis@stepc.gr</u>

Creative entrepreneurship is seen as a globally growing area. According to the Economy of Culture report, commissioned by the European Commission in 2006, creative industries and culture are deemed to drive economic and social development, as well as innovations and cohesion. They also promote the economic activities of other industries, especially in the ICT sector.

Creative industries include all those that create copyrights, patents or trademarks. They are therefore seen as business operations based on the commercial utilization of intangible assets. The term of creative industries has similarities with, for example, the following concepts: the cultural industry, the experience industry, content business operations, and the copyright sector

In Europe, creative industries build upon a rich and diverse core of cultural heritage and skilful arts. This core is surrounded by interconnected and related layers of entrepreneurial and innovative services bringing creativity to the market. While promoting and enriching European cultural diversity, they prove a powerful economic lever. They not only represent dynamic, fast growing sectors in Europe, but they are also global leaders and competitive exporters in a wide range of fields.

The paper will present the available information on the activities and economic importance of creative industries in Europe developed through the sectoral group of Creative Industries of the Enterprise Europe Network (EEN). It will present cases where creative industries are considered as a strong economic sector and identified key drivers for the emergence of favourable "eco-systems" for creative industries in SEE, such as enabling competences, skills, technologies and the interplay between different innovation actors and institutions in this field.

The development strategy and the roadmap of the sectoral Group in Creative Industries will be presented.

## **Business incubators in Serbia** –

### From start-up to added value

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The process of developing business incubators in Serbia is relatively late compared to other countries in the region: the first business incubator was opened in 2005 in Knjazevac. Due to the lack of systemic state support and inability of local governments to seriously invest in the development of incubators in their communities, the majority of incubators in Serbia are overcoming the start-up phase thanks to the huge efforts invested by incubator managers. Since the development of incubators is a process that requires time, at this moment it is not yet possible to analyze the performance of companies that were incubated and left the incubators. At the same time, the analysis of rapid development of Business and Technology Incubator of Technical Faculties in Belgrade, which in just two and a half years of work and in limited spatial capacity, has recorded very good results and became a real core of knowledge-based economy, shows the following main elements:

- Use of best practices from developed countries and the EU
- Rational model putting the old space to use
- Partnership with the university and support to young people and innovation
- Developing a set of required services that follow the growing needs of businesses

So far, the development of business incubators in Serbia, even at this initial and most difficult phase shows that is possible to create high added value. This is the main reason why the state should help and more seriously invest in operation of business incubators.

# **Innovation Promotion in Serbia**

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Knowing well that innovation is the only way of obtaining a legal monopoly, Serbia has undertaken a huge effort to promote, support and cultivate innovative businesses. First attempts in this respect were made in 2001, after democratic changes, and the University of Novi Sad has got the first TEMPUS project in Serbia after the lift of sanctions under the title "University Science Parks – Organisational Framework". Partners from Sweden, Austria, Greece, The Netherlands, Great Britain, Germany and Portugal were included, there experiences compared, and local situation was analysed. The strategy for developing Science & Technology Parks, as well as other forms of innovation business support, was subsequently established.

The following years witnessed a boom in this respect, despite of a number of difficulties and misunderstandings from authorities at all levels. One of the first was a Best Technological Innovation competition, started in 2003 at the University of Novi Sad, expanded to the whole of Serbia since 2005 (www.inovacija.org). Till now, more than 4000 people were attending trainings organized in this framework, since education is the focal point of the competition. 65 new high-tech companies emerged, and the competition became a major success story, with its central event broadcasted directly at the national TV.

Having high-tech companies available, other activities ensued. Business incubators were established in Belgrade, Novi Sad, Subotica, Kragujevac and Zrenjanin, innovation centres in all the university centres, 4 episodes of an educational TV series about high-tech entrepreneurship were released, a "Guidebook for innovative entrepreneurs" was printed and distributed to all those interested. ICT clusters were formed, regional master studies in entrepreneurship with emphasis high-tech were established an on (www.unescochair.uns.ac.rs/eng/). A new law on innovation was accepted by the parliament, regulating the area. All this has contributed towards a huge growth of the high-tech sector. For instance, only at the University of Novi Sad, there are now 53 registered high-tech spinoff companies, with an annual growth factor of at least 20%, and yearly turnover more than 35 million EUR and more than 1200 employees. The sector is growing still at a fast speed. Enterprise Europe Network has extended its operations to Serbia, and initial results show that it really helps the high-tech sector to find partners. More than 70 company-to company contacts were made, and a number of new projects started out of them.

If Serbia is to succeed in its quest for entering EU, it has to modernize its industry, and it is not possible to do it without the reliance on very profitable high-tech businesses. The development to this day ensures us that this is indeed possible, and even better news can be expected in the future.

**Full Papers** 

### Fostering Entrepreneurship and Technology Transfer in the Portuguese Higher Education Context

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The entrepreneurship and technology transfer in the Portuguese Polytechnic Institutes assume a major role in fostering innovation, promoting the regional development process and sustaining economic growth. The close connection between this higher education institutions and the industry represents a clear path for challenging the international crisis. The Polytechnic Institute of Leiria included recently in its organic structure a new unit that supports scientific and technological knowledge transfer, namely Technology Transfer Information Centre (CTC). This unit promotes complementary activities in the technology transfer and entrepreneurship fields (besides those naturally resulting from the academic graduation process) that boost the innovative and entrepreneurial culture in the academy conditioning the effectiveness of the technology transfer process. The referred complementary activities include formation, workshops, seminars, ideas and business plans competitions, among others, and intent to enlarge the students entrepreneurial skills. A methodological study was design in order to allow the authors to determine the impact of the above mentioned actions toward the increase of indicator of an internal entrepreneurial culture in the academy such as: number of supported business projects, number of incubated spin-offs, number of technology-based enterprises created and number of virtual incubated projects. This study was carried out focusing the main areas of engineering, management and business studies, fine arts and design, maritime and health studies.

#### Keywords

Entrepreneurial Culture, Entrepreneurial Education, Higher Education, Technology Transfer

#### 1. Introduction

The Polytechnic Institute of Leiria (IPL) is a Portuguese higher education institution that acts at the training field, research and development, and community services. This Institute was created in 1980, and includes five higher schools with the follow main fields of actuation: Education and Social Sciences, Technology, Management, Fine Arts and Design, Maritime Technology, Tourism and Health Sciences. The Institute has currently about 800 teachers and 11 000 students, distributed by under-graduation, graduation and master programmes.

Taking into account the new role of the higher education institutions as social development mediators, the IPL felt the need to adopt a sustainable strategy to promote entrepreneurship. (Finkle, T.A., 2009, 35-53), (Jyothi, P., 2009, 39-43)

#### 2. Methodology

The Polytechnic Institute of Leiria is a young institution, where the entrepreneurial spirit of its academic universe early flourished. In order to face nowadays global crisis and aiming the economic growth, the implementation of initiatives that develop the entrepreneurial spirit among its students, teachers and staff gradually increased the number of business projects among others.

Since the year of 2006, the Polytechnic Institute of Leiria proceeded to the gradual integration of the Entrepreneurship and Innovation subject in most of their graduation programs, starting by the area of Tourism and Fine Arts and Design, namely in the graduation programs of *Tourism, Tourism and Recreation and Sound and Image.* 

In a second phase, several areas where included in this group as presented in table 1.

This subject is taught mainly by qualified teachers and trainers in the field and some experts are invited. During the semesters entrepreneurs (students) are supported by coaches, mentors or trainers for developing their own projects.

Creating an entrepreneurial culture must be close followed by the training of the teaching and non-teaching IPL's staff in this area, which has already given some results, as for example the internal growth of experts that are able to coach and promote entrepreneurship innovative actions.

Areas	Graduation Programms	Graduation Programs wit Entrepreneurship and Innovatio subject (Number students 2006 2007, 2008)		
Education and Social Sciences (ESS)	<ul> <li>Cultural Animation</li> <li>Media and Multimedia Education</li> <li>Sports and Well-Being</li> <li>Primary Education</li> <li>Social Education</li> <li>Human Relations and Organizational Communication</li> <li>Social Work</li> <li>Translation and Interpretation Portuguese/Chinese - Chinese/Portuguese</li> </ul>	<ul> <li>Cultural Animation (27, - , - )</li> </ul>		
Technology (Tec)	<ul> <li>Biomechanics</li> <li>Energy and Environment</li> <li>Automotive Engineering</li> <li>Civil Engineering</li> <li>Electrical and Electronics Engineering</li> <li>Mechanical Engineering</li> <li>Computer Engineering</li> <li>Computer Sciences for Health Care</li> <li>Civil Protection</li> <li>Health Equipment Technology</li> <li>Food Engineering</li> </ul>	<ul> <li>Biomechanics (-, 33, 45)</li> <li>Energy and Environment (-, -, 2)</li> <li>Automotive Engineering (-, 27, 21)</li> <li>Civil Engineering (-, 85, 45)</li> <li>Electrical and Electronics Engineering (-, 65, 50)</li> <li>Mechanical Engineering (-, 21, 24)</li> <li>Computer Engineering (-, 32, 44)</li> <li>Computer Sciences for Health Care (-, 15, 10)</li> <li>Health Equipment Technology (-, 25, 35)</li> </ul>		
Management (M)	<ul> <li>Public Administration</li> <li>Accountancy and Finance</li> <li>Management</li> <li>Marketing</li> <li>Legal Counseling</li> </ul>	<ul> <li>Public Administration (-, 10, 18)</li> <li>Accountancy and Finance (-, 28, 33)</li> <li>Management (-, 158, 130)</li> <li>Marketing (-, 60, 50)</li> <li>Legal Counseling (-, 5, 43)</li> </ul>		

Table1 – Distribution of Number of students in the IPL graduation programs

Fine Arts and Design (FAD)	<ul> <li>Fine Arts</li> <li>Interior and Spacial Design</li> <li>Design - Ceramics and Glass</li> <li>Design - Graphics and Multimedia</li> <li>Industrial Design</li> <li>Sound and Image</li> <li>Theatre</li> </ul>	<ul> <li>Fine Arts (51, -, -)</li> <li>Interior and Spacial Design (-, -, 1)</li> <li>Design - Ceramics and Glass (-, 15, 10)</li> <li>Design - Graphics and Multimedia (-, 18, 73)</li> <li>Industrial Design (-, 34, 37)</li> <li>Sound and Image (30, 98, 45)</li> </ul>
Maritime Technology (MT)	<ul> <li>Biotechnology and Marine Biology</li> </ul>	
Tourism (Tur)	<ul> <li>Leisure Management and Business Tourism</li> <li>Tourism and Hotel Management</li> <li>Marketing for Tourism</li> <li>Restaurant Industry and Catering</li> <li>Tourism</li> <li>Tourism</li> <li>Tourism and Recreation</li> </ul>	<ul> <li>Tourism and Hotel Management (109, 45, 59)</li> <li>Marketing for Tourism ( - , 15, 30)</li> <li>Restaurant Industry and Catering ( - , - , 16)</li> <li>Tourism ( 31, 44, 30)</li> <li>Tourism and Recreation ( - , 1, - )</li> </ul>
Health Sciences (HS)	<ul> <li>Nursing</li> </ul>	<ul> <li>Nursing ( - , 114, 137)</li> </ul>

#### 3. Results of the new subject inclusion

According to the figure 1 it can be noticed a good students acceptation of the Entrepreneurship and Innovation subject in most of the graduation programs. This process includes two different regimes: optional and compulsory. The decreases in terms of the student' number in some programmes comes naturally from the demographic existent decrease in Portugal that confines the number of students in the higher education system and presents the lower value in the academic year of 2007/2008.

The graduation programmes of Sound and Image, Industrial Design and Design - Graphic and Multimedia in the area of Fine Arts and Design stand out, specially the two last ones that present a growth rate of students number of 9 % and 305 % respectively, between the years of 2007 and 2008. In the area of Tourism we can mention the programmes of Tourism and Hotel Management and Marketing for Tourism, with growth rates of student number between years 2007 and 2008 of 31 % and 100 % respectively. It is also of pointing out the strong interest of Nursing students on the subject, from the area of HS (growth rate of 20 % between 2007 and 2008). At the Management areas although the course of Management present the largest number of students, the growth rates in the programmes of Legal Counseling (760 %) and Public Administration (80 %) were the most significant. In the area of Technology the follow engineering programmes presented the most relevant growth rates: Health Equipment Technology (40 %), Biomechanics (36 %), Computer Engineering (37,5 %) and Mechanical Engineering (14 %).

Additionally a wide range of parallel action as workshops, seminars, business ideas and business plans competitions, among others, where developed and implemented. Mainly, these initiatives where promoted by an internal Technology Transfer Information Centre and the Entrepreneurial Centre. The first one is an organic unit that provides services to support companies, to promote business projects and create technology transfer between the institution and industry. The Entrepreneurial Centre is responsible for the promotion of technological entrepreneurship within the IPL environment, by implementing activities to develop an entrepreneurial culture, and to support and follow up innovative proposals.

Knowing promoters' difficulties on defining a business plan for its project, a crucial element to access financing sources and incubation, IPL is partner of two local Enterprise Incubators, participating actively on the incubation process. This process comprehends two stages: a Proceedings of

first stage of "virtual incubation" (in the IPL) and a second stage of "physical incubation" (in the Enterprise Incubator). In the first stage promoters fill in an application form where business idea is described and then evaluated by an independent panel of experts. If there is a positive evaluation promoters have the support of the Entrepreneurial Centre of the IPL on working up the Business Plan. In case of an adverse evaluation promoters can always have support to improve the business idea. After working up the business plan promoters are prepared to apply the second stage: the "physical incubation", in the enterprise incubator. (Culkin, N, 2009, 73-79), (Lee, K, 2009, 666-673)

The new entrepreneurs's projects can benefit from support mechanisms provided by IPL that established funds to support the knowledge valorisation process (intellectual property protection). The funds are raised through agreements, partnerships, associations, bank entities, risk capitals, business angels and entrepreneurial associations, among others. (Table 2)

		2006_2007	2007_2008	2008_2009
Intellectual Property (Applications)	Patents	_	4	_
	Patents	_	_	4
Intellectual	Provisional patent applications	_	_	18
Property (Registered)	Industrial design rights	_	3	_
(itogiotorou)	Trademarks	_	2	1
	Direitos Autor	_	2	1
Number of	Virtual incubation	_	1	4
Based Enterprises	Physical incubation	_	2	_
Spin-Offs		_	1	5
	Proposals	1	18	30
Services	Approved proposals		9	20

**Table 2** – Indicators: intellectual property applications, number of created technology-based enterprises, number of created spin-offs and number of services to the community



Figure 1 - Distribution of Number of students per graduation programs in the period of 2006 to 2008

#### 4. Teaching entrepreneurs: New challenge

The entrepreneurship education process also resulted in significant changes on the way teachers and trainers looked to this subject, and allowed them improve their own skills of teaching, being challenged by new strategies of learning-by-doing and learning-by-interacting, far different from the usual lectures based on a learning-by-learning methodology. In order to achieve this propose, teachers and trainers were invited to be part of a formation program based on a "leaning by doing" methodology that allow to learn through team experiences, allowing to acquired or develop a set of entrepreneurial competencies.

This methodology is very different from the conventional teaching methods and bases on an experimental approach applied to class or outdoor activities that offers continuity from one experience to another. The teacher or trainer role is to support and orient students in the learning process and not only to provide them information and knowledge. The main focus is now the student and the understanding of this person. With this methodology the student has the responsibility of its own learning focus and teacher or trainer should provide the environment and support to facilitate this process.

The main class activities included actions of group discover, entrepreneur picture and unexpected questions. Further activities as ideas brainstorming, business plans, "entrepreneur for a day activity" (outdoor activity where students implement their own business for a day) and a lunch with the presence of invited entrepreneurs where carried out. These activities were replicated with the students of the Entrepreneurship and Innovation subject. (Carvalho, L. et al., 2008)

#### 5. Conclusions

A sustainable strategy for the stimulation of entrepreneurship in the Polytechnic Institute of Leiria was established and one of the actions that was implemented in this scope, since the year of 2006, was the gradual inclusion of the Entrepreneurship and Innovation subject.

During the period of 2006 to 2008, stimuli, incentive and support was given to the participation of members of the teaching staff in projects for the transfer of technology and knowledge and entrepreneurship.

Several indicators are presented, as intellectual property applications, number of created technology-based enterprises, number of created spin-offs and number of services to the community. All of them revealed a clear increase and denote a strong commitment of the Polytechnic Institute in develop essential skills, capabilities and attitudes towards entrepreneurship.

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# Sustainable Innovations as Scenario for Regional Development

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By 2012 the Earth population is expecting to reach 7 Bln people, and this number is expecting to grow to 9 Bln till 2050. Many recent reports discover the problems of resource scarcity and climate change. Some scenarios anticipate total resources extraction of around 200% of 1980 equivalent by 2020, necessary just to sustain the world-wide economic growth [10]. In order to cope with these challenges on global scale, people need to develop new social behavior and vision for production and consumption.

The present paper aims to overview some emerging innovative practices, leading to social, economic and ecologic development. Largely will be discussed the role of the regions, the concepts of Living labs, regional role for sustainable innovation processes. Finally there will be presented some examples and models, aiming to support and improve the innovation activity.

#### **Keywords**

Living labs, Regional development, Sustainable Innovations

#### 1. Introduction

Regions become increasingly important in the context of globalization. On one hand, regions represent specific ecological, economic and cultural environment, and on the other hand they propose unique combination of natural resources and human activity. Regions designate geographic area centred within a conglomerate of complex inter-dependent economic and cultural relationships. Regions are focal point in the innovation process, as they form natural geographic borders for transfer of tacit knowledge [1]. In a global multi-cultural and multi-ethnic world, where geographic distance has become obsolete because of intensive air-traffic and information flow, some authors [2] anticipate even bigger role for regions for developing flourishing research and innovations eco-system. Regions represent administrative, political, economic, natural and cultural centres that form local communities, physical places where people live, work and communicate. The present research investigates how regions can facilitate and promote the process of sustainable innovations.

Sustainability is extending the concept of ecology, including three main components sustainable environment, sustainable society and sustainable economy [3]. Thus sustainability has to be understood as sound economic term, designating a path for longterm development. Finding appropriate models for further sustainability will provide long-term success and prosperity for next generations. According to recent projections, the dominating economic models can not match with present demographic growth. This means that in the next 40 years human will need the resources of another 5 planets as the Earth, in order to cope with resource scarcity and increased needs of the expected 9 billions people. Beside resource scarcity, some urgent issues as well are the increasing effect of climate changes on Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 natural and biological eco-systems. Sustainable innovations can propose a path for transformation of companies, consumers and regions to more stable and coherent models for long-term survival. So the present research proposes an overview of factors, leading to development and adoption of sustainable innovations and the role of the regions.

#### 2. Theoretical background and research methodology

#### 2.1 Overview of concepts behind Sustainable innovations

One of the main problems with development of sustainable innovations is the lack of common understanding of the term [4]. Sustainable development is defined as political concept in Brundtland Report [5], describing it as "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN 1987). Sustainability goes beyond the ecological aspects and scarcity of natural resources, as it includes as well social and economic stability [6]. Another important term is the eco-innovation defined by [7], stating that eco-innovation is the "creation of novel and competitively priced goods, processes, systems, services and procedures designed to satisfy human needs and provide better quality of life for everyone, with a whole-life-cycle minimal use of natural resources (materials including energy and surface area) per unit output, and a minimal release of toxic substances". [3] highlights that sustainable innovation is innovation aiming to generate benefits that are collective in terms of the environment, society and economy and reflecting a new out of the box approach often challenging traditional systems.

[6] claims that sustainable innovations is an umbrella term, designating ecologically sustainable development; participatory innovation (including customers, employees, users and the general public); continuous innovation (the ability to continuously regenerate and break boundaries); global innovation (innovation in global cooperation using knowledge distributed everywhere); innovative management (or management encouraging innovation in organizations and society).

Thus many scholars understand sustainable innovations as form of disruptive innovations, changing and threatening existing economic and social models. This explains why it is extremely difficult for companies and politicians to accept and work for this fundamental change, and why they often prefer to substitute it with eco-efficiency, dematerialization and ecology-friendly production [4]. [8] as well discusses the need for revolutionary change in the innovation system, emphasizing that the old dominant conceptual model for innovations is outdated and has to be replaced by a new one.

Vision for sustainable innovations should reflect the substantial change in individual behavior and in business models. Sustainable innovation is conceptual model of thinking, assessing individual and business choices for achievement of continuous systems and processes. The accent of sustainable innovation has to be put on the daily individual and business choices, leading to informed and responsible for the future decision making. Innovations should not be limited only to business initiatives, because individuals can adopt conceptual models for sustainable development being employees, experts, citizens, customers, parents, members of community, neighbors, etc. Thus sustainable innovation concern the people's way of thinking, living and working, and involve everybody and every decision made in professional or private life.

#### 2.2 Research methodology

The present research aims to discuss the role of regions in the emerging sustainable innovations paradigm. In the centre of our debate is put the innovation process as general

approach for coping with global challenges ahead and enabling achievement of sustainability in regional aspect. There will be discussed critical factors and challenges for sustainable innovations, discovering the role of regions as focal point of innovations, transforming from low-cost manufacturers to centres of value-creation, leading to increased well-being and quality of life.

#### 3. Main factors for Sustainable innovations

In order to discuss the regional role for the process of sustainable innovations, an overview is made on the main economic principles and challenges today. In [9] there are analyzed in details the state-of-the-art of the innovation landscape, including recent trends in company innovations, university and research infrastructure development, demographic and social factors and emerging concepts and innovation paradigms.

#### 3.1 Innovation paradigm

Today innovations become part of the every day severe competition in a global scale. Adoption of new technologies, improved products and process functionalities, optimized production and cost-efficiency and improved supply-chain processes become factors for differentiation and often result in shorter product life-cycle and accelerate market dynamics. Innovations are among the key functions of any company. In the knowledge-based economy knowledge become main factor for competitive advantage. So innovations are the measure of new knowledge that company can implement in its products and services and can sell on the market. Thus innovations designate the end-goal of any knowledge-intensive activity.

However in a global plan there are more than 3 bln people living with less than 2 USD per day. On the other hand, developed countries increasingly will suffer from worsening demographic structure because of aging, meaning worse productivity, rising demand for public and health care services, and more pressure on social systems. EU is one of the larger importers of resources in a global scale. Thus competitive advantage of European countries has to be focused on improved resource use, providing more value with less products, exporting more intangible than tangible products and services.

#### 3.2. To be or to have

The concept of sustainable innovations relies on the philosophy of Eric Fromm "To be or to have". While the economic growth following development of new technologies and fast globalization is due on the fact that more people "have" more products and services, sustainable innovations put the focus on the first part - "to be". The main question for companies should not be centred on how to use the concept of sustainability, ecoinnovations and eco-efficiency to sell more, but how to increase the value of limited resources. Increasing knowledge and services within products and using wiser resources means delivering more value for customers and allowing customers to spend wiser resources on their turn. Globally natural resources - oil, minerals, metals, fresh water and others, are expected to become more and more difficult to obtain [10] provide deep analyzes] and this will increase its prices. However, the factors of sustainability are strongly interrelated and can not be examined or anticipated in isolation, focusing only on resource scarcity, climate change and demographics change. One example of this complex eco-system is the recent food crises of 2007-2008, that led to sharp price increase of basic foods and caused political and economical instability and social unrest in both poor and developed nations (Wikipedia). The average world prices for rice rose by 217%, wheat by 136%, maize by 125% and soybeans by 107%. There were identified several groups of factors as climate

change - bad weather conditions in main producing regions and natural disasters due to increased ozone effect. However, this crisis situation was severely fuelled by economic factors - as increased demand and production of biofuels, increased consumption in Asia

factors - as increased demand and production of biofuels, increased consumption in Asia, redistribution of working land, and change in agriculture prices subsidies in developed nations. Finally the prices were influenced as well by large market speculations for commodities on the global stock exchanges, mass declining world food stockpiles and historically imposed trade quotas on countries as Japan, prohibiting it to sell rice on the world market. The complexity of the factors and relationships and its direct influence on the global economy can not be easily forecasted and anticipated. The global financial crisis afterward (2008-2009) was another challenge to the world economy and the recovery is not yet stable.

#### 3.3. Rising role of regional knowledge eco-systems

The raising importance of regions for speeding-up innovations and knowledge transfer is largely discussed in literature. The focus on regional knowledge ecosystem framework is due on increased dynamics of interactions within region, including emerging networks and tacit knowledge flows. Holistic approach of the regional innovation ecosystem, represent one coherent understanding and sustainable management of knowledge processes and not just providing tools and services. Recently, it has been recognized that innovations are localized. Innovations are result of ongoing and prolonged collaboration and interaction between firms and a variety of actors around them within what has been termed regional innovation systems [11]. This is due on the fact that non-codified, tacit knowledge transfer which play increasingly role in the innovation process largely depends from face-to-face contacts and frequency of interaction among individuals. So geographic distribution explains knowledge production and innovation, but still remain unclear how knowledge spillover matter on the formation of clusters and agglomerations [12]. The regional knowledge ecosystem can foster not only regional balance, but can adopt effective mechanisms to bring local innovations on a global scale. Regions are in the best position to promote new culture and perceptions of sustainable innovation among citizens and local business. Local community is a microreflection of the global world - this is what we see daily around us, and this is what makes sense to us. Local authorities can better promote sustainable innovation as it can better assess and evaluate resources, it can better understand citizens, local business, local research institutions and universities, mechanisms of transfer of goods and knowledge inside and outside region.

#### 4. Challenges for Sustainable innovations - perspectives for regions

#### 4.1. Role and place of regions to support sustainable innovations

Sustainable innovation should be adopted and promoted as public policy, because this new approach fundamentally oppose on the market logic for company development. Instead of producing and selling more new products and gaining bigger market share, companies have to fundamentally change their focus - to produce less material products, to improve production processes, to improve efficiency of resource use, to improve quality and life-cycle of products and services, to limit resources waste. Presently the price is the main base for competition. Thus in order to change the concepts of resource extraction and use, companies will need additional support to redefine production processes, business models and value-creation mechanisms.

Discussing the emerging role of regions, there can be identified the following initiatives and approaches, promoting the concepts of sustainable innovations among companies, citizens, customers and end-users. Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

- Raise public awareness for sustainable innovation in the framework of local development. Regions can promote companies and provide local examples and practices for adoption of sustainable policy. Attention should be paid on private companies, but as well on public institutions, producing and selling high-quality products with extended life-cycle, improving service for clients and after-sale policy, developing innovative approaches for limiting resource use and promoting resource efficiency.
- Evaluate sustainable eco-systems. Sustainable innovations stays for innovations, oriented toward ecological balance, better exploitation of resources, better responding on users needs, exploitation of global knowledge. Sustainable innovations can be defined as managerial approach rather then scientific as it stays not for better technologies, but for better managerial practices to incorporate more value in products. Thus innovative business models become increasingly important for any business and for any customer, designating what the offer is and the value for money. Innovative business models can create new sources of competition, changing the model of value creation.
- Changing social models. Contrary on any marketing campaign, in the framework of sustainable innovations, people have to learn to consume less, to taking care for products and resource longer and more efficient use and thinking about any practices and approaches enabling better sustainability in long-term.

OECD has identified several approaches to motivate industry to apply sustainable methods [13]. One factor will be the increased demand for green and fair products, which is function of social demand - through increased education and public awareness campaigns. Another incentive is better information for customers, including communicating low-impact product use, explaining how to reduce the use-phase impact on what customers purchase, decrease energy use, requiring labelling standards and information about resource consumption and energy efficiency status and others. Innovative after-sale services will allow prolonging product life, durability of products and services, and development of take-back regional policy. Regions can foster companies to implement product and service innovations and service-oriented business models, emphasisng the fact that the value-adding process highly involves customer services. Leadership for social change and socially responsible business have to be reinforced and highly estimated in the society.

Challenge	Regional Incentives	
Creating demand for green and fair products	Raise regional awareness and knowledge about sustainability and foster demand for green and sustainable products	
Communicating for low impact product use	Foster companies to improve information about products extended and efficient use.	
Innovative after-sale services	Promote product quality, business models and after-sale support, increasing product life;	
Product and service innovations	Improve quality of products and services provided in community	
Service-oriented business models	Increase value for clients while providing additional services.	
Leadership for social change and socially responsible business	Promote local leaders; raise social recognition for adopting sustainable innovations.	

**Table 1** Regional role for promoting sustainable innovations.

# 4.2. Regional support for sustainable innovations within main business processes

- Innovation process Regions can foster intensive knowledge transfer processes, fostering cooperation and public initiatives for local eco-system, involving internal and external experts in networks. The role of regions can be to enhance companies and to involve customers, end-clients, experts and administration, in order to increase value for money, proposed in the community. Working with companies, regions can raise questions for longer product life-cycle, improved quality, after-sale service and pay-back policy. Living labs and open innovation framework propose new model for cooperation. Matching supply and demand improve planning, production, storage and logistics and increase productivity and efficiency.
- Production process Companies increasingly focus to outsource standard production processes and to specialize in specific tasks. However, many examples prove that sustainable innovations and expert knowledge, applied in the production process can enable companies to discover many new sources for cost optimization, eco-efficiency and increasing value. Regional support can facilitate companies to improve production processes in a whole, supporting explicitly better quality products, resource efficiency, use of efficient working practices as tele-work, mobile and flexible work, minimizing rented physical spaces, minimizing transport costs. Regions can describe specific business models appropriate for local context.
- Distribution process Logistics process is extremely severe problem because of the traffic, oil-dependences and metal use. Thus optimized distribution processes in the region can enable regions to increase safety, to optimize road use, to optimize distribution of products. Shortening production and distribution cycle will mean shorten needs for working capital. Adopting regional supply chains and transportation chains, optimizing packaging, decreasing waste and damages in the logistic process can contribute to local sustainability.
- Sales Regions have to raise awareness and motivate users to understand sustainable innovations paradigm using wiser resources, calculating overall resources consumption, obtaining better value and well being limiting its consumption.
- After-sale process Regions have to develop explicit procedures and mechanisms to help users and companies to recycle and buy-back products and resources; Thus companies have to keep closer contacts and relationships with customers.

#### 4.3. Some practices of sustainable innovations

Living labs (LL) is evolving concept, fast spreading around Europe (EnoLL). This is a form of user-driven open innovation ecosystem, based on a partnership which enables users to take an active part in the research, development and innovation process with product conception. It can be defined as "an environments for innovation and development where users are exposed to new solutions in (semi)realistic contexts, as part of medium- or long-term studies targeting evaluation of new solutions and discovery of innovation opportunities" [14].

Benefits of LL can be discussed from various perspectives. Users, citizens and members of the community can be empowered to influence the development of services and products which serve their real needs, and thus jointly contribute to savings and improved processes through active participation in the R&D and innovation lifecycle. SMEs and micro-entrepreneurs can act as providers, developing, validating and integrating new ideas and rapidly scaling-up local services and products to other markets. Larger company can improve the innovation process, by partnering with other companies and end-users. Researchers, economy and society gain stimulating business-citizens government partnerships and improved technology innovation ecosystems; integrating technological and social innovation in an innovative 'beta culture'; increasing returns on investments in R&D and innovation. Living labs contribute to the reduction of market risk [15]. The authors studied in details 4 cases in LL and summarized that LL reduced uncertainty and risk on personal and team level, increase entrepreneurial role, create experimentation arena and finally develop initial demand.

Several examples for sustainable innovations are provided by [16] describing the models how different companies and institutions can promote regional sustainable innovation eco-system. Wal-Mart requires for example from its suppliers to respond on specific environment standards, and thus raise awareness and directly support regional sustainability. Triodos Bank has raised attention on the sustainability niche, focused to finance only companies and projects, delivering social or environmental benefits. Further, authors propose the metaphor of "Bikini model", designating the trend to "sell less but make more". This is the model of DuPont, changing the focus of sale - from selling final material goods, often customers prefer getting specific service. This can enable companies to optimize production processes, delivering more value for products, saving resources, improving waste etc. Another example is the model of dematerialization, describing development and transfer of digital resources, creating more value with less resource as model of Apple Ipod and Amazon reader.

#### 5. Conclusions

The present research focuses on regional role for emerging complex knowledge eco-system, enabling knowledge transfer and flow of information. Regions have to increasingly promote sustainability among it citizens and companies as companies can not alone promote sustainable innovations. Regions are in the best position to foster local processes, because they can increase information for sustainable innovation on different levels, involving everybody in the process. Regions can successfully influence knowledge flows, networking and cooperation in practices and forms of Living labs and other examples, raising awareness and better motivating and public recognizing efforts for attaining long-term sustainability. Further research can give more references for emerging business models, fostering sustainability on local level.

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### Enacting Industry Cluster Renewal Through Interregional University Pipelines – A Process of Sensemaking in the Swedish Periphery

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This paper illustrates how interregional links to universities renew industry cluster development in a peripheral region. The empirical research and focus of the paper is a dynamic automobile-testing cluster that emerged, grew and matured within a remote region of Sweden. Key findings illustrate how at maturity the cluster's lead entrepreneurs sought renewal opportunities through linkages to universities located farther field; yet due to an imbalance of motives challenges were experienced. Nevertheless these challenges are resolved through what we term a 'sensemaking process' resulting in interregional university pipelines opening up to renew the peripheral region's core industry cluster activities. Accordingly, practical implications for regional development and policy are provided along with avenues for future research.

#### Keywords:

automobile testing; industry clusters; interregional links; sensemaking; Sweden; industryuniversity collaboration.

#### 1. Introduction

Key challenges for peripheral regions of industrialised nations are to develop local industries and sustain development. In aid of such challenges research has noted many thriving regional developments to be attributed to building and supporting regional clusters. A regional cluster is generally known as a group of interconnected businesses and organisations in a specific geographic region that through competitive and cooperative relations involving a localised business support infrastructure and shared vision, glean productive synergies for themselves and their particular local industry<sup>[1-3]</sup>. As regionally clustered businesses have the same, or highly similar long-term immobile physical resources requirements, they complement each other's operations and when functioning well create conditions to facilitate healthy regional development<sup>[4]</sup>. Nonetheless, once regional clusters emerge they generally follow a lifecycle trajectory meaning that stagnation and regional decline is imminent. Sustaining development within regions and local industry clusters is therefore critical for regional development.

Prior research highlights the importance of links to universities in order to develop regional clusters<sup>[5-10]</sup>. To be entrepreneurial, and take advantage of local synergies, many regional clusters have been developed nearby universities. The Uppsala Bio-tech and Kista Science clusters in Sweden are examples of this. Nonetheless the actual processes that transpire when links are forming between a cluster and university (i.e. micro processes) have received little attention, especially when the linked university(s) are located outside the clusters home region. A logical explanation of what goes on is 'sensemaking'<sup>[11,12]</sup>; yet such conceptualisation has not yet been well applied to empirical data at a regional level, or used within a peripheral regional cluster context. Thus Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 by investigating interregional links between a peripheral regional cluster and universities located father afield the purpose of the paper is to interpret the process of industry cluster -university links and how it enacts renewal in a peripheral region.

# 2. Understanding industry cluster development, interregional links and sensemaking

In the way that regional clusters experience emergence; growth; maturity and decline their development is likened to the traditional industry lifecycle<sup>[13,14]</sup>. Conceptive development of clusters are noted to occur from natural or socio-economic factors prevalent to particular geographic locations that trigger or stimulate new activities by local entrepreneurs<sup>[16]</sup>. Subsequently certain entrepreneurs start to cooperate around a core industry activity/initiative/idea and realise common opportunities through local interactions. Once initial business and industry initiatives are launched new industry emergence often transpires through social movement or dialectical processes<sup>[16,17]</sup>. Nonetheless, most emergent developments occur when new businesses spin-off from lead entrepreneurs or engage in related activities<sup>[15,18,20]</sup>.

Research shows that preceding emergence; regional cluster development tends to experience growth. New actors (in the same or related activities) will be created or attracted to the region and new networks and formal 'institutions for collaboration' (hereinafter IFC's) develop <sup>[15, 20]</sup>. Often a label, website or common connotation tied to the region, IFC and clusters core businesses will appear. During this development the cluster contributes considerably to entrepreneurship within its respective region<sup>[21]</sup>. Mainly due to newly found relations, access to and sharing of resources, communications, technology, information etc becomes high. Furthermore lead entrepreneurs and firms in the cluster become aware of competitors competencies both inside and outside their region. During this development lead entrepreneurs and core companies tend to be open to new projects, ideas and ventures and competitive advantage vis-à-vis other regions is strong<sup>[22,23]</sup>.

Nonetheless, once an industry cluster reaches a certain critical mass, and develops diverse competitive and cooperatives relations within its particular region, development will eventually enter maturity<sup>[15,24]</sup>. Clusters experience convergence at maturity because many firms become involved<sup>[25]</sup>; hence size, congestion and saturation begins to debase development. As such the pace of business and industry progression can decrease, local perceptions may become unfavourably biased and too much emphasis placed upon internal relations which in turn confines the clusters logics and hinders development<sup>[24]</sup>. At this point lead businesses in the cluster tend to look and act only within their local environment, become complacent with the levels of competition and begin to relax. As previously mentioned this dampens development and ultimately leads to stagnation and decline where the cluster becomes vulnerable to technological and/or economic changes from outside their region<sup>[25]</sup>. Cluster maturity can occur between 10 or 20 years after initial emergence and may last for 10-15 years <sup>[14]</sup>. Nonetheless it becomes a critical development phase in which the clusters core actors *should* re-organise, re-think and renew their milieu to gain new inspiration and sustain development for themselves and their particular region. Accordingly industries as diverse as automotive, chemical, electrical equipment and defence are most vulnerable during these mature developments<sup>[22]</sup>.

To maintain regional cluster development, Wolfe and Gertler<sup>[26]</sup> suggest non-local sources of information, excellence, skills and competencies to stimulate developmental pipelines between industry clusters and entities located outside the region. They suggest that important business; communication, R&D and industrial developments are created through interregional 'pipelines'. Although interregional, the effectiveness of such pipelines is similar to those of local networks and depends on the quality of links and levels of trust between the entrepreneurs and organisations involved<sup>[27]</sup>. Advantages of interregional pipelines relate to the integration of clustered firms becoming active in multiple regional environments, each of which is open to different industrial potentialities<sup>[28]</sup>.

Access to interregional pipelines can feed local interpretations and usage of skills, competencies and expertise that contributed to the development of successful firms, organisations, or clusters in

other regions<sup>[23]</sup>. A well-rounded system of interregional links connecting an industry cluster to the rest of the world therefore aids development by allowing key firms to establish relations with actors outside their own region<sup>[24].</sup> This runs along the paradigm that even world-class regional clusters cannot be permanently self-sufficient. New research, business and industry developments will always be created in other parts of the world <sup>[29]</sup>; hence those regional clusters that build links to firms, organisations and universities of global excellence will gain competitive advantage and tend to maintain their development<sup>[30]</sup>. Consequently many policies have placed universities in a central position to develop regional clusters. This trend has resulted in the emergence of 'Mode 2' universities and increased pressure on universities to produce research that is exploitable within regional cluster settings<sup>[7,9,31]</sup>. At the same time regional clusters are considered similar to organisations and values that achieve common goals.

Seminal sensemaking literature<sup>[11,12,33]</sup> frames local business managers in an ongoing evaluative process of (future) strategies, problems, possibilities etc. through which meaning and understanding (sense) is attributed to any given situation. According to Weick<sup>[12]</sup> the concept of sensemaking is a dynamic creational process of making sense of surroundings. Contexts are therefore conceived as a mutable entity continuously enacted by the individuals involved through their sensemaking process<sup>[12]</sup>. This stresses the process as driven by plausibility rather than truth. Organisational members will go to great lengths to evaluate and correlate any given set of means to support any existing attributed truth by both consciously and unconsciously enriching, patching as well as splinting organisational norms to fit into a present scenario. Merton<sup>[34]</sup> describes this fundamental set of corrective truths residing on a meta-level as the organisational ethos. Such bias towards the already known is well illustrated through defensive routines<sup>[35]</sup>. Defensive routines transpire when people hold validity to something which is problematic, yet do not believe it a problem. In business situations defensive routines arise when managers continuously solve problems based on - thought to be - well tested truths; yet these 'truths' have been framed as non-testable<sup>[35]</sup>. This suggests that when a local organisation is *not* frequently challenged or confronted with alternate truths, goals and unexpected outcomes the sensemaking of any organisational member is inclined to re-enact the ethos and in turn create defensive organisational routines <sup>[36]</sup>. Consequently sensemaking has been frequently used when studying micro-processes in organisations and facilitating an analysis of local managers.

Fruitfully, Zucchella<sup>[24]</sup> suggested that applying sensemaking to industrial districts would enable analysis of how fundamental rethinking of regional phenomena creates opportunities for mature regional clusters to avoid debasing development and foster new logics. A coherent body of research using sensemaking to gain insight into regional cluster development processes has yet to unfold though. Moreover, although the importance of links to universities in order to develop regional clusters has been stressed<sup>[3,6]</sup>; the process that transpires when pipelines are forming between a regional cluster and university (i.e. the micro processes) have received little attention. Using sensemaking would bring insights into how exposure to new ideas and logics from university institutions may hinder or renew a regional clusters development process.

#### 3. Research site

Located in a peripheral and sparsely populated<sup>\*</sup> region of Europe a fully-fledged winter automobile-testing industry and regional cluster operates. The Arjeplog/Arvidsjaur region in northern Sweden lay at the geographic core of such activities. Figure 2 overleaf illustrates the regional cluster's peripheral location in Europe and Sweden.

Within the Arjeplog/Arvidsjaur region many local SME's and international businesses are closely gathered and test various products and vehicles on frozen ice-tracks or inside secret testing

\* 0.3 inhabitants per km<sup>2</sup>
chambers. Almost paradoxically multi-national automobile corporations encompass the region's SME's customer base. During the clusters peak growth period (1989-1999) financial returns increased 700 percent<sup>[37]</sup>. Thus throughout 2002/03 a record turnover of 500 million Swedish crowns (US\$62million/€52 million) occurred. Per annum 2,000 professional drivers, technicians and engineers from Sweden, Europe (mainly Germany), Asia, Australasia and North America work within the cluster<sup>† [38]</sup>. Although remote, the region provides for and operates a dynamic regional business setting and has contributed towards increased regional entrepreneurship and innovation, and surpassed the region's historically dominant forestry and local mining industry<sup>[39]</sup>.



Figure 2. Peripheral location of the research site

Critical for global automobile-testing industry is secrecy. Favourably, the remote Arjeplog/Arvidsjaur communities are collectively confidential<sup>[40]</sup>; and in fact notorious for staunch approaches in swiftly interrupting and shutting down unauthorised media and paparazzi. Broadband and wireless IT communications, road networks, airport facilities, high-school education programs, petrol stations, hotels and tourism offerings have developed in tandem to the clusters core activities and serviced the region's influx of business. Hence this well-developed and mature regional cluster plays a key role in their peripheral European and Swedish region's development.

# 4. Research approach

A longitudinal case study following the peripheral Arjeplog/Arvidsjaur region's cluster development process was employed. This allowed for the maintenance of a holistic perspective on events<sup>[41]</sup>. As such this investigations' design focuses on a single regional setting embedded in a context both spatially and temporally<sup>[42,43]</sup>

Primary data was collected through a series of in-depth interviews and meetings with entrepreneurs, trade association officials, managers, customer relations' co-ordinators, company directors, project managers, site managers, university professors and regional development executives involved in the Arjeplog/Arvidsjaur winter automobile-testing cluster. With permission from informants (n=15) and participant organisations (n=12) a total 37 hours of raw interview data was recorded. Each primary interview was transcribed within 24hours of conduction. To enhance validity, avoid misinterpretation and adhere to secrecy issues<sup>‡</sup>, each transcription was emailed to the corresponding informant for verification. As a result six interviewees requested changes in their interview transcripts as to clarify details. Furthermore, due to secrecy, all informants were able to designate sensitive details in the transcriptions that their employers Secrecy Declarations

<sup>†</sup> Full-time equivalent employees: circa 500. Seasonal employees: circa 1,500

<sup>‡</sup> On-site access (as well as employment) for firms in the cluster includes mandatory signing of secrecy declarations. Breach results in liability to damages for any organization/firm/individual concerned.

required to be removed from any publicly printed materials. Hence three participant organisations requested 'sensitive information' relating to their customers, products, research results and financial details were removed from their respective data transcriptions.

Additionally, secondary data was gathered. It encompassed observational notes documentation and archival data relating to the regional cluster's development. This was obtained during site visits, meetings with key informants and from Swedish media archives and company websites. Secondary data totalled 241 newspaper articles; 32 websites; 19 company documents, four government reports and two pages of observational notes. Based on suggestions from Aspers<sup>[45]</sup>; key documents (i.e. meeting notes, project dossiers, annual reports, presentation slides etc) were archived and inserted into a casebook. Subsequently the complete qualitative data-set was rich and captured the Arjeplog/Arvidsjaur regional clusters development process from 1973 through to 2010.

Data was analysed from a 'narrative perspective'<sup>[46]</sup> dealing with the automobile-testing clusters development process. The analysis for this particular study honed in upon data pertaining the cluster's links to universities. Using constant comparison analysis<sup>[44]</sup> raw interview content was grouped into recurrent themes, each representing partial schemes used by the informants during the interviews. Key data and information regarding events, activities and interactions unfolding during 2004-2010 was focused upon for this study because that was where key informants identified prominent links to develop between the cluster and university. In the section below these key findings are outlined in detail.

# 5. Key Findings

Our investigation discovered that by 2003, with no noticeable assistance from Swedish universities, the Arjeplog/Arvidsjaur winter automobile-testing cluster (hereinafter WATC) encompassed over 40 local firms, two IFC' and a highly specialised and intricate local business and customer network. The cluster, along with lead entrepreneurs, had developed unique, yet well-rounded and standardised operating routines providing steady regional income. At that point in time a local industry developer mentioned his region's entrepreneurs had learnt all they could from working around each other so their (as well as his) job was to maintain development rather than grow it.

However via the clusters formal trade association intermittent connections to universities emerged to access new testing instruments that measured ice-depth (electronically). Thus, initial links to Swedish universities begun. Tertiary institutions that the cluster began communicating with were *all* based in other regions of Sweden (e.g. Göteborg, Luleå, Malmö, Stockholm, Umeå & Östersund) and located between 250 & 900kms from the WATC core activities. Despite vast geographical distance lead entrepreneurs in the remote Arjeplog/Arvidsjaur region managed to access, borrow (and later purchase) ice-measuring instruments that significantly reduced their onsite time, operational and personal costs<sup>§</sup>.

Furthermore certain lead WATC entrepreneurs involved their local businesses in small-scale engineer training and related educational plans that universities fashioned. Although interregional university links were activated, future outcomes were unclear for the cluster. During this time Entrepreneur A explained: "The plan is that [university] students should work here with us from for example October 1 to end of March, then go back [home] during summer and come back [to Arjeplog/Arvidsjaur] next autumn, for three years" and Entrepreneur B noted: "With training [of engineers] we have now something with university X, but it's very small.... we are just starting with [training their] engineers and selling them to the clients, but we don't have a lot of positions vacant, I mean we can sell a person but it takes time, so we have to prove to the customers that

<sup>§</sup> For many years routine methods for measuring lake ice that automobiles (even trucks) are put through rigorous testing upon had been by manually drilling holes. This was a time consuming and laborious method.

this guy can do the job as good as a German technician. So I mean we have one, sort of on training now on from the university, they [the university] actually pay half her salary."

University actors began to express eagerness to engage in the Arjeplog/Arvidsjaur region's WATC. Some institutions created advanced degree and research programmes related to automotive design, developments and system engineering. Yet core companies and entrepreneurs in the cluster were ill informed or not involved in the programmes nor their design. In a few cases entrepreneurs learnt about the advanced university projects when professors called to set meetings in order to pitch their academic research and inform the entrepreneurs what the university research would do. After various formal pitches, the entrepreneurs noted most university actors were very unaware of how their WATC regional businesses and winter-testing operations worked. They also mentioned how university actors wanted a variety of academic research to be used by international car-manufacturers etc and that local Arjeplog/Arvidsjaur firms were seen as a stepping stone for academics eager to have their technical research used by global automobile manufacturers. Thus, although interregional connections to university were emerging local entrepreneurs, site-managers and engineers in the cluster were disappointed in what these external 'university people' could actually provide. Certain entrepreneurs mentioned they were offended by some university's approaches; and after a meeting with university actors one of them sighed loudly, then said: "X university... they don't provide the technical knowledge that they really could, we need real knowledge!".

Disappointment lead to confusion in what could be provided through links to universities in more central regions of Sweden and this created challenges for many of the peripheral region's entrepreneurs. Misaligned approaches from different universities were the key problem. Entrepreneur B explained it was not easy to make university connections and said: [university X] have made it tough for themselves... you know they have never shown any interest in say [local firm A] as a company or to help [local firm B] become better, and that's the criticism". Expressing difficulties in understanding different universities motives and potential in developing local Arjeplog/Arvidsjaur businesses Entrepreneur B said: "Well the training programme with [university Y] that's ok, that's fine, they seem to have big ears and listen to our needs and listen to what we want, but with [university X] they have the wrong ideas about our business". Hence even though various university institutions were eager to be involved in the region, WATC core local firms found them difficult to work with and many entrepreneurs were sceptical. As Entrepreneur D explained: "I have talked a lot with [university X], but they don't listen to what I try to say." Furthermore Entrepreneur D explained his confusion and scepticism and said: "They [university X] don't understand us, they're acting not in a commercial point of view, rather in a more bureaucratic way, it takes time [to develop new car-testing projects] and they don't understand that they are a supplier [of expertise & knowledge]. Despite misaligned motives' an influential entrepreneur pointed out that she believed universities were going to be important for future WATC developments, but she didn't know exactly how.

University actors realised their approach to working with the cluster needed to change from what they *thought* was needed to what the WATC firms *said* they wanted. New discussions with the clusters local entrepreneurs were set. In Arvidsjaur during a newly arranged meeting, a university professor explained to the entrepreneurs: "We are prepared to change our goals, that is the point of this meeting". In the same meeting, the CEO from a prominent local firm said: "Interesting for us is a portfolio of what the university can offer in the way of sound-tests and other measurements so we can offer them to our customers. You [the universities] must be at our disposal when our customers want this." Although motives and development potential through interregional cooperation with university actors appeared fuzzy, representatives from the clusters trade association were hopeful the region could get universities to work *productively* together with the cluster. However during 2005-07 a series of meetings and discussions between the clustered

<sup>\*\*</sup> Expertise and knowledge need was often related to ice behaviors, road friction and automotive testing procedures. Yet most expertise offered related to car-design, multi-body dynamics and automobile control systems. Furthermore geographic distance between the peripheral region's cluster and the eager universities made for irregular and formal meetings between the Arjeplog/Arvidsjaur car-testing firms and university actors.

firms and university actors resulted in many WATC entrepreneurs writing off the possibility of future collaborative projects with universities.

Reflecting on cancellation of projects and failure to convince the remote region's clustered firms and entrepreneurs to cooperate interregionally; university actors reassessed their goals and projects. Some senior academics had applied for long-term funding grants from the European Union. Received funds allowed them to create new departments and employ professors and researchers etc. Their approach this time around were to work directly towards involving the Arjeplog/Arvidsjaur WATC entrepreneurs and focus on winter orientated automobile testing systems and techniques. Professional consultants from the Swedish automobile testing industry were hired to advice on projects and research areas of interest to the cluster. A handful of WATC service providers became interested in university actors. Funding opportunities attracted some entrepreneurs to commit and collaborative on university projects whilst R&D potentials attracted others. However only two WATC firms were observed as proactive and give universities time and space to visit their region again and get to learn the unique automobile-testing business and operations. In doing so these firms incurred personnel, financial, and efficiency costs; but the entrepreneurs behind them perceived their new costs as investments into future, yet unknown, development.

A subsequent development for region's WATC was creation of a formal industry-university collaborative institution. Although run and located in another region of Sweden the formalised vision for the new institution was to: 'act for the car testing entrepreneurs and their region and for the automotive industry'. A board of directors encompassing two university professors, an Arvidsjaur municipality commissioner and an influential WATC entrepreneur were recruited to steer the organisation. With the entrepreneur's guidance, and Arvidsjaur government official's help an interregional cooperative network between more 15 Swedish organisations (10 of which were WATC companies) developed in which WATC entrepreneurs were invited to join and codevelop research projects. Future results of the projects were promoted to provide sustainability for them through developing diverse and advanced automobile testing-services. An inaugural pilot project between a WATC firm and Swedish university developed innovative measurement systems. At Arvidsjaur airport in 2009 the results were demonstrated to WATC entrepreneurs', international automobile industry officials and university actors<sup>[47]</sup>. Preceding the event a university representative expressed that understandings between WATC firms and university had 'vastly improved', and went on to say: "it was not that there were walls between us, but now [these projects] have created a different spirit, it feels more like we are a team now".

#### 6. Discussion

Applying the Weickian sensemaking concept<sup>[11,12,36]</sup> to the findings we discover how initiation of links between the clustered firms and universities stimulated a dynamic interregional sensemaking process. Initially, lead entrepreneurs and external university institutions were confronted with each others established sets of corrective truths. Accordingly university actors represented an ethos that led the WATC to – at best – perceive universities as having potential to provide meaningful competencies to their operations and - at worst - the university institutions made no sense to the WATC at all.

Disconnectedness between the curricula of research and tertiary programs etc conjured at universities located far from Arjeplog/Arvidsjaur, and actual WATC operations explain this key discrepancy. Furthermore, an imbalance of motives moved the cluster's lead entrepreneurs towards confusion and perplexity regarding how valuable it was to develop interregional university linkages. Hence external stimuli, in this case eager university institutions, challenged the mature cluster's existing interpretations of sense and nonsense. Confrontations between key WATC firms and university institutions from other regions created within the cluster what Argyris<sup>[35]</sup> would consider debasing and defensive routines. WATC entrepreneurs reached initial assumptions about what projects to adopt and how (new) interregional collaborative partners should behave. They also questioned the value of proposed interregional university projects, concluding that it made no sense to them what they said and how they went about doing things.

These debasing activities occurred during the initial contact phases and assumed university knowledge and project offers brought to meetings was not congruent with the 'real knowledge' that their regional cluster needed. Interactions with influential WATC entrepreneurs as well as legitimacy in respect to research grants stimulated university actors to re-evaluate and reassess their initial conduct. At the same time the perceived importance of new knowledge and competences – articulated by certain lead entrepreneurs – opened the interpretational scheme of both WATC and university actors towards repositioning. Thus both WATC and university entities had important incentives to align themselves towards perceiving their respective interregional partners ideas and goals as sensible. Sidestepping the defensive routines appeared to be the shared evaluation of university inputs as valuable. However the actual valuation of it came from two diverging sets of interpretative schemes.

Frequent collaboration between universities and local industry has been argued to have made a pronounced impact in opening the closed organisational culture found within the university sector <sup>[9,31]</sup>. However this study showed parts of the closed organisational culture in university institutions to still be apparent. This could be explained by the infrequent collaborative activities between the regional cluster and university actors. Nonetheless the integration of academic research and knowledge into the peripheral regional WATC and automobile industry was found to have industrial and social relevance. Despite initially failed approaches and motives being misaligned, the actions and behaviour of university institutions in this study appear similar to those of what Harloe and Perry<sup>[9]</sup> call 'Mode 2' universities. In turn this indicates certain Swedish universities are, perhaps without even realising it, turning from traditional 'Mode 1' institutions into 'Mode 2'<sup>††</sup>. Hence, this paper also brings relevant sensemaking challenges and difficulties to the surface when university institutions transgress from Mode1 to Mode 2, especially through interregional links.

It should be noted though that the pressure placed on universities to be both drivers and foundations of commercialisable knowledge has been suggested as 'too heavy'; however the importance of regional clusters being engaged with higher education institutions can not be disregarded either<sup>[7,10]</sup>. This particular case from Sweden exemplifies the importance of mature industry clusters building developmental pipelines to university. Moreover it provides a relevant service-based and low-tech regional cluster example that supports Wolfe's<sup>[7]</sup> valuable suggestions and Doutriaux's<sup>[6]</sup> high-tech and knowledge based examples indicating university as a *catalyst* for regional cluster development rather than a driver.

Furthermore this study contributes towards understanding regional renewal and industry cluster development in peripheral regions. Previous research indicates collaborative activities between local businesses and university as almost nonexistent in peripheral regions<sup>[48]</sup>. We concur with such a premise as this investigation also showed activities between the regional cluster and universities were for many years nonexistent. Nonetheless fertile links did eventually develop, yet challenges related to sensemaking were experienced. Hence this study extends prior literature by highlighting specific challenges met when industry clusters in peripheral regions endeavour to build relations with university actors located farther afield. Finally, although much research suggests that peripheral regions yearn for, yet struggle to renew due to unfavourable local conditions linked to remoteness and underdevelopment<sup>[49-51]</sup>; this investigation from the Swedish periphery illustrates a case where yearning for renewal was achieved, although not without difficulties, through interregional pipelines between well-rooted local industry and universities based outside the region.

<sup>&</sup>lt;sup>††</sup> Mode 1' science is generated within disciplinary contexts; and problems are set and solved by means that are controlled by the specific disciplinary communities themselves. 'Mode 2 science is created in broader, trans-disciplinary contexts. It is carried out in the context of application and the historical distinctions between 'pure' and 'applied' research are increasingly transgressed: fundamental problems are investigated in the course of 'applied' research programs and the possibilities of application are increasingly shaping programs of 'pure research' (Harloe and Perry p. 421) [9].

# 7. Practical implications and avenues for future research

Firstly, for building interregional university pipelines that rejuvenate industry cluster development it is implied through this study that formal organisations run by university, yet aimed directly at servicing a local industry, will aid renewal. Nonetheless regional decision makers and development agencies etc are needed to smooth the process. We suggest a series of interregional events be created (both in the cluster region and university region) where industry and university personnel get to meet and socialise. Secondly, to aid the industry-university sensemaking process formal training and advice should be proved to researches and academics to develop professional business and industrial oriented communication (oral & written). Finally, regional clusters lead entrepreneurs should be invited to formalised discussion meetings at relevant university units to facilitate mutual understanding of needs and aims.

Communication outlets conducted as 'professional development workshops' where academic researchers present their work to related businesses and vice versa would support the respective industry-university entities towards making sense of each others ways of conduct and everyday problems etc and how these are dealt with. This would aid mutual understanding of the opposition (being researcher or industry personnel) and help fertilise the ground for productive interregional collaboration. Based from this specific study one can expect interregional industry-university links to take quite some time to develop into productive pipelines. What is more one should expect entrepreneurs and academic parties engaged in such developmental pipelines *not* to understand each other for at least the first few years. Nevertheless, sense can eventually be made through ensuring motives are aligned, new institutions are created within universities and that lead entrepreneurs are involved in the process.

Future research is suggested to complement this study and determine precise factors that trigger and influence a constructive sensemaking process that results in the renewal of regional business environments. In addition, empirical research is needed to aid conceptualisation and understanding of how links between regional clusters and university located in the same region develop (i.e. intra-regional links). Guiding questions should relate to whether (or not) intraregional sensemaking challenges and process transpire in similar or different fashion to the interregional ones revealed through this research. Would renewal of a regional cluster in a peripheral region be realised more efficiently and effectively if university institutions were more geographically and/or psychologically proximate? The micro-processes of both *intra* and *inter* regional pipelines between regional clustered firms and university actors require more detailed study. Particular focus should be placed upon understanding the impact abridged to psychological distance and the ability (and failure) of university to introduce new ideas and logics that renew local business environments.

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# Model Potential for Rapid Economic Growth in Republic of Srpska

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The model is based on the principles of integrated management of change and the principles of integrated systems of excellence. Basically designed model includes a completely new structure of business systems that will take into account the value of socially responsible companies. Creating a successful new business structure of the system is only possible mechanism for the Republic of Srpska entered the phase of rapid economic growth. The existing structure of business systems and the existing business environment economics subject area of water in the spontaneous chaos. Only changes of the revolutionary character of the problem can be resolved. Reengineering, which involves a completely new business structure is a revolutionary change but a huge risk and change that has a chance for a successful outcome. In the Republic of Srpska business, we have a situation where we have four groups of companies. These are public companies, the former state which were privatized, a private company established last twenty years of entrepreneurial and small business. All these groups are characterized by a number of economic entities of negative value. Very few successful operations of business entities is not the result of positive value the ability to totally liberal turbulent market, but often the result of monopoly and illegal activities. The question is whether such a structure of business entities any possible economic growth and progress? The answer is that everyone is not possible. The next question, which in itself imposes, the question: what, how, who and when you deal with the problem? The answer to this extremely complex issue is available through the scientific research that is based on years of research by relating the problem of economic growth and development of the former Yugoslavia. The general hypothesis is that the state system, which does not require the result should be changed or considered changing the system must be initiated within accepted as an axiom. Undisputed fact that the business situation in the Republic of Srpska version Disclaimed radical and revolutionary changes related to the business structure in the short term move to a state of chaos. New structures used must be based on the principles of socially responsible companies. The new socially responsible companies in poceni critical issue may occur only on the principles of public-private partnerships. For a revolutionary restructuring of the business we need a responsible and competent political, administrative and business management.

For the successful outcome of the restructuring is needed and appropriate organizational logistics. Competent organizational logistical support to this problem, we can seek only in the state scientific-research organizations. Such an organization should be able to bring together all the creative forces in the territory of the Republic of Srpska and through its network development projects needed to create a business environment.

The current philosophy is that fewer individuals in the increasingly wealthy at the expense of increasing poverty of the majority, must experience the end. Offered a model of rapid economic growth will be given the chance more numerous middle class, who has a knowledge, that the principles of the knowledge economy include the creation of new efficient and socially odgovornijih business structures.

#### Keywords

economic growth, integrated, business systems, revolutionary changes and structures. Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

# 1. Introduction

Economic spaces that have a low level of economic development indicators, in order to not only reduce the delay, but also alleviate the intensity of the lagging, must resort to the rapid economic growth. This growth must be shown that growth rates are much higher than the rate of growth space that are economically developed. The existing structure of economic entities in the Republic of Srpska as well as the condition of the existing business environment are not able to meet this complex goal. Need a completely new structure of business systems built on the principles of socially responsible companies and integrated knowledge. Engineered solutions must be the result of domestic creative and capable young people. Key organizational mechanism to successfully managing rapid growth can only be a public scientific research organization that would deal with the integral development of the Serbian Republic. Organizational structure of such an organization should be set so that in addition to important scientific research center in Banja Luka, a division network to regions and local communities. The central activity of this set of scientific-research organizations would be creating new business entities. Such business entities, should be the optimal result of their own technological development and the result of socially responsible investors Partnerships, an modern knowledge and public institutions.

State institutions and influential individuals must demonstrate a higher degree of responsibility for the economic development of Republic of Srpska. Readiness for revolutionary change and to create a logistics organization mechanism in the function of rapid economic growth is the first step to successful economic development of Republic of Srpska..

This work given the purpose and scope is not limited to my address a broad and deep range of analysis and research. It is marked by the global scientific attitudes regarding the problem of faster economic growth opportunities in the territory of the Republic of Serbian.

The authors are aware of the complexities of the problem, but in a very difficult situation, which is the economic situation in the Republic of Srpska, the obligation of every scientific worker is within the limits of their intellectual and creative capacity may try to point out the possible direction of Serbian economic recovery. Hypothesis that economic progress is possible only on the basis of economic growth rates that are considerably larger than the economic growth rate of developed space is easy to demonstrate on the basis of the basic mathematical model that expresses the rate of economic growth.

# 2. Notes relevant to the quantitative expression of growth

In economic science which deals with the problem of economic development we know that quantitative growth is expressed through the rate of growth. The growth rate is defined as the ratio between the increase in the value of the observed parameters of growth in a given period and the value of this parameter during the period that preceded the period. Reporting Period is usually a year or previous period of previous year in comparison to the year. Expressed in mathematical form would be:

$$r = (X_t - X_{t-1}) / X_{t-1}$$

where  $X_y$  and  $X_{t-1}$  value of the observed parameters in the year I observed the previous year t-1.

Observing mathematical form is clearly visible in the area of small values of monitored growth parameters X, a small absolute increase in this parameter results in significant value growth rates. This leads us to the conclusion cautious assessment of the comparative growth rates. In a situation when we have the same growth rate of two economic spaces, the space with a larger value of the observed parameters and we will have a greater absolute increase

in the value of the parameter of growth. The same rate of growth in the long run will lead to significantly increased values of the observed differences in the parameters.

Based on the above analysis clearly needs to impose properties at a lower level of economic development had to have a significantly higher rate of growth compared to areas that are economically developed. So the solution of problems related to economic growth is not reaching the poor growth rate of developed space, but much faster growth rates measured value. As the economic growth of the standards specified by the most expresses the growth in GDP, investment, employment and consumption growth, to areas with lower values of these parameters must exercise a greater rate of growth.

Viewed from the perspective of consumption and standards, at the same rates of growth area with major social product per capita is capable of much greater increase in spending and standards and ability to more investment in new investments.

Republic of Srpska is certainly room with very low absolute values of the parameters that measure economic development. Character stuff seriously recognizable development need to have growth at rates that are considerably larger than the value of developed space rate. All efforts in the Republic of Serbian related to economic development must be directed towards rapid growth. Measure all that is going to be in the future in the field of economic development will show the growth rates. However, if the rates are not higher than the rate of growth in developed countries, we will have a situation even more delay. Clearly imposes the conclusion that the proper solution of problems related to economic development only one that will create conditions for rapid economic growth. Research conducted for the purpose of analysis of the Republic of Srpska business climate shows the need for a thorough reengineering of the existing economic structure of Serbian.

# 3. Analysis of the current business environment

General assessment of the business environment in the Republic of Srpska could be reduced to the evaluation of the efficiency and effectiveness of the current business climate and the evaluation of business ethics and culture. Efficiency and effectiveness of the business climate in the Republic of Serbian was far below the possible efficiency and effectiveness. Existing business ethics and culture is very questionable. Such a general statement regarding the business environment is the logical synthesis of the analytical characteristics of the given business environment.

The main characteristics of business of republic of Srpska climate can be classified into three groups due to the intensity of the impact on the efficiency of the business environment, namely: very significant, important and little impact on effectiveness as well as in four groups given the location of sources of influence on the specific characteristics of business environment, namely: the internal system , internal unsystem, from the environment and combined.

	Characteristics of business environment	The impact on efficiency	Source Impact
•	On the business scene, there are no socially	Extrem.	Composite
	responsible companies	important	
There is no development vision		Extrem.	Internal system
<ul> <li>Strong emotions ambience of the past</li> </ul>		important	Internal unsystem
•	There is no strategy of technological development	Significant	Internal system
•	Allocation of concessions unqualified companies	Extrem.	Internal system
•	The vast unemployment and labor supply	important	Internal system

•	The impact of the knowledge economy is very small	Significant	Composite
•	The extraordinary centralization of authority	Extrem.	Inside the system
•	Undeveloped corporate governance	important	Composite
•	Undeveloped public-private partnerships	Extrem.	
•	Together funding. The banking system is primarily a	important	Composite
	function of consumption. There is no investment-	Significant	
	development bank. Existing RBI for his character	Significant	
	and not the bank fund		Composite
•	Low level of business ethics and business culture is	Significant	
	often expressed hostility and business	Extrem.	Composite
•	A system of competition underdeveloped. There is	Important	
	no competitive spirit and power of appreciation	Extrem.	
	successful and capable	Important	
•	Demonstrated bureaucratisation. Hyper-regulation	Significant	Composite
•	Low level of development activity in business	Less important	Inside the system
	systems	Very important	Inside unsystem
•	, Incompetent management	Very important	Inside unsystem
•	Large deviations in obllast business conduct	Very important	Composite
•	Uncare public institutions for the state of the	Significant	
	business sector		Composite
•	Spending on the basis of imported goods	Very important	Composite

In addition to these structure features in the above table may be more a state of very great importance also for the impact on efficiency as well as whether the result of internal or systemic unsystem process or influence the environment. What a great extent determines the character of the current business environment is: the government is the largest employer and the local community is very important, the government is the largest holder of investment activity, predominantly in the administration of employment, insufficient share of industrial production in the domestic product, a significant share of non-productive services, low levels of newly values in the raw material processing, the effects of public natural resources far below potential, a huge number of deviations level of criminal activity in question by foreign investors and the like.

# 4. Integral restructure the only way out

In the Republic of Srpska a situation related to the structure of business entities to have four groups of economic entities, namely:

- 1. Public Companies
- 2. The former government, now privatized enterprises
- 3. Private, one-member, the company established last twenty years and
- 4. Small business entrepreneur

Public companies do not earn anywhere near possible business results. They have a very unsuccessfully organizational and management structure. Management structure consists of people not sufficiently competent and professional enough. Appointed by the ruling political parties according to the criterion of political commitment and not by the criterion of managerial skills. These companies do not have clear development objectives and development strategies. A number of service businesses awarded incompetent organizations. In most cases, their business strategy is tantamount to maintaining the ongoing operation and maintenance of the existing situation. The ability and willingness to Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 change is at a very low level. A key component of development as well as changes in business activity in modern form, it can be said not to exist. The fact is that the development of some public enterprises represented in the organizational structure, but in these structures are not competent people who put their knowledge and creativity can successfully deal with development. They are in most of the operational administrative logistics operating business activities. Development, based on the management changes, these companies was unknown thing. These companies have built adequate systems of motivation on the basis of human resource management. Companies are often monopolistic character. Still have a model of differentiated prices. One price for the business sector and the other for citizens. This approach produces a huge room for manipulation. Public companies have a very low level of responsibility prma capital of the company and profitability. If a sentence should express position on the efficiency of public enterprises, then it could be the following: Public enterprises in the Republic of Srpska economy with quality far below potential levels.

Privatized companies are the largest statistically speaking. In character when viewed from the perspective of the life stages most of the time in the late stage of age or stage of dying. The process of privatization did not happen comprehensively restructuring, but only changes the ownership structure. In the majority of owners of privatized companies and shareholders are incompetent, are not trained to corporate governance. They do not express the willingness to promote corporative management. They have no interest because the majority shareholders compared with the owner. In most managerial structure of the privatized company is not interested to continue activities which continually degrade operability and reproducibility company. Have no development programs and plans. Their basic strategy is to provide a profit by selling the property to the investment for the purchase of part of the state capital. Sale of property after an expensive and time-consuming monitoring process of bankruptcy and liquidation of companies. These deviation processes are more often accompanied by a variety of science marked negative acquisitions. Serious analysis and research show that the probability of over 80% we can claim that among the privatized companies was about 50% of companies that did not have a realistic chance to survive in this new situation, and the remaining 50% in a situation that has been made whole comprehensively restructuring had the opportunity to successful long-term business. On the basis of this analysis may be imposed following the court for the process of privatization in the Republic of Srpska. The privatization process viewed from the angle used is totally unsuccessful. Probably a detailed research on the topic used to show that she was more damage than benefit. But it is undeniable that there was a possibility that the process of privatization made a much greater effect. The key issue to this problem is that the privatization of the system produced a variety of deviations and it did not have mechanisms in addition to changes in ownership structure, and comprehensively implement the restructuring.

Private companies established last twenty years have been exclusively in the form of limited liability companies. Not known case that society is transformed into limited liability stock company. These companies are focused on short-term profits. Most of these companies have no employees, that belong to the "0" companies. A large number is constantly maintained at the initial level of business activity and an extremely small number of successful growing. Intense galloping growth companies tend to have a system project that is established with the aim of realization of a short-term task. Companies in this group, which operate successfully, its business activities are usually over entrances or exits leaning on the public sector. Viewed from the perspective of long-term development, these companies are not development-oriented, especially from the perspective of new employment. Rapidly increasing their growth based only on the growth of financial capital, while the categories of human, social and intellectual capital of these companies is not known. Today, well-known methods and techniques of contemporary human resource management for this group of companies are unknown thing. The general assessment that it is socially irresponsible

companies for a number of these companies is a mild statement. These companies in their social responsibility and style of conduct justifies the act's existence. What is highly questionable for these companies and their owners is a business ethics and business culture. The owners of these companies in most cases their business based on the values that go beyond business and economic sciences. It was built in a parallel system of values based on the deviations business and social irresponsibility. These companies and their owners are not willing and able to comply with codes of business ethics and business culture. As a result, we have completely problematic business environment in which those who respect the codes and standards often are the losers. This situation, the product of the two main reasons. First, a substantial number of owners of these companies do not possess even an elementary knowledge of an field office of legislation and management. Ignorance is irresponsible behavior and acceptance of negative values of the environment in which business exist. Second, many owners have direct or indirect political power, which is used as an effective tool for business deviations because it brings a huge benefit. Logical question is, what is the solution to the problem. Question regarding the lack of knowledge it was possible to solve the education of owners, managers and entrepreneurs. In the initial phase of the power law should oblige them to be licensed in the field of management and entrepreneurship, while in the second phase, it then became part of the business culture. The second issue can be resolved by a conflict of interest code which will not be available at the same time engaging in political, business and administrative management. However, the negative values in the group of economic systems are so let the roots, so it will probably be possible to resolve the problem within the framework of an integrated system reengineering of business structures and processes. Entrepreneurial small businesses in most cases on the border of survival. Very often burdened with relatively high fixed costs result Presumptive local and national taxes and utility fees. Today we have a situation that is far more entrepreneurial businesses closed than open a new. The largest number of entrepreneurs from small businesses from the area of trade and catering services. The huge expansion of large commercial chains from abroad is certainly greatly endanger the existence of a large number of small trade shops. This issue should be put under the magnifying glass research in order to come to court what are the benefits and how much loss from overproduction of commercial chains. Entrepreneurial small business in the industry could be developed successfully without major industrial systems.

In the field of intellectual services, there was a significant expansion of business activities, which are a consequence of legal norms. Businesses that deal with intellectual services it was possible to fall into a group given the motives of the establishment. These services are often a result of legal obligations as a result of various lobbying to impose a normative commitment. Very often unnecessary attack on the standard of living. Very often we have a situation that is being sold "Mist" citizens. Standards expressed in the business sector not only in decline but under the influence of incompetent administrative structure In some cases, takes the basic autonomy of the business entity comparison. Administration in its operational behavior does not accept a model in which everything is permitted that is not explicitly normatively prohibited. Guillotine of regulations in the business sector not only has not happened but there was a more pronounced overproduction regulations.

Business environment outside the administrative center of Republic of Srpska further complicated because of very pronounced system of administrative management in the Republic of Srpska. In a time of powerful information technology this issue can be resolved, but the problem is the unwillingness of the administration to do so. A system in which the increase in information technology and administration of highly increases the degree of bureaucratization is illogical. This phenomenon is the result of a large number of senior administrative staff that are very difficult to adapt to new conditions and junior administrative staff by employment in the administration of various lines and least-line expertise and skills.

Forex analysis of the structure and the status of businesses and business environment in the Republic of Srpska indicate the need for immediate revolutionary changes in existing business structures. The real and only possible way in this time of the whole restructuring of the entire socio-economic system.

# 5. Synthesis of research

Given the breadth and depth of the problems related to the case of Serbian economic growth, it is possible to define a large number of research projects. These projects will be possible in a situation that offered potential for rapid growth model gets offered logistical support in the form of scientific-research organization that would deal with the problem of integrated economic development of Serbian.

The main research hypotheses which are related to key scientific positions in this paper axiom characters as follows: The state system that does not give a satisfactory result has to be changed. Changes of the system should be initiated from within. System observed the medium hypothesis: The state structure of the system that does not give required output must be changed.

Another basic hypothesis comes from the central themes of this work given the title as follows: Economic growth in the Republic of Srpska observed indicator of the growth rate is satisfactory. For not only lagging but reduced maintenance and development of existing differences in relation to the developed countries in the Republic of Srpska must have a higher growth rate than developed countries. This hypothesis, it was easy to prove the analysis of mathematical models for the rate of growth.

Performed research hypothesis that the achievement of rapid growth requires new structures of business entities and business environment is logically confirmed on the basis of the main hypotheses. Hypothesis is backed by the claim that the mechanism of the state scientific-research organizations only right organizational solution that can be logistical support achievement of rapid economic growth is the result of Srpska constructed scientific attitude by a sufficiently reliable tested by applying the scientific method: Brainstorming, Benchmarking, Delphi methods and techniques survey.

Offered a model of rapid economic growth of Serbian if it was initially spark that the responsible institutions of the Republic of Srpska water at specified levels: political, scientific and technical discussions about the possibility of economic growth with higher rates in relation to the environment confirm their full scientific value.

#### 6. Logistic support the proposed solution

Looking at the problems one by one hardly recognizes the degree of complexity of the economic situation in the Republic of Serbian. Looking at the situation through the prism of integrated creative analysts and researchers, quickly come to know that the economic situation in a position that borders on economic chaos. In such a crisis there is an additional obligation of scientists, researchers and other creative forces in the Republic of Srpska to make the maximum effort in the search for possible solutions of problems of economic development of Republic of Srpska Serbian. Offered through a decision model designed in this paper should be subjected to court and scientific experts. The first and the rights of logistic support should be the result of the attitudes and scientists who represent the authority in the field of economic growth and development.

The first operational step logistic support should be followed by the Serbian Prime Minister, whose members must be willing to take risks and to enter into the process of creating a competent scientific research organization whose mission would be in the function of rapid growth area of Serbian.

# 7. Conclusion

Republic of Srpska in relation to the closer and wider environment has significantly lower values of parameters which shows the economic development and growth. In order to maintain the measured difference in the development of an absolute value of the parameters, the Republic of Srpska must have increased growth rates. The current economic situation borders on the phase of chaos. The structure of existing business entities is very unfavorable and unsustainable because it is not possible to build any kind of development and growth. You need to login integral restructuring based on the integrated systems of excellence. The model created in this paper offers a solution that means a whole new structure of the business entity and a new structure of the business environment.

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# **Construction Structure Process and Glasses Mounting in the Continuous Facades**

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The article summaries in a short way the process of construction and building of the curtain walls. The first paragraph includes brief the advantages of these constructions as compared with classical way. Profiles of ALUMIL S.A. Company have been taken for concretization, which have been used to construct three four buildings of this kind. The second and third paragraphs are focused on the most useful systems of these kinds of curtain walls and on their constructive and calumniating side. The defining of active loads and deformations. The last paragraph includes data on the components parts of the curtain walls their composition and way of selection.

#### **1.Introduction**

This article should draw attention, to the designers and constructors, on advantages also importance of deep study and precise calculation for static and dynamic elements in continues facade as nowadays technology.

# 2.Systems and fundamentals

Constructing skyscrapers need to improve or replace the classic constructive materials (brick and stone) with new one, easier through mounting and lighter, like combination of glass and aluminum used for construction continues façade.

Such structures have the following advantages: Overall structure can be constructed in a shorter period accomplish in that way the economic objectives. It is easy to fit the surrounding environmental with the buildings view, it is fluxional and the constructive cost is relatively law. Materials used in such cases are long life and maintenance expenses are law. Continues façade imposed to the end-users the grandiosity. They allows the natural light entrance through buildings, make possible also an open view from inside, ensure very good isolation from noise and considerably reduce thermal exchange. All this benefits will assure only through a very good architectural project and precise calculation for construction. [9], [10]

The variety of ALUMIL S.A. series and profiles gave us the conformity to easily construct even the most difficult forms and further to create new forms for the different difficult issues we faced during the constructive process. Studies and projections, done during the preparation phase, make us possible to easily accomplish the mounting phase and save us considerable time during the montage period. Some of the construction we have realize are in figure 1 [1], [2], [3],

The aluminum profiles of ALUMIL S.A. are projected in the way that give the durability during the functions and guarantee. In such comfort conditions we realized an esthetic view, as the models showed in the figure 1, also constructing in the best way the slope surfaces, spherical surfaces, different inside and outside angel etc.







C.

d.

b.

Figure 1. Some of the construction we have realize

# 3. Façade systems

Construction continues façade need in any case a special study and it is a very delicate job. Refer to this study we have decide on the view of the buildings, we have set the technical dimensions of construction; realize the proper engineering calculation which consist on careful static and dynamic calculation. [4], [5], [6], [7]. In order to accomplish in the right way the constructive calculation, in accordance with producer diagrams, we have to follow with the high precision each detail given and foreseen in the project for the building. We have to realize calculation in order to face full and exactly all tensions will occur in the structure sourced from the tendencies for deformation and bending arrows as per object construction. Aluminum Profile dimension are mainly depended from the mechanical parameters we have accepted such are glass weight, air depression, building architecture. Tolerances motivated from "economical" reasons are prohibited due to the undesirable high risks they can generate.

#### 3.1 Standard Solar Façade Serial ALUMIL M1

The main vertical and horizontal columns are mounted in the inner side, than glasses one or two layer (common two layers) capture with proper elastic elements and in the end cover that accomplished structure. From the outside you can see one aluminum strip wide 55mm which can be different geometric forms and color in order to be fit with the architectonic selection (figure 3). Such construction type, successfully have been implemented, at the building in the Kavaja street figure 1a and in the many others cassas. [1], [2]

It is very easy to mount such facades compare to the other types but they generate more problems during the maintenance period. Meantime we should be very careful during the isolation process.



Figure 3. Standard Solar Façade Serial ALUMIL M1

#### 3.2 Semi Structural Solar Façade Serial ALUMIL M3

The difference, with the above mentioned system, consist on the outside view in both direction vertical and horizontal, we can see just a small strip of aluminum, width enough to ensure the glass keeping figure 4.a Such construction type, successfully have been implemented, at the building in the figure 4 b .[1],[3]



a b Figure 4. Semi Structural Solar Façade Serial ALUMIL M3

#### 3.3 Structural Solar Façade Serial ALUMIL M4

This is a well known type of continues facades «structural spacer glazing system » figure 5 it is very difficult to see the aluminum profile. We use special glue for their construction. [1], [3] In all above mentions structures we can use also thermo aluminum profile, they do not change any constructive elements or calculation, except the increasing the thermo-isolation ability of facades figure 5 b



Figure 5 Structural Solar Façade Serial ALUMIL M4

# 4. Acting loads and deformation.

a. Loads, sourced from the air compression, are linked closely with building height, place, and orientation etc. [3], [4], [5]

b. Loads, sourced from weights of the compound elements of the facades such are glasses, panels etc. These loads are categorized in two compounds, which have their respective acting points in 1/2 and 1/10 of the horizontal columns. It is clear that the materials transmit their weight forces to holding profile; practically it is not possible to calculate the exact influence of those materials. [3], [4], [5]

c. There is minimum permit for bending arrow, showing the air pressing, which should be less than 1/300 of the columns length (figure 2) Potential deformation permitted should be in that size that, cannot act in the opening windows of facades and meantime to assure protection from water and air. [3], [4]

# 5. Selection of the appropriate profile for the mullion

In the absence of a special agreement between designer and client, Euro code 9 sets specific limits in terms of deformation, which must not exceeded. Based on Euro code (ENV 1999-1-1, Design of aluminum structures), the European EN 13830 makes special reference on the serviceability limits of aluminum structures concerning resistance to wind load.

Specifically for curtain wall mullion and transoms, the following limits for the elastic deflection have been set:

L / 200 or 15 mm, whichever is less, where L is the length between supports.

This selection of the proper profile was based on the condition for the maximum acceptable deflection of a beam supported at two f  $\leq$  H / 200  $\leq$  15 mm. The following formula for the necessary moment of inertia results from this condition:



$$J_{\min} = \frac{q_w * \alpha * H^{\lambda}}{1920 * E * f_{\max}} * \left[ 25 - 40 * \frac{\alpha^2}{H^2} + 16 * \frac{\alpha^{\lambda}}{H^4} \right]$$
  
Jmax = Moment of inertia  
Qw = Wind load  
a = Width L/2  
H = Mullion height

Elasticity moduls

The first step of the colorises of the proper mullion profile must be the colorises of the

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The first step of the selection of the proper mullion profile must be the selection of the appropriate wind load value, used for the calculation, depending on the construction height and exposure of the structure in wind pressure. Parameter c is an additional safety factor.

=

#### Table 1

Structure Height	Wind pressure w	Wind load we	Wind load we
		For c = 1.2	For c = 1.6
0 -8 m	0.50 KN/m <sup>2</sup>	0.60 KN/m <sup>2</sup>	0.80 KN/m <sup>2</sup>
8 – 20 m	0.80 KN/m <sup>2</sup>	0.96N/m <sup>2</sup>	1.28 KN/m <sup>2</sup>
20 – 100	1.1 KN/m²	1.32 KN/m <sup>2</sup>	1.76 KN/m <sup>2</sup>

We = c \* w

c = 1.2 for non wind exposed building

c = 1.6 for wind exposed building

In the table in the catalog we may to recurrent moment of inertia of a mullion, referring to a wind load of 1.0 KN/m<sup>2</sup>, applied on one side of the structure. For any other wind load value, each cell of the table must be multiplied by this value. E.g. for a 0.6 KN/m<sup>2</sup> wind load value, each cell of the table must be multiplied by a 0.8 factor.

#### 5.1 Calculation

The calculation for the curtain walls in the figure 6.

Building height:	18 m
Safely factor:	1.6 m
Length between supports:	3.4 m
Left side:	0.8 m
Right side:	0.8 m

For an 18 m building, with a safety factor of 1.6 (for a wind exposed building), the design value of wind load is  $0.8 \text{ KN/m}^2$ . Using the table 3, we get one value of the moment of inertia, that we have the same dimension for each side of the mullion. These values must be multiplied by 0.8. We then add these values. Finally, we select from table in the catalog the appropriate mullion profile, keeping in mind that the moment of inertia Ix of this mullion must be greater than the sum (I1+ I2):

In the table for H = 3.4 m and L1 = 0.8 / 2 = 0.4, the moment of inertia is 85.7 cm<sup>4</sup>. I1 =  $0.8 \times 85.7 = 68.56$  cm<sup>4</sup>

In table 2 for H = 3.4 m and L1 = 0.8 / 2 = 0.4, the moment of inertia is 85.7 cm<sup>4</sup>. I2 =  $0.8 \times 85.7 = 68.56$  cm<sup>4</sup>.

From table, we select the profile M9951, which has a moment of inertia  $Ix = 222.41 \text{ cm}^4$ , greater than the sum (I1 + I2).



Figure 6 Semi Structural Solar Façade Serial ALUMIL M3 alutherm

#### 6. Continuous Façade elements

#### 6.1 Supports

Supporters are set in proper places, in horizontal and vertical lines, in accordance with constructions conditions and controlling the façade plan. The plane control for supporters is carried out simply, through the common methods in vertical and horizontal direction and cross the diagonals of façade.

Aluminum columns are mounted to the supporters in vertical way, in some cases we can mount even in horizontal line. They are mounting between two floors. Column length from 6.5 m has to have at least two anchorage points.

Project must assure some possibilities for small dislocation (up-down-front-behind) depended even from the defects born from construction façade level. This is the reason why they are produced with elliptical whole.

Materials are aluminum, thickness up to 8 mm, special content 6005 A F26 and high durability.

#### 6.2 Vertical and Horizontal aluminium parts

The basse construction Is compound frome aluminium profile, thèse are going upper with facade in vertical waw (colons) and in horizontal. There are elements within columns and cross-linked in propre way with columns.

The architectural study and static also dynamic calculations on structure decide on forms and dimentions of those parts.

The columns high, in figure 2, are linked direct with calculation. The high should decide in the very beginning and then after depended on loads and architectural areal distances we can decide on horizontal lengths. The expansion coefficient, of the aluminum content parts used in profile production, accepted based on formula a=23x10-6 for each °C. Based on the

expansion coefficient we should calculate a displacement of 1.4mm per meter in the condition of temperature diapason -10 °C up to 50 °C.

The width of columns is comfort to using rules. This dimension has direct effects on glass hold.

#### 6.3 Axiliaries equipment for links

Equipment, used for linking different aluminum parts, are made from aluminum mark 6005A F26, this prevent any damage of those part from corrosion and warranty the sustainable linkage.

All screws, in contact with aluminum, are made from stainless steel or galvanized.

#### 6.4 Hermetic rubber

All water flows must be in the direction of the outside of façade. In order to accomplish such condition the hermetic rubber must be and set in the proper way.

All hermetic rubber, used for assuring hermetically and elasticity purposes within aluminum parts and accommodating glasses in the system, are with high quality and special. The rubbers, which are the most sensitive element and being one of the most important element in assurance of hermetic must have high durability as per thermal characteristic for temperature from -20 ° C up to + 80 ° C.

They should have durability, due to the fact of difficulties facing for changing, they should not change the characteristics during the time and maintain their elasticity in order to allow and follow the changes happenings in other elements affected from nature temperature changes.

#### 6.5 Parts from nylon

Between the supporters and profiles, profiles their-selves, we put nylon elements which allow small displacement, caused from expansion, shrinkage, inevitable changes happening in concrete structure or in aluminum structure, as well as different small movements vice versa.

Thermo isolation material set between the main columns and pressing plate, offers us a benefit in the heat transmitting coefficient in the level of 2.5 W/m<sup>2</sup> °C.

#### 6.6 Glasses

Glasses are the base element of façade. The main criteria, in (gross) glasses selection process, are:

Glasses durability against damages, especially those caused from air pressing. For that reason calculate an element with maximal load (for example in the highest point) based on the maximum air pressing registered in the region we calculate the glass width.

Selecting, one, two or three, glasses layer depended on requirements. In this view point we should consider the atmospheric condition in region, thermal isolation as well as the acoustic noises in the surroundings area.

Within the two layers of glasses there is a light aluminum frame. We stick, with special glue, the glasses from the two sides of this frame. We should surround the inside and outside area

with special rubber meantime it should set even between the glasses and aluminum. The common isolation glasses compound from two layers with thickness 6mm and 4 mm the distance between must be 12 mm and the total thickness is approximately 22mm. [2],[3]

# 7. Conclusions

- Continuous façade construction already is an imperative, especially for the high buildings or skyscrapers; meantime we replace the classical materials with a combination of glasses with aluminum.
- Continuous façade construction is a delicate entrepreneurship, it require to carried out a detail study which will guide the architectural solution and decide the constructive dimension in accordance with calculation of acting forces.
- Based on consumer requirements, economic restriction and detailed studies we have make possible constructing such facades even in our country.
- Realizing a careful selection process for construction as well all other compound elements will make possible to achieve the optimal results as per durability, hermetically and thermo isolation.

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# Aluminium construction for protection elements of the building cover and the energy exchange

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In practic, energy conservation is the reduction of the required amount of energy for a concrete result. Efficient energy use means technological application for efficient resolution in the covering of energetic needed data. (ex. Preservation of desired temperature, while we have the reduction of the energy in heating/cooling, by using with efficiency thermoisolation or devices, profitable installation, etc.) Essentially, this refers to the rapport between the amount of energy consumed in practice and the initial amount of energy used.

#### 1. Energy conservation

#### **1.1 Diminution of energetic consumption**

Peoples get a considerable impact, on energetic consumption, when they use the aluminum cover layers in the buildings.

Practically, the energy conservation should assume as the process of using less energy in order to reach the required results. We should agree that, the efficient energy use mean, efficient technological implementation in order to fulfill all energetic needs. In this view point, maintain the desirable temperature in the same level by decreasing periodically the warming energy, or keep fresh through the thermo isolation efficiency, further using special apparatus, rentable installation etc. This is a ratio between, the practical amounts of energy consuming and inputs of energy.

Energetic efficiency, for actual products in constructive elements, and specifically in aluminum construction such as cases and frame, façade, buildings, apparatus, include all characteristics which decide on their behavior on energy consumption.

Energetic yield on building, must calculated as the amount of energy consumed in reality, in order to fulfill common needs of the building, such needs comprise warming, water heating, freezing, ventilation and lighting. This amount of energy can be expressed with one or more mathematical indicator. Indicators are calculated taking in consideration isolation, technical and installation characteristics, ratio of planning and location with climate factors, sun exposure even the neighbor buildings, energy auto generated from the building itself and other influenced factors on energy needs including the climacteric condition within the building.

Energy consumption commonly imposed from needs to keep in the same level inner climacteric condition of buildings. Here are included consume for worming and coolness, ventilation, lighting which are in functions of thermal conformity as well as using in different electro machines for daily purposes.

The greatest end-user consumers are buildings. Within EU, this consumer uses almost 40% of the total amount of energy. Within one building, worming the space-area consume 69% of the total energy, water heating need 15%, lighting and electro machines use 11% of the total energy.

Building sectors shows that, increase rhythm of energy consumption reach a level of 7% yearly average. This is mainly dictated from the air-climate equipment and micro-equipment. Such rhythm already stabile in EU is not true for the countries with intensive development including Albania.

#### 1.2 Protective cover, applied in building and the energy exchange

Protective cover applied in building play a filter role between outside and inside environment. Air movement, dust, rain, humidity, temperature change and radiation have the same impact even in the inner space of the building but, in much lower ratio. The difference between outside and inside areas is that: outside you have huge dynamic changes and uncontrolled in time, inside you have limited influences even further you can control changes in time.

Protective cover, applied in building is a decisive element on energy exchange between outside and inside environment, thus it switches in an important element on building thermal efficiency figure 1.



Figure 1 Effects, of compound elements in total thermal loss

The main goal, on modern energetic planning, is control and reducing thermal losses during the winter and thermal benefit during the summer figure 2.

Thermal-isolation is the key material, which drastically limits the warming amount of energy circulating between protective cover and building.

Basements, frames and glasses play an active role in factors mentioned above. They are predominant parts of protective cover of building.

Protective cover fixes the energy exchange rate between outside and inside environment, thus it results to be a decisive factor on general effectiveness of building.



Figure 2 Inner temperature and thermal conformity during the year

# 2. Rules improvements, on energy consumption

Rules improvements, on energy consumption, have brought a significant result within the EU countries. If we compare energy consumption in the building we will have the following scenario: previous 1980 consumption has been 200-300 KWh/m2 yearly average, today the modern buildings within EU consume 30-70KWh/m2 yearly average. The major improvements derive from implementation of new technologies such as, thermal-isolation covers, basement implementation, frames application, glasses facades which are the nowadays European common technologies.

The difference, of the thermal diffusion coefficient, between a simple window (U>4W/m2K) and a windows with latest technology (U<0.8W/m2K), show the potential amount of energy that we can save. It is worth emphasizing that, for 0,1W/m2K saving in thermal isolation of frame, we reduce (1,21/m2) 1.2Liter petroleum per square meter of frame in a year.

Guidelines and legal-framework, issued from EU commission, for the energetic saving in buildings during last 10 years emphasize requirements and conditions for improving energy saving, protecting warming level, as well as certifying building for energy use and for minimal energetic efficacy.

Thermal isolation glasses, passive worming and cooling are included in the measure should taken in order to improve the energetic yield.

# 3. Contemporary requests

Aluminum construction isn't a losses source for thermal, even further, they do not influenced negatively in energetic balance, in contrary, they are a positive factor in thermal balance due to the fact they auto-control energy generation and have a very positive impact in realizing building with null energy consume.

Cases, frames and glasses should reduce thermal looses, when climacteric condition impose warming, also they should benefit from sun rays to reach an equilibrium of losses. Finally we should say improving technology to reduce losses. When climacteric conditions impose cooling they should reduce the cooling loads. Finally a dynamic control is needed instead of the static one figure 4.





During the winter Figure 4 building with null energy consume.

During the summer

Cases, frames and glasses should maximize the benefit from sun rays during the winter period. They should accumulate energy and diffuse it in inner area of building, in harmonic combination with materials which increase thermal capacity; meantime they should reduce thermal losses without reducing air circulation.

During the summer materials should eliminate the over-warming within the building, allow passing the warming through the air circulation and passive freshness.

Cases, frames and glasses should warranty in any case healthy and relax life, contributing in thermal comfort, air quality in inner areas, optic conformity, acoustic conformity and security. Meantime they should assure the proper ratio on yield, function, time and costs.

Type of glass frame	Thickness of glass frame (in mm)	Air in the empty place	Thermaldiffusion Coefficient (W/m2K)	
Uneven	6	-	5,7	
Uneven	8	-	5	
Doublo	4-6-4	Air	3,4	
Doublo	4-12-4	Air	2,9	
Doublo-low translation	4-10-4	Air	2,0-2,4	
Doublo-low translation	4-12-4	Air	1,7-2,4	
Doublo-low translation	4-6-4	argon	2,1-2,6	
Doublo-low translation	4-12-4	argon	1,3-1,7	

Table 1 Coefficient of thermal diffusion for different types glasses frames

#### 4. Conclusions

In practic, energy conservation is the reduction of the required amount of energy for a concrete result.

Efficient energy use means technological application for efficient resolution in the covering of energetic needed data. (Ex. Preservation of desired temperature, while we have the reduction of the energy in heating/cooling, by using with efficiency thermo isolation or devices, profitable installation, etc.)

Essentially, this refers to the rapport between the amount of energy consumed in practice and the initial amount of energy used.

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# **Analysis of Creative Industries in Serbia**

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Creative industries have emerged as the booming industry worldwide. In this paper we will firstly define conceptual framework behind creative industries. Secondly, we will provide summary of sector performance in Europe and globally. Understanding of the European and global trends in creative industries will provide useful guidance for Serbia's sector analysis. Therefore, thirdly, we will focus on state of the sector in Serbia. We will present both national and international studies. The conclusion that can be reached is that creative industries are a good performing sector, with music industry, film industry, advertising, design and publishing as the leading sub-sectors. The full realisation of the sector's potential will, however, need public support. Thus, at the end of the paper, the appraisal of public awareness and support is given.

#### Keywords

Competitiveness, Creative Industries, Creativity, Culture, Public Support.

#### 1. Introduction

There is an overall consensus that creativity is considered a key strategic asset for improving competitiveness and fostering the economic growth in the knowledge based economy of the 21st century [1], [2], [3]. However, many experts on the subject have used various overarching terms for the cluster of activities (industries) that significantly rely on creativity, as well as different classifications of the relevant activities. We have decided on the frequently used term *creative industries for "those industries that have their origin in* 

individual creativity, skill and talent and which have a potential for wealth and job creation

through the generation and exploitation of intellectual property". In other words, creative industries are those industries that are at the crossroads of arts, culture, business and technology [1].

As Serbia is undergoing EU integration process, we consider that any analysis of creative industries in Serbia should rely, whenever possible, on the classification of industries that are proposed in The Study of the Economy of Culture by European Commission (Table 1) [3]. For the sake of clarity, the paper suggests that traditional arts field (visual, performing and heritage) together with cultural industries should be termed *cultural sector*, as they produce cultural outputs that have no secondary "utilitarian" function (in the Table 1, the corresponding boxes are given in purple). There are other activities (design, architecture and advertising) that use culture as an intermediate consumption in production process and as a factor of innovation. The are grouped together under the term *creative activities/sector*, (ex. the design activity of a car manufacturer) (in the Table 1, they are coloured yellow). Together, these two sectors represent what is commonly known as *creative industries*.

CIRCLES	SECTORS	SUB- SECTORS	SOURCES
FIELD	Visual arts	CRAFTSPAINTINGS - SCULPTURE PHOTOGRAPHY	Amadeus (+Eurostat for photography)
RTS	Performing arts	THEATRE – DANCE – CIRCUS- FESTIVALS.	Amadeus
CORE A	Heritage	MUSEUMS – LIBRARIES- ARCHIVES. ARCHAEOLOGICAL SITES	Amadeus + UNESCO
	Film and Video		Amadeus except European Audiovisual Observatory for video sale through and rental
	Television and radio		Amadeus
IRIES	Video games		Amadeus + Eurostat
.SU	Music	RECORDED MUSIC MARKET	Eurostat+Amadeus
		LIVE MUSIC PERFORMANCE	
<u>LE 1:</u> URAL		REVENUES OF COLLECTING SOCIETIES IN THE MUSIC SECTOR	
CIRCI	Books and press	BOOK PUBLISHING MAGAZINE AND PRESS PUBLISHING	Eurostat+Amadeus
S S	Design	INTERIOR, GRAPHIC. FASHION, PRODUCT	Amadeus
:LE 2: ATIVE ISTRIE	Architecture		Eurostat
CIRO	Advertising		Eurostat

#### Table 1 Classification of creative industries

The idea of a creative economy has also been applied specifically to the economy of cities, leading to the emergence of the concept of a "*creative city*". This term describes an urban complex where cultural activities of various sorts are an integral component of the city's economic and social functioning. Creative cities use their creative potential in various ways. Some function as nodes generating cultural experiences for inhabitants and visitors through the presentation of their cultural heritage assets or through their cultural activities in the performing and visual arts. Some, such as Bayreuth, Edinburgh or Salzburg, use festivals that shape the identity of the whole city. Others look to broader cultural and media industries to provide employment and incomes and to act as centres for urban and regional growth [4].

# 2. European and worldwide creative industry at a glance

The findings of European Commission [3] have shown that the the sector is performing very well. The turnover of the European creative industries amounted to 654 billion euros in 2003, growing 12.3 per cent faster than the overall economy of the European Union and employing over 5.6 million people. Its contribution to EU GDP was 2,6%. The document also pointed out the high interdependence of creative industries and ICT. The development of the ICT sector is heavily dependent on the availability of quality and diverse "content". Although this content is not necessarily cultural (it may be constituted of business information, government services, etc.), cultural content is an essential driver for the take-off, use, and development of ICT

UNCTAD's Report on Creative Economy 2008 [4] have shown "that the creative industries are among the most dynamic emerging sectors in world trade. Over the period 2000-2005, trade in creative goods and services increased at an unprecedented average annual rate of 8.7 per cent. World exports of creative products were valued at \$424.4billion in 2005 as compared to \$227.5 billion in 1996, according to preliminary UNCTAD figures. Creative services in particular enjoyed rapid export growth – 8.8 per cent annually between 1996 and 2005."

#### 3. Serbia's sector performance

As Serbia is not a member of EU, no data were included about the performance of creative industries in Serbia in the aforementioned European study. This analysis is, however, needed for the sake of the Serbian creative industry itself and in order to facilitate the Serbia's EU integration process. Therefore, over the past few years, several individuals and institutions raised the question of the performance of creative sector in Serbia and its impact on the competitive advantage of Serbia's industry. As a result, a few studies have been conducted and several projects have been started. Moreover, sector's performance was included in the UNCTAD's Report on Creative Economy 2008.

#### 3.1 UNCTAD's Report on Creative Economy 2008

World trade in creative goods and services from 1996 to 2005 is presented in Report on Creative Economy 2008. As Serbia and Montenegro were one country at a time, it is the aggregate of both countries's figures that is given. Nevertheless, the data is a rough estimate of Serbia's ranking among European transitional countries, that is, its peer group.

			2005	
			As %	
Exporter	Value (f.o.b. in millions of \$)	of country total	of total for economies in transition	of world total
ALL CREATIVE INDUSTRIES				
World	335,494	100.00	-	100.00
Developed economies (1)	196,109	100.00	-	58.45
Developing economies	136,231	100.00	-	40.61
Economies in transition (2)	3,154	100.00	-	0.94
Russian Federation	1,649	100.00	52.29	0.49
Belarus	419	100.00	13.28	0.12
Croatia	397	100.00	12.60	0.12
Ukraine	336	100.00	10.65	0.10
Serbia and Montenegro	111	100.00	3.53	0.03
Bosnia and Herzegovina	70	100.00	2.22	0.02
Armenia	40	100.00	1.26	0.01
Moldova	35	100.00	1.12	0.01
Kazakhstan	30	100.00	0.96	0.01
Macedonia, TFYR	26	100.00	0.83	0.01

 Table 2 Creative goods: 10 ten exporters among economies in transition

As can be seen from the Table 2 and 3, Serbia and Montenegro are present as both top 10 exporters and top 10 importers among economies of transition, which include 17 countries (9 European and 8 Asian). As far as former Yugoslav republics are concerned (the main regional peer sub-group), Serbia and Montenegro performed better than Macedonia and Bosnia and Herzegovina, but all three together lagged significantly behind Croatia: Serbia and Montenegro contributed to 3.53% of group's total exports, i.e. 0,03% of world total, while Croatia contributed to 12,60%, i.e. 0,12% of world total exports. The sectors where Serbia and Montenegro are among top three producers and have regional comparative advantage are the Production of Carpets (12.68% of all economies in transition) and Glassware (10.82%). In the following sectors, Serbia and Montenegro perform relatively well, although in most cases Croatia is the regional leader: Music Industry (11.50%), Other Visual Arts (13.23% vs. Croatia's 38.77%), Fashion (8.89% vs. Croatia's 18.12%), Film (8.11% vs. Croatia's 28.30%) and Graphic (7.49%). The same situation was present in analysing the import/export ratio, where Croatia again showed the lowest dependence on imports [4].

	2005				
		As %			
Importer	Value (c.i.f. in millions of \$)	of country total	of total for economies in transition	of world total	
ALL CREATIVE INDUSTRIES					
World	350,884	100.00	-	100.00	
Developed economies (1)	284,147	100.00	-	80.53	
Developing economies	60,759	100.00	-	17.32	
Economies in transition (2)	5,978	100.00	-	1.70	
Russian Federation	2,680	100.00	44.82	0.76	
Croatia	877	100.00	14.66	0.25	
Ukraine	662	100.00	11.07	0.19	
Kazakhstan	448	100.00	7.50	0.13	
Serbia and Montenegro	296	100.00	4.95	80.0	
Bosnia and Herzegovina	263	100.00	4.41	80.0	
Belarus	197	100.00	3.29	0.06	
Albania	119	100.00	1.99	0.03	
Moldova.	102	100.00	1.71	0.03	
Macedonia TEYR	97	100.00	1.63	0.03	

Table 3 Creative goods: 10 ten importers among economies in transition

#### 3.2 National analyses of creative industries

The interest for creative industries in Serbia was first manifested in academic circles in 1990s with papers by Milena Dragicevic-Sesic, who wrote about fostering entrepreneurship in culture and more recently, together with colleague Branimir Stojkovic, about cultural management. In their work, role and importance of " industries of culture" is analysed through the possibility of cultural development and diffusion of cultural and artistic values. New approach to creative industries' analysis, which is more in the line with current tendencies, is introduced in 2006 with the study by Jovicic Svetlana and Micic Hristina Creative industries: recommendations for development of creative industries in Serbia. More recently, Hristina Micic published Creative industries, design and competitiveness: proactive approach (2008). The following table (Table 4) is adapted from this study. Although design is mentioned in the very title, the economic performance indicators are lacking due to the heterogenous nature of design which belongs to various activities. This heterogenous nature of design makes the current statistical methodology incapable of tracking its performance. In general, in Serbia and in Europe, the statistical frameworks are not tailered for monitoring creative industries [3] and thus data obtained, particularly for many traditional arts activities and video games among others are not comprehensive enough. Many other data should be taken with caution. For instance, the ovarall number of employees amounts to ca. 41.000 (2,7% of all employees in Serbia). However, the real data should be grater as the employment in creative industries is characterised by freelance contracts, part-time or selfemployment activities, as well as higher job mobility.

BRANCH	Number of enterprises	Number of employees	Sales revenue (in 000€)	Net profit (in 000€)	Net profit ratio (2005)	Net profit ratio (2004)
Publishing books, newspapers and magazines	1.566	17.984	534.027	50.241	8,20	5,60
Sound recording, publishing and reproduction	63	213	21.414	4.475	19,95	8,27
Film and video activities (production, distribution and projection)	215	969	35.805	4.274	9,82	6,59
Radio and television activities	301	8.642	84.014	1.511	0,94	0,68
Advertising	97	1.241	125.830	14.614	11,61	10,95
Total 1 (without traditional arts)	2.242	29.049	801.090	75.115	7,78	5,35
Total 2 (with traditional arts field included)	NA	41.162	833.000*	ca. 75.800*	9,10	NA

Table 4 Economic performance parameters of Creative Industries in Serbia in 2010

\* The figures given are rough figures due to approximation

ICEIRD 2010

Source: Translated from Mikic Hristina, Kreativne industrije, dizajn i konkurentnost: proaktivan pristup, Centar za evropske integracije – Srbija, Beograd, 2008, p. 42 and 12

The publishing industries, as well as radio and television activities, are the most important sectors in number of enterprises and employees. As can be seen from Table 4, the highest number of enterprises that do not belong to traditional arts field are in publishing and print sector (70%) opposite to discography which includes 3% of all enterprises. The average number of employees is 13, which indicates that the highest number of enterprises are small enterprises (in fact 96% of creative industry enterprises are micro-enterprises). The most profitable industry is music industry with around 20% profitability, more than is European average for 2003 (8,9%). Other good performing sectors with high net profit ratio are advertising (11,61%), film industry (9,82%), and print and publishing (8,20) (all figures are around EU averages).

The author has concluded that there are many points that indicate that creative industries could be important generator of future development of Serbia. She has pointed out that public investment is still vital, as well as non-financial support, as both individual entrepreneurship and private investment in this sector are still in inception. In other words, in the future the government should play an important role in creating context in which creative industry market can function competitively and self-sustainably, but it should also be prepared to intervene at those market segments where that is not the case [5].

Brief but informative overview of creative industries in Serbia is given by Serbia Investment and Export Promotion Agency (SIEPA) at their website : www.siepa.gov.rs [6]. It provides additional information to that covered by Hristina Mikic. SIEPA calls the industry a *booming* industry, while stating that in the recent years, creative professional services, namely architectural services, design and advertising, became leaders in creative production as well as promoters of innovative ideas and practices. Domestic design industry market was worth between € 27.5 million and € 137 million in 2005. Advertising market was worth € 167 million, while architectural services market about € 485 million. Business revenues rose by 27% in 2007, while net profit rose over 70%. The most profitable industries stayed the same in 2007 (the reported year): music industry and motion picture and video production. Business revenues per employee ranged from € 1,012 (cinemas) to € 9,567 (advertising). There is an expressed concentration of creative industries enterprises in the largest cities, in Belgrade, Proceedings of International Conference for Entrepreneurship, Innovation and **Regional Development** 

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Novi Sad and Nis. These cities have strong infrastructure and distribution network channels, and a vast supply of creative workforce.

In 2007 *NGO Academica* [7]. carried out a mapping of organisations/entreprises and freelancers that are active in creative industries in South-West Serbia. This database is now made public at website www.madmarx.net. Currently, the mapping of creative Diaspora is underway. The website offers links to portals, forums, associations, festivals and some of enterprises that belong to creative industries [8]. It is a good example, although still in the development phase, of use of modern technologies for sector's visibility and promotion.

# 4. Public awareness and support

As Mikic has noted, creative industries are a promising generator of future economic growth but, at this phase, public support is needed for the full exploitation of sector's capabilities. In order for the support to follow, first awareness must come. To what extent is awareness about the creative industries developed within relevant national government bodies is discussed in continuation. Some of the more relevant support initiatives are also outlined.

#### 4.1 Ministry of culture

Within ministry of culture there is a special sector (Sector for contemporary art, cultural industries and relations) whose task is to analyse the current state of cultural industries and devise measures for its improvement [9]. However, the sector group has not yet published any report on the subject. Nevertheless, Ministry of culture every year allocates a significant portion of its budget for support of cultural institutions and individuals. In 2010, it will allocate around 8 million euros (37% of the ministry's budget) [10]. As the ministry has not been very selective in its choice of beneficiaries, almost everyone who applies at the contest will get a certain amount of money. This results in the fact that most grants are of symbolic value. According to ministry's decision on co-financing programmes for cultural and art promotion in 2010 [11], the majority of beneficiaries will receive donations of between 100.000 and 200.000 RSD (around 1.000 and 2.000 euros). On the other hand, Ministry of culture will receive from National Investment Plan (NIP) 615.683.960 RSD (around 6.200.000 euros), or 2.36% of the NIP budget for 2010. The largest amount will go to the reconstruction and adaption of National Film Archive, National Library of Serbia, Museum of Contemporary Arts in Belgrade and National Museum in Krusevac. In 2010, more than 22 million euros will be programme and national budget for DG CULTURE 2007-2013 allocated from IPA programme and media support of European integration process [10].

#### 4.2 Ministry of economy and regional development

The awereness of the creative industry sector itself (apart from its individual subsectors), and its potential for economic growth has been virtually non-existent. Certain initiatives that the ministry is carrying out have, however, postitive impact on the sector. For instance, the ministry has been supporting cluster initiatives for several years now [12]. So far, there are two clusters, directly or indirectly connected to creative industries: Serbian Film Commission and Association of Apparel Producers. Another focus of ministry's activities is the support of the development of tourism as key sector in Serbia. In the *Tourism Strategy of Republic of Serbia* [13] from 2006, city breaks, events and business tourism are defined as tourist products with greatest priority. City breaks and events must include cultural and creative content in order to be successful. The strategy outlines thus the needed support measures for successful realisation of culturally-related projects. For events organisation, these

measures include grants, development credits, stimulating concessions and many fiscal measures (lower import duties for equipment, lower communal tax, accelerated amortisation, "tax holidays", "loss carry forward'). For cultural heritage, they include grants, direct public investment and state guarantees. The strategy also envisages the creation of *the Cultural Strategy of Tourism*. The prosperous implementation of the Tourism Strategy entails the active participation of many creative individuals, enterprises and organisations. Nearly all sub-sectors of creative industry need to be involved (architecture, advertising, graphic design, film and video production, publishing etc.) if the strategy is to have favourable, i.e. profitable outcome. Unfortunately, as is the case with many strategies, there is no public annual report on the implementation of a certain strategy. Therefore, to what extent is the Tourism Strategy implemented so far remains unknown.

#### 4.2 Other key supporters

Serbia Investment and Export Promotion Agency (SIEPA) [6], as has been mentioned earlier, recognises creative industries as key industry sector in Serbia. Many of its activities focus on branding of Serbia's good-quality goods and services in order to render them more internationally attractive. It realises that, although there is abundance of creative professionals, there is no strong conection between them and other industries, esp. manufacturing industry. SIEPA facilitates the cooperation between them through various manifestations. It is also active in promoting young artists and especially Serbian textile industry and its fashion designers. The apparent drawback, however, is that there is no communication between SIEPA ant the Ministry it belongs to, the Ministry of economic and regional development, with the aim of raising ministry's awareness about creative industries impact on Serbia's economy.

Many foreign countries, whether through their ministries of foreign affairs, embassies or cultural centres offer support to Serbian industry and culture: USAID, the Swiss cultural cooperation programme in the West Balkans, British Council, French Ministry of Foreign Affairs, WUS Austria, Italian Cultural Centre, Norvegian cultural porgramme, to name just the few. For example, USAID Competitiveness Project [14] identified Serbian film industry as key sector. The main support activites USAID provides in this sector are: Serbia Film Commission capacity building and outsourcing promotion, film incentive advocacy, global digital animation market development support and film lab certification support. It also launched Serbian FilminSerbia website portal and brand www.filminserbia.com.

In 2009 Serbia joined Enterprise Europe Network (EEN) [15], the largest business support network with 45 member countries. The network's mission is to help small and medium-sized companies make the most of business oportunities in European Union. Since Creative Industries sector is overwhelmingly made up of small businesses, in particular microbusinesses (less than 10 employees) [3], it was realised in 2009 that these enterprises should receive special focus within EEN, so that a new sector group was needed to specifically address the needs of these companies and help them better exploit the opportunities provided to them by EEN. Therefore, a new, 19th sector group was launched within EEN in 2010: Creative Industries Sector Group. The authors of this paper and their respective home institutions, University of Novi Sad and Institute Mihajlo Pupin, are directly involved in the implementation of the Enterprise Europe Network project in Serbia. Moreover, University of Novi Sad, as a partner in Serbia's EEN Consortium joined the sector group from the very start. In this way, University of Novi Sad will enable Serbian small and medium enterprises that work in creative industries to find potential partners in Europe and beyond, as well as better inform them about the potential business opportunities.

# 5. Conclusion

According to studies conducted, creative industry in Serbia follows the global upward trend: it is a good performing sector. Despite this fact, there is little awareness about its potential among relevant governmental decision-makers, esp. in the Ministry of economy and regional development. Strategy for creative industry development in Serbia thus remains yet to be written and implemented. In one study conducted, it has been pointed out the incapability of exisiting statistical methodology for succesfully monitoring the progress of this sector. Changes in that direction are necessary for further comprehensive studies. This problem is also apparent in European dimensions. As Serbia aims at EU integration, it should use the experience of EU members and adapt the methodology proposed in The Study of the Economy of Culture by EC. Music, fim, advertising, design and publishing are the most promising sub sectors. However, when compared with other ex-YU countries, there is much room for improvement. Finally, there should be better cooperation with other complementary industries, especially ICT and tourism.

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# Entrepreneurial skills and University's ability to facilitate entrepreneurial learning environment

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This paper discusses the entrepreneurial activity at the University of Novi Sad. Research has been conducted on 32 predominantly innovative small companies in the close vicinity of the University of Novi Sad. This university was chosen due to the fact that it is the only university in Serbia with organised activity for promoting entrepreneurship amongst scientists and researchers. Entrepreneurship research lacks consensus regarding the issue of what makes an entrepreneur. Different approaches refer to personal psychological characteristics, to personal skills or to relevant knowledge areas. The present study contributes to the field by having analyzed the skill profile of 32 entrepreneurs in Serbia. A common definition of entrepreneurship is the process of identifying opportunities for creating or releasing value, and of forming ventures which bring together resources to exploit those opportunities. Accordingly, a key research question on the subject has been whether and how entrepreneurs can learn the capabilities involved in recognizing and acting on opportunities. It is considered that the ability to learn is essential in developing entrepreneurial capabilities in order to survive in a competitive and ever changing business environment. Technology partnerships can play a crucial role in educating young entrepreneurs that have already gained some technical or specific knowledge. Importance of technology partnerships lays in balancing activities of basic research at universities and colleges on one side and applied research in the industry on the other. Partnership is crucial for: bridging the gap between research and development at universities and industry; eliminating time lag of application of basic research and giving incentives to the researcher. This paper summarizes the perceived skills of entrepreneurs on one side and available entrepreneurial support incentives from the University. Thus, enrapturing both sides of the entrepreneurial dilemma.

#### Keywords

Commercialization of university research, Entrepreneurial skills, Entrepreneurial University.

## 1. Introduction

#### 1.1 Entrepreneurship – catchy word

While most economists agree that entrepreneurs are central to the functioning of the economy, entrepreneurs have proven as quite elusive as an object of empirical study. Some of the most fundamental questions about entrepreneurship go curiously unaddressed in economics. For example, where do entrepreneurs come from and what makes good entrepreneurs. Some of

this gap in research might be explained by the complexity of the measurement issues in addressing these questions.

Traditionally, entrepreneur-associated factors are examined with the explanatory statement that "the enterprising individual is a critical component of venture creation" (Shook, Priem, & McGee, 2003, p. 394). Economic theory discusses special functions of the entrepreneur, in particular Schumpeter's view that the entrepreneur is an innovator who organizes and coordinates economic resources. However, economic theory rarely seeks to explain firm births and the post-entry performance of newly founded firms and an attempt to fulfil this void was made by Tamashy (Tamasy, 2006, p. 368). Undeniably, entrepreneurial studies often revert to functions of the entrepreneur in order to legitimate the person-based approach and to derive qualifications required to start a successful new business.

Recently, exceptions in economics look at demographic and psychological predictors of who enters into entrepreneurial activity such as risk aversion (Kan & Tsai, 2006), IQ, or socio economic factors (Shivani, Mukherjee, & Sharan, 2006), (Co, 2003) and the occupation of the parents/siblings, i.e. "entrepreneurship antecedents" Salvato (Salvato, 2004). Furthermore, by focusing on the relationships among social capital, cognitive processes, and entrepreneurial opportunities, model proposed by De Carolis (Carolis & Saparito, 2006) lays the groundwork for further theory development and empirical research.

Recent research supports the view that one of major factors which increases the probability of an individual's becoming an entrepreneur is his or her possessing a balanced skill-mix. This idea, denominated as JAT (Jack-of-All-Trades) theory, is based on substantial research from various countries. It is justified by the fact that as entrepreneurs have to manage a variety of tasks and people; they need to be well versed in a variety of fields, this ability coming both from innate attitudes and the choice to acquire expertise in different fields. On the basis of professional itineraries of Stanford Master of Business Administration alumni Lazear observes that "Those who are going to specialize invest in only one skill. Those who become entrepreneurs may invest in one skill, but if they do so, it will be the skill in which they are weak. But entrepreneurs are the only individuals who may invest in more than one skill." (Lazear, 2004, p. 209).

Nevertheless, according to Silva (Silva, 2006), cross-sectional tests of the JAT theory cannot control individuals' "unobservable characteristics" such as family or regional background, which may also be responsible for skill accumulation and occupational choice. By applying panel data analysis (to a longitudinal survey of Italian families), a research technique different from the cross-sectional one used hitherto in the JAT theory, Silva came to a different conclusion to that of the JAT: an individuals' cross-disciplinary knowledge did not enhance their propensity to become entrepreneurs. All in all, Silva's (Silva, 2006, p. 122) analysis suggests that "if a JAT attitude matters for entrepreneurship; it does so as an innate ability. Previous claims, on the causal effect of acquiring a balanced skill-mix on the probability of becoming an entrepreneur, should be more cautiously interpreted."

According to these approaches, there is no doubt that entrepreneurs show a certain profile which distinguishes entrepreneurs from non-entrepreneurs. However, hitherto little research has focused the skills profile in different countries. The present study contributes to this field by having analyzed the skill profile of 40 high-tech entrepreneurs in Vojvodina.

#### 1.2 Understanding entrepreneurial skills

As rightly pointed out by Roy and Dousios (Roy & Dousios, 2006), the term "skill" embraces the ideas of competence, proficiency, attributes and the ability to do something well, closely related to knowledge, expertise and capability. The debate on the hierarchy of skills has created different classifications, for example, dividing skills into cognitive skills (involving reasoning) and manual ones (involving physical action), knowledge-based technical specialism and management specialism, soft/personal vs. managerial skills, or according to skills' economic worth (which changes over time) whereby those skills which take more time to acquire are rewarded more highly.

According to the state of the art in research on new venture growth carried out by Gilbert, McDougall and Audretsch (Gilbert, McDougall, & Audretsch, 2006), educational background and prior related industry experience of the entrepreneur(s), prior entrepreneurial or start-up experiences have well-established direct effects on the sales and employment growth of new firms. Personality traits are believed to have indirect effects on the growth of firms. Another key entrepreneurial capacity is obtaining resources (financial and human capital).

The same group of scientists (Gilbert, McDougall, & Audretsch, 2006) paid attention to the different capabilities required of the entrepreneur and employees depending on the strategy of the firm's growth: if it is internal growth (by innovation) then it requires more creativity and technological capabilities then in the case of external growth (where other firms may be acquired with ready assets). Similarly, international growth strategy requires that the entrepreneur possess specific knowledge of the cultural background, which may not be so necessary in the case of domestic growth.

Among numerous views on entrepreneurial skills, Bush (Bush, 2008) lists three major capabilities: visioning, bootstrapping and social skills. In consistence with the literature, a vision is defined as "a pattern for future; having elements of time and scope, it is values driven, has a purpose, and often evokes a mental image or picture that can be communicated" (Bush, 2008, p. 23). The second key entrepreneurial capability, bootstrapping, refers to conserving financial resources and managing cash so as to start up a venture and make it grow. Finally, social skills are defined as learnable behaviours used by individuals in their interactions with others, particularly important for entrepreneurs to persuade others to join and commit themselves to their business idea. These include persuasion, social adaptability, impression management and social perception, as well as self-efficacy and emotional expressiveness.

In tandem with an extensive body of research, Markman and Baron (Markman & Baron, 2003) point out that the chances of entrepreneurial success grow in the presence of personal characteristics and skills such as self-efficacy, ability to recognise opportunities, personal perseverance, human and social capital and superior social skills. Although some of these traits may be treated as personal characteristics, the authors affirm that all of them can be learnt by means of appropriate short-term training. Such a perspective is rooted in theories of personorganisation fit, according to which people choose jobs consistent with their attitudes, values, abilities, personality and personal preferences; what is more, it has been proven that the incompatibility of values between the employee and the organisation is a predictable cause of employee turnover. Importantly, as noted by the authors, the individual-difference factors they posit, in contrast to other aspects of personality, are open to modification through appropriate trainings. At the other end of the scale, the authors acknowledge that these personal characteristics interact in complex ways with market forces, industry trends, new technological discoveries, and so on, to ultimately determine the success of entrepreneurial firms.

# 2. University Spin-off Underpinning

## 2.1 Socio-Economic Pressure

The political changes in Serbia laid the foundations for making a clear break with the past decade's economic decline, ethnic and political unrest enabling the country to get on the path towards economic, social and political stability. Great attention is being placed upon improvement of the business environment by removing unnecessary bureaucratic obstacles to the entry and growth of new private firms. This is generally recognized in all transition countries as the primary engine of growth and job creation. Developing a network of supportive institutions and improving access to capital is among primarily goals set by a government.

In previous, centrally planed, economy private ownership was forbidden by law and every entrepreneurial endeavour was to be carried out in the state owned or socially owned companies for the collective wellbeing. First progress towards true entrepreneurial behaviour, for self gain, was enabled with changed regulation in 1989. And strengthened and supported with additional infrastructure development from 2003. From that point on Serbia is recording ever-growing number of newly established SMEs.

Sudden and radical change in the economy has made an impact on perception of entrepreneurs. As it is formulated in the law entrepreneur is "person that establishes legal entity in the sole purpose of independently reaching economic gain". This strict formal interpretation has made comparisons among number of entrepreneurs in many countries much harder.

## 2.2 Academic entrepreneurship

Academic entrepreneurship in the Serbian economy was influenced by the transition from a centrally planned to a market economy. The University has had to challenge academics to modify their patterns of research activity, primarily due to increased pressure as a result of shrinking budgets and the disruption of links with former partners, customers or financiers. In comparison to private sector led research and development activity and its potential to impact the economic potential of the country, academic research was more advanced. Small firms spinning out from the University was in majority of cases an "impulsive" (bottom up) reaction to over-capacity, mutually preventing "brain drain" of highly qualified human resources and linking the expertise residing in those resources to the industry.

University spin-offs differ from common business start-ups in a very important aspect: the university spin-off transfers knowledge created in a public sector environment to the private sector. Against a background of economic decline and financial pressure, spin-offs have helped to reabsorb qualified labour that was idle or in receipt of only a very low income. They provide jobs or second jobs either for endurance or to improve living standards by offering increased salary potential. Academia provides a big pool of potential labour through the undergraduate student feeder that can be recruited for either permanent or short term jobs. Academic entrepreneurs who set up their small firms seek to use their accumulated capabilities, skills and "insider" information as well as their purely scientific knowledge. Through their activity they are in a position to transfer knowledge, information, skills and expertise from academia to industry, or from abroad to the local market through technology transfer.

# 3. The Conducted Research

#### 3.1 Methodology

The conducted research consisted of three stages: 1) A qualitative approach with 25 interviews to select a large initial group of skills and choose behaviours for each one, and the analysis of the relevant literature 2) Consulting experts to check the content validity for the chosen skills and their related behaviours (which make up the definitive items), 3) Presenting a first draft of a questionnaire. The stated phases have been done previously and more could be found in (Morales & Bojovic, 2008)

Table 1: Skills and behaviours

APPLICATION TO CHANGE

- 1. I accept and easily adapt to change
- 2. I respond to change with flexibility

#### LEARNING COMPETENCE

- 3. I easily absorb and assimilate ideas and information
- **4.** I continually show interest in new developments and in keeping up to date
- 5. My knowledge adds value to the work that I do

#### IMPACT

- 6. I inspire enthusiasm in the people that I work with
- 7. I effectively present my ideas with conviction
- 8. I am experienced in leading and motivating people

#### TOLERANCE FOR STRESS

- 9. I come up with continual good results under pressure.
- **10.** I can maintain or even increase effort under stressful situations.
- **11.** I remain composed in stressful conditions.
- **12.** I can control stressful situations.
- TOLERANCE FOR UNCERTAINTY

**13.** I remain professional in situations of uncertainty.

#### TOLERANCE FOR FRUSTRATION

- **14.** I choose actions even though there are difficult decisions to make.
- PLANNING CAPACITY
- **15.** I put a lot of effort in meeting set goals.

Based on the data gathered in Serbia, from 32 high-tech companies a database was created and ranks determined presented in table 1 and figure 1.

### 3.2 Findings

Looking at the results of the survey presented in figure 1 it is unambiguous that application to change, learning competence and planning capacity are viewed as the core skills that are leading to success in Serbia. The values set to these skills were above the mean portraying the perceived high importance of skills in the academia entrepreneurs that responded to the questionnaire.



Figure 1: Distribution and deviation from the mean

Entrepreneurs in the high-tech sector put forward learning, as they have to be up-to-date in the knowledge area. Investing not least than 8% in the research and development and following closely developments of the specific industry it is no wonder to find all three learning competence activities:

- I continually show interest in new developments and in keeping up to date;
- My knowledge adds value to the work that I do;
- I easily absorb and assimilate ideas and information

to be placed highly on the scale of importance.

The only competence placed higher than learning was planning. Meeting set goals was placed at the top. The most likely influence on valuing planning as most important is the practice most of those firms have with predominantly west-European partners. Meeting set goals on time usually signifies the difference between earning enough money for salaries and having to dismiss workers. This proves that customary trust that perseverance always pays off is carried to business as well.

Activities adding to application to change (first two questions) came in third place, just above the average (figure 1). The answers prove the understanding of academic entrepreneurs towards the significance of quick adaptation to newly established circumstances. This is no wonder, as most of the entrepreneurs were provoked by changing environment to become entrepreneurs at the first place.

Somewhat less important factors for successful business among academic entrepreneurs are: impact, uncertainty and frustration. As far as impact is concerned it just proves that chosen respondents although coming from academia are not necessarily acquainted with managerial needs and human resource management skills. They are simply learning by doing and not seeing themselves as skilful motivators and leaders. It is not uncommon that after having one successful company academic entrepreneur creates another with another innovative idea that one has. This is just to add to the notion of being more into advanced technological accomplishments than into managerial area.

Current political turbulence has left its consequences on people and it could be the factor influencing lowering of threshold for stress tolerance in general and in this survey for Vojvodina respondents. For the question "I can control stressful situations" respondents could barely put that on priority list valuing it as 11th most important factor for their success. The tough wrestle with stress in Vojvodina is evident with question "I can maintain or even increase effort under stressful situation" for which the lowest marks were awarded, putting it to the last place, perceiving themselves as completely stress averse. This is not to verify that they are doing business completely unaffected by stress, but to state their uncomforting when exposed to stressful situation.

### 4. Conclusions

Traditionally, the primary goal of University lies in the advancement of scientific research and education. These goals make the University a unique source of basic research which, when adopted by the business community, can function as an important source of knowledge based economic growth.

Knowledge spill-over tends to occur only within a limited geographic region. Therefore Universities are an important economic catalyst for specific regions. The small, innovative and dynamic new businesses formed in the process of spinning off become an important driver in local economic growth, industrial renovation and employment generation.

Understanding the drive of entrepreneurs, their needs and possibilities for development could lead towards universities willfully encouraging entrepreneurial climate. They should be the one to present incentives, rewards, and leadership that encourage faculty to commercialize research. Facilitating to the learning, training, consulting and coaching needs of would be entrepreneurs is worthy activity and program present in different forms in the Serbian universities. However, this is far from the full aptitude universities have to offer. Further support, as stronger networks with industry and government are needed for the results to be farreaching. Through the partnerships with industry and government the gap between research and development at universities and industry could be reduced and the time lag of application of basic research and giving incentives to the researcher eliminated.

Understanding the needs and behaviors of entrepreneurs is a solid foundation for developing a formal policy concerning fostering entrepreneurial climate at the one place with the highest probability for impact and success– universities.

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# Analysis of Innovation Factors of Micro and Small Companies: A Strategic Approach

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Today, companies are faced with completely new challenges, and thus completely new sets of solutions are required which may demand the transformation of management, it's values, and other basic key indicators of success. Innovation as such becomes a priority if company wants to protect its competitive position, since everybody else innovates, and the markets are beginning to expect new features year in and year out. Creating a strategic plan as a basis for a company's future development demand that a company defines and monitors a specific set of innovative factors, and to standardize its conceptual base to precisely defined forms, as well as the instructions for its application. A lot of studies examine the link between business environment, strategy, and innovation performance by presuming that in environments where rapid change is expected, it would seem that firms with the most aggressive strategic posture are more likely to stay competitive. Based on these findings, authors conclude that strategic posture is a major determinant for innovativeness. Research presented in this paper covers 126 companies with the aim of having as a representative a sample as possible. The objective of this study is to define possible differences between micro and small companies from the selected research area and other companies, regardless of the selected innovation factors, by applying modified SPACE models for defining strategic posture of a company.

#### Keywords

micro and small companies, SPACE analysis, strategy posture, discriminative function

### 1. Introduction

One of the key challenges of all enterprises today is how to continuously adjust, innovate, change, shape, create, and network with other enterprises in order to survive and prosper in an often unpredictably growing market. Enterprises today should find a way to adequately react on fast changes in external or/and internal environment. External environment with complex and unstable factors, imposes a strategic way of thinking and reacting. Problems becomes chances only if company is highly aware of its position, its future direction and consequences of applying the selected strategy. Unfortunately, it is not unusual that selected strategy is not in accordance with financial and competitive potential of the company. Foundation of the traditional management and entrepreneurial thinking are completely shaken. The new paradigm is necessary in situation in which the nature of the economic value and creating wealth has fundamentally become altered, demanding new ways of thinking and new approaches as well as new strategic planning tools and models.

With selected strategy, a company describes the way it will realize previously defined goals, as well as methods to achieve a sustainable competitive advantage. Previously defined *What* 

to do? (mission and objectives) demands defining How to reach these goals? (policies and strategies). Every time company tries to define its future, it necessary has to define where it stands in its present state (actual strategic posture), where it wants to be in the future (future strategic posture) and how to arrive there (which strategy to implement)? Implementing one of the models of strategic planning (such as SPACE model) could be an appropriate solution. Some authors [1] have argued that a definition of strategy is the plan of the managment for strengthening the position of the organization, satisfying customers and achieving performance targets. The innovative enterprises are competitive, they have a proper strategic posture – whether aggressive or competitive. Key features of innovative enterprises are: readiness to accept changes, long-term dedication to technology; a certain level of independence when it comes to conducting ideas of employees as well as the support of the overall organization; readiness to take risks, orientation towards permanent growth, the ability to control (business) uncertainties as well as the existence of open channels of communicating with the external and internal environment of the enterprise. Modern, innovative enterprises, continually maintain multiple objectives, which they carry out and which may not be completely or precisely determined. Any of these goals can be fulfilled in different ways - through different strategies. Therefore, each innovative enterprise has one core requirement, which is to use specific models of strategic planning in a new way or in new business areas. Knowing the strategic position of the company, using for example the SPACE model of strategic planning (Strategic Position and Action Evaluation Model - [2,3]), offers the company an ability to define a set of goals and to create the most appropriate approach for achieving desirable strategic posture.

The success of a business depends heavily on its strategic positioning in the market [4]. The structure of the innovative enterprise is seen as an integrative system that provides for the continuous connection amongst enterprise and its environment. It should provide all integrative qualities needed for coping and managing phases of the innovative process, flexibility, and adaptability for welcoming different technologies and changing environment, as well as the ability of development that confront the enterprise during different phases of the life cycle that emerge while the enterprise is growing and developing. Strategy also defines direction of innovative activities and it should be used in order to achieve a better level of innovativeness of the company. Innovative activities of the company should be in accordance with the strategies selected. The company must define innovative goals, while the measure of innovativeness must belong to group of key measures of development of the company. Some authors [5] examine the link between business environment, strategy, structure and innovation performance by presuming that in environments where rapid change is a way of life it would seem that firms with the most aggressive strategic posture are more likely to survive, let alone stay competitive. Based on these findings, they conclude that strategic posture is the major determinant for innovativeness.

This paper deals with studying the differences between micro and small enterprises and other companies in terms of the key factors determining the strategic posture of the company by applying the modified SPACE analysis, within the domain of significance of these factors. We have identified similarities and differences resulting from the implemented research. It is also defined possible differences between those selected groups according to selected factors of company's innovativeness.

## 2. Method

The research covered 126 companies from Serbia, BH and Montenegro. With the aim of having as representative sample as possible, the companies different in their size, legal form of organization, economic sector, location, activity, and ownership were selected. The research of the strategic commitment of the selected companies is made in line with the

expanded and modified SPACE questionnaire [3], in order to evaluate the strategic posture of the company. The survey has been implemented in a period of three years. In the final sample of the entities, after the exclusion of the companies and factors with more than 5% of the missing answers, 116 companies were kept in the further analysis.

From the research sample selected, we analyzed micro and small enterprises, in accordance with European Commission definition of SMEs [6]. The main reason why we selected this group is that micro and small enterprises, according to the data from the Business Register Agency in Serbia during the period from 1999 through 2008, are represented with almost 96%, medium approximately with 3% and the rest are represented approximately with 1%. In the research sample selected, micro and small enterprises are represented with 49.13%, medium with 21.55%, and the large ones with 29.33%.

The questionnaire developed through the revision of the modified SPACE analysis covers seven metrical scales in its final version (instead of four in the original SPACE model), and the characteristics of metrical scales including the brief description and the value of the Alpha coefficient are given in Table 1.

No.	Scale name	Brief scale description	Alpha*
1	Company innovation from product/service aspect	Factors relating to innovation and development processes at company, as well as the operating and development aspects of relation with clients	,9276
2	Client orientation and reputation in external environment	Factors including operating activities of client relations evaluate company acceptance by clients and business partners	,8623
3	Market growth potential	Factors relating to characteristics of the market the company operates on: market growth rate, market size, product demand, possibility of opening new markets, demand stability, etc.	,7743
4	Company operation financial potential	Factors relating to financial aspects of the company operation, describing the internal components of company financial potential	,7894
5	General characteristics of economic segment	Factors relating to the character of the economic segment, i.e. economic/industrial branch company operates in: energy price change, economic segment energy dependence, raw material availability, etc.	,7415
6	Economic segment profitability (Competition aspects / economic segment volatility)	Factors relating to the company's competition for the selected major product: Number of competitors within the economic segment, pressure of competition within the economic segment, etc.	,7677
7	Political-legal aspects of external environment	Factors relating to the environmental components determined through the impact of government and operating rules set out at the national level, which may not be impacted or controlled by the company	,7638

 Table 1: Metrical scales developed by the revision of the modified SPACE model (Borocki, 2009) - significance domain

\*(Alpha = Reliability Kronbah coefficient in line with the internal consistency model)

Due to the need for reducing the number of factors in the existing analysis for the evaluation of the strategic posture of company, as well as the need to decrease the complexity of the existing model, data analysis methods are selected in order to ensure this. The data are processed in the statistic program packages Statistica and SPSS.

The analysis includes the answers to 51 items of the modified SPACE questionnaire (instead of original 80) within the domain of its significance. After the initial exclusion of individual variables, some measuring characteristics of the newly formed scales are checked. The

significance domain is selected as the decisive aspect for the model modification primarily because of its orientation to variables which may be significant for the respondents in the future. Latent structure of the significance domain space measurement and of the values of the modified SPACE model is reviewed in the analysis of major components. Such process is selected due to mostly explorative nature of the study and the tendency to avoid the risk of excluding the potentially useful variability from the analysis. With the aim of determining the latent structure of the common space of the summation scores in the scales of the modified SPACE model, the analysis of the major components was implemented. The main components were rotated in Promax position. Promax rotation was made and the most interpretable solution was selected (solution with 7 main components – Table 1).

Metrical characteristics of the scales formed on the basis of the matrices of the set of the rotated main components within the value and significance domain were reviewed by applying macro program RTT9S, intended for SPSS environment. The program authors are Konstantin Momirović and Goran Knežević, while the modifications were made by Stanislav Fajgelj.

With the aim of determining the structure of the differences between the micro and small enterprises and other companies in the dimensions of the modified SPACE model, we have applied canonical discriminative analysis. Grouping (criterion) variable was the belonging to the group of the small and micro enterprises vs other companies, and the set of the quantitative (predictor) variables included the summation scores on the scales of the modified SPACE questionnaire.

# 3. Results

Within the defined sample, the discriminative function was applied, and the results are presented in Tables 2, 3, 4, and 5. The aggregation variable was the recognition of the group of micro and small companies or other companies, and group of quantitative variables was made of scores on modified SPACE model dimensions.

Function	Eigenvalue	jenvalue % of Varia		Cumulati	ve Canonical Correlation
1	,235	1	00,0	100,0	,43
					<b>~</b>
Func	tion Wilks	Lambda	Chi-squa	re df	Siq.

 Table 2: Discriminative function characteristics

The discriminative function is statistically significant at the level of p<0.01. Canonical correlation coefficient (Rc = 0.43) indicates that the intensity of differences between the groups is modest. Variable discriminative intensity is presented through Wilks-Lambda test which amounts to 0.810 for the first discriminative function, which indicates its statistical significance in explaining the total variance of the differences between the groups. The score on the scale of *Political and legal aspects of external environment* (Table 1 – metrical scale no. 7) has got a significant and high correlation with the discriminative function, and significantly but with substantially lower coefficient, scores on the scale *General characteristics of industrial segment* (Table 1 – metrical scale no. 5). Other dimensions of the modified SPACE model do not provide significant contribution to the discriminative function structure.

	Function
Political and legal aspects of external environment	,775
General characteristics of industrial segment	,367
Market growth potential	-,138
Profitability of industrial segment (competitor's aspects, volatility)	,067
Client orientation and reputation in the external environment	-,066
Company innovativeness (product/service aspects)	,007
Financial potential of the company	-,004

**Table 4:** Discriminative function significance matrix – significance domain

It is notable that the fifth and seventh dimension (Table 1) of the revised SPACE model are *significantly correlated* to the discriminative function. The fifth dimension has the strongest significant contribution to the structure of discriminative function, while the first dimension has the weakest significant contribution. Keeping in mind that the content of discriminative function is primarily related to the *political and legal aspects of the external environment* which is under the direct governance of the State (enterprise has no control or influence on them whatsoever), as well as the *General characteristics of industrial segment* (fuel prices, correlation/dependence of economic segment and the energy, availability of raw materials and goods, possibility to produce/place services in big amounts, average use of available capacities), it can be interpreted as: *The Overall conditions for doing business (the overall business environment)*. Other dimensions of the modified SPACE model did not provide significant contribution to the structure of discriminative function. It is important to note that other elements, which constitute the structure of discriminative function, have a negative indication.

Tal	ble	5:	Centroids	of	grou	ps
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MICRO AND SMALL ENTERPRISES	Function
Others	,472
micro and small enterprises	-,488

The group of *micro and small enterprises* obtained lower scores on the discriminative function, and the group of Other enterprises' scored higher. Practically speaking, it means that *micro and small enterprises* do not consider as significant factors those which are under the direct influence of the Government (political and law aspects and the overall conditions for doing business, overall features of economic segment), whilst the Other enterprises consider the influence as significantly greater. The conclusion is that *micro and small enterprises* consider their own finances, methods of reaction to competitors, and gaining innovativeness and competitiveness as more important than other factors on which they cannot have influence on.

Table 5 shows group centroids, which represent the arithmetic mean of the groups, which indicates that their distance (discrimination) is significant. The negative polarity of the discriminative function shows *micro and small enterprises* results, and its positive polarity shows the results of Other enterprises. That means that *micro and small enterprises* consider *The political and legal aspects of the external environment as well as the Overall features of economic segment,* as less important. The group of Other enterprises acquires low, while the *micro and small enterprises* acquire medium scores on the discriminative function. This result indicates that the group of *micro and small enterprises* has the tendency to exploit their own potentials and it is remarkably notable, while the Other enterprises mark the significance of these scales as significantly less.

# 3.1 The differences between micro and small enterprises and other enterprises regarding innovativeness

	Micro and small			Std.	Std. Error
	companies	N	Mean	Deviation	Mean
INNOVATIVENESS	,00	59	45,7600	10,05972	1,30966
	1,00	57	45,6948	10,09763	1,33746

7	ahle	6·	Descri	ntive	statistics
I	anie	υ.	Descri	puve	รเลแรแบร

	Table 7: t         test for Equality of Variances							
		Leven for Eq Varian	e's Test uality of ices	t - tes	t	4		
		F	Sig.	t	df	р	Mean Difference	Std. Error Difference
INNOVATI VENESS	Equal variances assumed	,179	,673	,035	114	,972	,0653	187,178
	Equal variances not assumed			,035	113,831	,972	,0653	187,191

There are *no significant differences* noted between *micro and small enterprises* and other enterprises in regards to the dimensions of innovativeness. Regarding the dimension of innovativeness (first Promax component in the domain of significance), there are no differences among *micro and small enterprises*, which shows that enterprises consider this dimension equally important. Enterprises have the awareness that this is the key element for gaining competitiveness.

# 4. Discussion

If we look at the overall sample structure matrix [3], significant correlation with discriminative function is observed for dimensions related to political and legal aspects of external environment, which are under the direct government of the State (enterprise has no control or influence on those), as well as the General characteristics of industrial segment. Comparison of the results on discriminative function of the overall sample and micro and small enterprises, shows that micro and small enterprises do not consider as very significant those factors which are related to components from the environment and which are determined through the impact of the State and business rules set at the level of the State. and on which they cannot influence or control them (change of regulations and laws, relation between State and area of economy, level of economic growth of the country, tax obligations, level of inflation, etc. as well as factors which are related to the features of economic segment and economic/industrial area in which the enterprise is doing business: changes of fuel prices, dependency of the economic area on fuel, availability of raw materials, possibility to produce in big amounts, etc. Structure of the first Promax component named Company innovation from product/service aspect show us that it does not include all aspects of innovativeness of the company. Which aspects/measures to use in order to find out the level

of innovativness of the company is not an easy task. One of the possible ways is to measure the innovativeness of the company through: *Posture, Propensity*, and *Performance* [8].

Since the SPACE method is useful for defining the strategic posture of the company, if we observe the overall researched sample, it can be noted that the aggressive strategic posture is a dominant one, just as it is among *micro and small enterprises* [9]. This posture is typical of attractive industries, which do not have significant changes in their environment. Enterprises have a certain competitive advantage, which can be protected by potential financial forces. The critical factor is the entrance of new competitors. Enterprises in this situation can completely use the possibilities (opportunities) to look for potential candidates for gaining profit (cooperants, business partners) in their own industry or in related industries; increase their market share; and to concentrate resources on products with a certain competitive advantage. The movement toward the aggressive posture is possible using generic strategy of overall cost leadership, or concentric diversification [4]. Thus it is possible for company with competitive strategic posture to change its position if it changes the key factors, specially the ones that are most important for innovative activities in the company.

# 5. Conclusion

116 enterprises were chosen as the overall sample, with 57 of them being *micro and small enterprises*. A chosen subsample was observed in order to determine the structure of differences between *micro and small enterprises* and Other enterprises. Discriminative analysis was used for determining differences. The results showed that the differences between *micro and small enterprises* and Other enterprises have medium intensity. The structure of the discriminative function has also shown certain differences between productive and non-productive enterprises when it comes to considering such factors as significant or less significant for them.

Since the first Promax component named: *Company innovativeness (product/service aspects)* includes only a few aspects of innovativeness (e.g. product development, operating and human resources technologies, product quality and originality, product delivery dates, available know-how, etc.), a larger group of key factors must be included in a future research in order to give a more precise picture of innovativeness of the company. It is useful to take into consideration and to analyse the results of researches in which authors attempted to quantify innovation by evaluating outputs through the enumeration of patents, through R&D inputs, through impacts of innovation activity or in some other way.

The more aggressive approach, even if demonstrated as unstable among enterprises which implement it, represents their way to be proactive, attempt to decentralise management, as well as to explore their external environment and its possibilities in more detail. While observing the key factors for micro and small enterprises in chosen research sample (factors which have high significance and small value), it can be seen that those factors are: Market share, Uniqueness (originality) of products/services, Abilities of employees working in sales departments, Development of labour technologies, Development of human resources, Return on invested resources, Risks of financial management, Stability of expenses, etc. These factors must be the base for founding the strategy for better company strategic posture – each and every change of those factors should be dynamically observed and the goals for changes of those factors created so that the enterprise can keep or accept the aggressive approach, which is the source of the innovativeness for the enterprise.

The best results that we get from this method (modified SPACE analysis) is tracking all changes that could happen to key indicators primarily in internal environment (financial potential of the company and competitive strength), in order to keep the satisfactory level of organizational as well as environmental innovativeness. In turn, the organization can control how changes of key innovativeness' indicators could have an impact on company's strategic

posture. As the result of strategic planning process, organization gets its strategy – the connected network of strategic goals. In this network, the organization needs to have a few innovative goals. "Improving innovativeness in order to create a new value" - precisely defined in every specific example. A potential approach to use process of strategic planning/creating business strategy as a base for improving innovativeness of the company includes the following steps [3]:

- Clarifying organizational goals from its mission, sources of income and analysis of organizational phase of lifecycle
- Defining innovative goals to support the growth of the company, using modified SPACE analysis as a base for innovative indicators/measures
- Identifying the required organizational capabilities and/or constrained-deterministic parameters for the future
- Creating a family of metrics which support the organizational innovation strategy.

Further research should comprise more enterprises in the sample as well as take more into detail the sample structure analysis, thus providing a more precise analysis of different economic segments. Furthermore, it is recommended that the research be conducted on a wider geographical area (Bosnia and Herzegovina, Montenegro, Croatia), which would further increase the validity of the results. Including more companies into the research sample would ensure a more precise analysis of various economic segments as well as a comparison between SMEs in an emerging transition economy and in developed countries. Understanding that innovation is not a stage in the life time of a firm but an ongoing process should help to further identify triggers, drivers and impediments of innovation and to manage innovation in firms.

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# Marketing Management in Banks and Other Financial Institutions

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Banks are financial institutions, which effectively mean the use for profit. Placement of certain assets prices of services is useful for development, namely ensuring the existence of companies concerned and for users of tools. Banks important exercise is connected with numerous partners, individuals, institutions, enterprises. Bank business is dependent on the market situation. Market savers and market consumers (and those who invest), are entirely separate financial market. Marketing examines the motives and needs, which are in settings in saving drive, or for investment (consumption). Thanks to the results of such research activities defined marketing program. Program activities include marketing the shares and should be resolved the bank problems but problems of bank customers, as well!

By identifying the motives and needs of customers, the bank organizes placement of funds. Placement of funds is done in support of marketing research results, because the relevant information is able to take optimal decisions, without the obvious risks.

#### Keywords

Bank, development, marketing, small and medium sized enterprises

## 1. Marketing Management in Banks and other institutions

Banks are financial institutions, which effectively mean the use for profit. Placing means prices of certain services is useful for development, namely ensuring the existence of companies concerned and for users of tools. Banks perform important activities, which are connected with numerous partners, individuals, institutions, enterprises. Bank business is dependent on the market situation. Market savers and market of consumers (and those who invest), are entirely separate financial markets. Marketing examines the motives and needs, which are in settings in saving drive, or for investment (consumption). Thanks to the results of such research activities is defined marketing program. Program on activities of marketing include the shares and how should be resolved the bank problems but also to bank customers. By identifying the motives and needs of customers, the bank organizes placement of funds. Placement of funds is done in support of marketing research results, because the relevant information is able to take optimal decisions, without the obvious risks. The role of marketing in banks is extended and focused in two ways: in its business and in particular bank in solving the problems of clients, in efficient and effective manner.

Concerning the realization of tendencies to expand sales of bank services, is applied the strategy of market segment, which achieves the homogeneity of the requirements of population groups. This way the elements of marketing mix combine, to be brought in the function of the respective directions.

Banking services represent the product, which constitutes the main element assortment. Services may be in the opposite direction to the work commitment that savers, depositors, but also in the opposite direction of credit allocation. Each type of service has its price.

For example, allowing loans with interest becomes certain, which are nothing other than the grant price of services that financial resources for certain period, which solve problems with different clients. The height of the price (interest rate) is related to the needs of users of credit, with their ability to return annuities, but also with the state of competition. If there is a large number of banking institutions, services are used where conditions are more favorable. Sales channels are present in the bank. In everyday life, customers are willing for banking facilities to be in appropriate locations, with a better position, which will respond to users of services.

Promotion activities are needed, because it enhances communications with the population about the types, quality and benefits and other services that bank offers, which lured to take decisions on cooperation with these institutions as well as it provides to the bank ,data from the market for existing customers and those potential.

Marketing in banks, as business concept and function, is the right direct of bank and the customer. It prefers to the bank market segments, which successfully and efficiently can provide tools and to the clients, optimal information of the bank's bid, so regarding to the earned knowledge, decisions about savings or taking loans will be brought more quickly and without ambiguities.

Of course, always referring to the fact when the assets are there, where conditions are more favorable, higher interest rates and ways of attracting more secure, while the area of taking credit are determined for the more available conditions, with longer terms for return and with low interest. Therefore, it is created link between bank and customer, while cooperation remains loyal while the bank's services or offer as the whole is at the appropriate level. If an ordinary customer is valuable, then how much can a bank invest in continuing to keep existing customers and benefits of new customers?

Cost of new efforts can always be justified, and remember, if you lose a customer, you will give your competitor a reward - of income from life-long customer!

Today, the way how the bank offers its products and services is as equally important as its products and services. Competition of products and services are not very different from each other so that customer's orientation will be toward a bank based on services that it offers. The survey of 200 Small and Medium Enterprises to develop different activities in Kosovo, we see that 63 of them in absolute numbers or 31.50% have started their own businesses through credit by lending banks.

How did you startthe Business		Number of Enterprises	%		
With self finance		137	61.50		
With self finance and the Bank		63	31.50		
Τ	otal	200	100.00		
Sources:Data from surveyof Center fordevelopment and economic prognosis of University AAB/ Decemebr.2009					

#### Table 1 Way of beginning to work to SMEs

#### Table 2 Preferences enterprises to Banks

You are a client of which Bank?	Number of Enterprises
Pro Credit Bank	47
Raiffaisen bank	37
NLB	14
BPB	9
Commercial Bank(B.Ekonomike)	3
TEB	10

Sources:Data from surveyof Center fordevelopment and economic prognosis of University AAB/ Decemebr,2009

From the table, presented in absolute numbers we see that the great credibility have with ProCredit Bank, Raiffesen Bank, NLB, TEB, BPB and finally Commercial Bank. Verification of their needs enables the formation, amendment and modification assortment of services. Assortment of bank services includes types of services that provide a certain bank. The dimensions of the bank assortment are dependent on the size, potential and professional framework found in these institutions.

Banking institutions in decisions of market savings or consumption, conduct policy of collecting and placement of funds. Program services fit their existing and potential clients. The total number of enterprises starting 63 who started their business with the help of banks, note that a considerable number of companies are clients of two or more banks.

From, the following tables we see what services use Small and Medium Enterprise's and we also see that interest for loans and credit card is 41%.

	Number of	
Which services you use from the bank	Enterprises	%
Electronic	22	11.00
Loans and Credit cards	82	41.00
Transaksions	60	30.00
All	36	18.00
Total	200	100.00
Sources:Data from surveyof Center fordevelopme University AAB/ Decen	ent and economic progn nebr,2009	osis of

#### Table 3 Type of services that use SMEs

Table no. 3. We see electronic services (transfers, control of the company account, cash withdrawal etc) with 11% of SMEs that uses this service. Credit and bank card services 41%, banking and similar transactions with over 30%, and other services 18%t is worth to mention that until the beginning of January 2009, there has been any law or regulation that enterprises transactions necessarily be performed by banks. In March 2009, was approved by the Kosovo Assembly, the law that all companies are obliged to transactions on the amount of 500.00 Euro, necessarily be made through banks. Before the customers choose a bank or a business, they know in advance if they trust and like that bank, can judge upon the look and what impression they leave and how much responsible they feel.

What is most important, they may have seen how the banks have treated other customers. Often consumers can judge based on the quality of service offered which should always be characterized with confidence and show attention to their needs. Satisfied customers become ambassadors of the bank by recommending the bank to their families and friends

and being faithful to that referred Bank. Spontaneous recommendations which are suggested by consumers are the most credible promotions that sometimes you may have.

During the researches made, on how SMEs notified about bank services, we noted that 120 of 200 respondents say of them through brochures, other 40 from TV, 32 meetings with representatives of banks and 8 of them from the internet.

How you are notified with the new Bank	Number of	
services?	Enterprises	%
Brochures	120	60.00
TV	40	20.00
Internet	8	4.00
Meetings	32	16.00
Total	200	100.00

Sources:Data from surveyof Center fordevelopment and economic prognosis of University AAB/ Decemebr,2009

From this table we see that 60% of them during meetings or carrying out other works also, or even primarily for the performance expectations of any other work, or we get attention from brochures that are placed before the counters or leaflets. Numerous ads that appear on TV are another form of banking services and information which constitutes more than 20%. Each bank has personnel information that make direct meetings with the concerned persons and SMEs have the reach for 16% of them, and only 4% of them informed by the internet, although methods is more rapid and economical.

Rather, dissatisfied customers want tell to the banks or other financial institutions but show their dislike to their families and friends, they even repair the little event that could right after become a real drama and a terrible event, which can further on draw attention to media, which creates a negative attitude toward Banks.

In terms of bank, providing good customer service has great significance for many reasons:

- Reputation-a good strong reputation is a very important factor for keeping customers and attracting new customers and investors. This is so essential for the credibility and integrity in all types of business transactions.
- A productive working environment without high stress-services to customer's i.e. To make happier customers, team member's happier and less conflict in the workplace.
- Cost-effectiveness if banks achieve to make customers happy the first time, the bank will spend less money by dealing with customer complaints, and correct mistakes and eventually repair the damage caused to its reputation.
- Profitability provision of appropriate banking services to customers from the coil to drop in price competition because it is proven that people will pay slightly more for better services.

Staff should try to see clients in the longer term and not just as a customer who comes to torment and disturb working staff. Clients normally do not change the bank unless the service is bad or if they have a difficult experience or bad. It is well known that is five times more expensive to withdraw a new customer than to keep this current. New customers are attracted to the use of expensive activities such as advertising and marketing brochures.

The key message is that bank staff does not know much about which clients will be clients for life and which will use the bank only for a short time. In order to that staff should treat all customers as if they were clients of life and perhaps they will become life-long clients. Following are the benefits of bank customer's life:

• They stay near the bank for 10/20 years

- They show other potential clients for good service to customers in the bank.
- They are satisfied with products and services offered by banks.
- They have good personal relations with the Bank.

Complications during the loss of clients are many and they do not only lose their own client but will lose three more people who will have the recommendations from the client. The main priority is to never lose a client. Customers of the bank or a company can be divided into three groups.

- The least satisfied leave and not return. They complain and others tell.
- The satisfaction not even notice
- Fans They return and tell others as well and thank staff.

# 2. Conslusion

From all this analyses we can come to a conclusion that unsatisfied customers are clients who really are concerned with the service provided by banks. They are customers who go and not be returned. Some will complain, but research has shown that only 1 in 20 will actually complain to the bank. Complaints should be taken seriously.

Thus, a complaint may be meaning that 19 other customers have had the same bad service but are not complaining. Unsatisfied customers will also tell their family and friends. American research shows that unsatisfied customer will be showing to the other eleven people. Not satisfied customers perceive the service. They take for granted the work that will take it for what they paid. If you ask for their bank, they can respond, "It was OK", but such a client is not enough because we want him to return and also to show other people, family or society.

Concerning the fan customers, the bank would like to have many clients' admirers because these individuals:

- 1. IU also tells to the other people perhaps 7 or 10 people.
- 2. Returning repeat business is very possible.
- 3. Buy more also use of other banking services.
- 4. Thanking the staff they show their appreciation that makes work with clients even more enjoyable

In order to satisfy clients, staff should behave towards them so that customers will notice the difference and be like. Most banks are the same (products, services, location, payments, etc) Bank should give an effort to be noticed by the client by showing itself as better and different than other banks, on the contrary, the clients rather chose the other bank.

Some important statistics regarding the issue of why customers leave a bank or a company are:

- 1% due to death
- 3% because they buy from friends / people who know
- 5% due to retirement or displacement to live in a different location
- 9% prefer competition
- 14% are not satisfied with services
- 68% because of the way of treatment by staff!

From this researches we can conclude that the relationship between banks and clients will improve if the bank will offer better setrvices, improve effectiveness in quick and amicable resolve of problems or complaints of the clients. Otherwise, the cost will be very high for the

bank if the complaints remain unresolved. Customers will hear more on this, they can run off to the other bank and the price for the improvement of the appeal will be higher over time.

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# The Impact of Organizational Changes in Public Sector on the Regional Development of Vojvodina : Tolerance of Employees to Changes

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To meet the challenges of a global economy and the increasing public demand for the smaller but more responsive public administration, public sector organizations in Serbia have been required to transform. This transformation has been greater than any shift experienced in the private sector since it was starting from a traditional bureaucratic base, where services were provided based on a social values and equity. Public sector changes may not be always more difficult than those in private, but they are certainly different as doing what is "right" in public sector is a matter of responding to conflicts and negotiating with various interests much more, than it is the private sector case.

The purpose of this paper is to scrutinize the role and importance of public sector for the regional economic and social development of Vojvodina as well as to analyze changes in public sector organizations which may improve sustainable regional development. This analysis is supported by a pilot research, aiming to examine tolerance to changes of employees in the public sector of Vojvodina. The results reveal various change principles suitable for the public organizations in Vojvodina thus indicating on an appropriate change strategy, which may contribute to the regional development.

#### Keywords

Employees, Organizational change, Public sector, Regional development, Vojvodina

#### 1. Introduction

By the end of 20th century, governments from the countries all over the World have been faced with an emerging problem of too large and inefficient public sectors [1]. In the time of global economic crisis, those problems has become even more evident. Thus, rigorous reforms of the public sector and creating of new foundation for government administration is becoming the imperative and one of the main tasks for many governments. Effectiveness and productivity, measurable results, focus on citizens, decentralization and divergence of

creating process from politics implementation are required in public sector. The new public management is increased from those changes, as an equal partner to a private sector and civil society. Public administration regulated by these pripciples represents support to reform and improvement of society, and it is not account-keeping expense, financed by tax-payers.

The *New Public Management (NPM)* is the common name for a series of reforms in public sector, beeing implementing in the greater part of OECD countries, as well as in developing and transitional countries, for the last twenty years. The essence of NPM is substitution of hierarchy-bureaucracy models of public services, performance orientated administration, that exists in quasi market conditions, improving competitiveness among suppliers and services financed by the State [2].

The main idea of NPM implementation is innovations improving and public administration employees' effectiveness, especially those on the higher level of management. NPM principles are aimed at changing the public sector in three areas [3]. The first is a change from hierarchical to economically-based structures. The second change encloses business processes and implicit change from regulative to economically-based processes. The third change is considering values and encloses change from legally based to economically based values.

Seven basic principles of NPM are [2]:

- 1. Practical and profesional management
- 2. Explicit standards and measures of business performance
- 3. Greater emphasis on output control
- 4. Disaggregation of units in the public sector
- 5. Greater competition in the public sector
- 6. Private sector styles of management practice
- 7. Higher level of discipline and more economic resource using.

Considering that main characteristics of NPM model are: focus on outputs and value added creation, authority reduction, flexibility increasing, greater responsibility and control, client and service orientation, greater capacity for strategy formulation, introduction of competition and other market relevant elements, outcomes of the shift to NPM have been argued to be increased accountability, greater transparency and improved efficiency [4].

# 2. Importance of the public sector reform for competitiveness and regional development of Vojvodina

Considering the regional development of Vojvodina, the infallible factor is, by all means, competitiveness of Vojvodina as a region. Competitiveness is important element in any today's development strategy. Competitiveness can not be inherited today, but it has to be created. Access to production factors is not important any more, as is much more important the way we use them and improve their values.

Regardless the fact that aggregate EU competitiveness index is lower due to the accession of new, mostly densely populated and underdeveloped members, Vojvodina and Serbia behindhand is higher than it used to be a few years ago. Following the screening, conducted in 2006, Vojvodina had index 59,42 lagging behind the European average of 43,6 percents [5, p.5]. The results from 2009 are much more unfavorable, because the index of the Province dropped to the 22 point, which makes only 21.4 percents of the European average [5, p.5]. According to the latest data published for 2006, Vojvodina, takes 103rd position on the list of 118 European regions measured by competitiveness of its economy [5, p.27]. Following all important indicators, which make the basis for measuring of the level of development in four main areas: economy, infrastructure, education and creativity, Vojvodina is far below the European average [5, p.27]. Perceiving the fact that according to the latest Report on competitiveness for 2009/2010, Serbia has deteriorated its position and it now

takes 93<sup>rd</sup> place among 133 countries [5, p.27], we come to the conclusion that Vojvodina also would deteriorate its position on the list of competitiveness of European regions. It is possible that new measuring of competitiveness rate will show the same.

Unreformed public sector is, by all means, one of the brakes for regional development of Vojvodina. An attitude that public sector should accomplish only managing function, is constantly prevailing, particularly it is related to a Executive Council of Vojvodina and local authority. Meanwhile, for the stronger competitiveness and regional development, it is necessary to create public sector that will, besides accomplishing legal, statute and other administrative authorities, be the potential generator of development and the starter of public opinion creation. Without public opinion it is not possible to change the society in Vojvodina. Starting assumption without which there is not any further development is the public sector reform, and it should be complex, complete and systematically bonded. That kind of reform means, at least, three basic targets: discharging of public expenditure and budget, establishing of sustainable social functions of the Province and raising public sector efficiency through privatization of infrastructure activities, i.e. public and utility companies as well as city building land.

The bigger part of the strategies and measures within the Integrated Regional Development Plan of AP Vojvodina includes public sector [6,7,8]. For the purpose of advancement the scope for regional economy development it has been defined the founding strategy of corresponding communication net and electronic services in the different sectors of business, administration, management, education and culture in Vojvodina. Within the project E-Vojvodina, which refers to Information society, it has been defined creating of provincial E-government, which includes customer service automation in provincial administration.

The Integrated Regional Development Plan of AP Vojvodina depends largely on public sector efficiency and economical behavior [6,7,8]. That is why public sector reform seems to be the crucial component for competitiveness of regional economy and regional development.

# 3. Changes of employees' behavior

Implementation of changes in the organization can be seen from the position of the basic targets of organizational changes related to the adaptation of the organization to changes in the environment, changes in organizational behavior of employees and changes in the managing function.

It is not possible to observe mentioned types of change isolated one from another, because it is fact that they do not happen isolated one from another. We can discuss about reasons for changes, considering mentioned aspects, or related levels how change is more related to the determined aspect.

Employees behavior in the organization is closely related to the function of organizational culture, that represent the basic convictions, belief and values of employees in that organization. One of the significant aspects of employee behavior is tolerance to change and the general attitude toward change. Organizational culture, if it is well placed, and desirable behavior of employees can determine the way of thinking that contributes to tolerance to change.

The process of thinking, which determines an attitude to changes, is based on the three types of convictions [9, p.58]:

- descriptive convictions, representing belief in accuracy and inaccuracy of the observed information,
- evaluation convictions, representing personal experiences and interpretation of what is good and what is bad,

• convictions that represent expectations and interpretation of what should happen and what should not happen.

Change tolerance is related to scope of values that determines the perception frame. Furthermore, perception conditions attitudes and opinions about some subject or problem. The tolerance to changes is related to the degree of acceptance of new situations, people and problems, and it can be seen through the relationship of employees to changes, flexibility, respect of diversity, lack of the emotional reactions in the process of change implementation, realistic assessment of the problem and new situations.

# 4. Research

The problem how employees are related to changes is based in many political and social breaks, that all did not contributed to create tolerance to changes, and did not contribute to develop tolerance of the employees to accept new things, the level of complex situation tolerance, all this in the light of readiness to behave in the situations when complex problems should be solved.

The transformation process in public sector means many changes related to employees, manifested through their behavior in organization. Considering the situation in Serbia, where transition process has been going on for some time, and the cost of change is, as far as human resources, higher and less predictable, it is necessary to identify problems related to the process of transformation, especially from the personal aspect, in order to prevent and reduce costs and effects, that are increasingly observed through behavior, health and work ethics of employees.

### 4.1 Research hypothess

The research hypotheses are based on the following assumptions:

H1 - there is law employees' tolerance on changes in the observed organizations,

H2 - there are differencies among the organizatons concerning tolerance on changes,

H3 - there are differences of employees' change tolerance, concerning their general demographic characteristics.

### 4.2 Research methodology

The survey is based on the instrument of Marusic [10], Tolerance to changes, which consists of the tree dimensions of tolerance to changes: Acceptance of the new thing, The tolerance to complex situation and Solving a hard to solve problem. This instrument is supplemented with the questions related to general demographic characteristics of the participants.

The data, collected by questionnaire, are processed by statistic methods of descriptive and multivariant methods, as well as correlation draft, ANOVA, regression analysis was used too.

### 4.3 Sample

The pilot research was based on a the survey that included 99 employees in the 6 public sector organizations in Vojvodina, selected by the suitable choice from the following organizations: 25,3 % from JP Informatika (Novi Sad), 30,3 % JKP Cistoca (Novi Sad), 9,1 % JKP Lisje (Novi Sad), 11,1% Provincial Secretariats (Novi Sad), 18,2 % JP Standard (Backa Palanka), 6,1 % USC Ruma (Ruma). Among 99 examinees, 57% was male and 42% female.

Examinees were in the different age. 16,2% of examinees were aged 20 - 30, 38,4% were aged 30 - 40, 23,2% were aged 40 - 50, and 22,2% were over 50 years old.

The majority of examinees had a faculty degree (57,6%), then came employees with a high school education (35,4%). The percent of examinees with primary school qualification was considerably smaller (4%), as well as the percent of participants with college degree (3%). Working experience indicate the employees profile: 48,5% participants have up to 5 years of working experience, 20,2% are employees having 5-10 years of working experience, 7,1% are employees from 15-20 years of working experience, 6,1% are from 20-25, and 8,1 are over the 25 years of working experience.

#### 4.4 Research findings and discussion

Results indicate to average and law average scores of tolerance to change in all the tested organizations. The highest score of arithmetic mean clearly reflects that majority of attitudes related to the tolerance to change is: "We rather accept what we are used to, than what we are not familiar with."

In the company JP Informatika there is the highest level of tolerance to changes, and the lowest is in the company JP Standard from Backa Palanka. The existing differences related to tolerance changes are not statistically significant, exept in two things: the first is related to attitude that solving small and simple problems gives better results for the long term period, than solving big and hardly solvable problems, and the attitude related to preferring the society where most of people are known, than society where most of people are not known. As can be seen in the Table 1, the lowest scores are related to tolerance to changes, concerning solving of hardly solvable problems.

Company		Acceptance of new things	Complex situation tolerance	Solving hardly solvable problems
JP Standard	Mean	3,5833	4,0764	3,8704
	Std. Deviation	1,06066	,85227	1,12103
JP Informatika	Mean	4,3100	4,3450	4,0000
	Std. Deviation	,93619	,81432	1,09713
JKP Cistoca	Mean	4,1250	4,0042	3,8889
	Std. Deviation	1,48810	,92934	1,39878
JKP Lisje	Mean	3,8611	4,3056	3,5926
	Std. Deviation	,39747	,57660	,86245
Provincial	Mean	4,1364	4,1932	3,6667
Secretariats	Std. Deviation	1,02081	1,11294	1,02198
USC Ruma	Mean	3,7917	3,8958	4,5556
	Std. Deviation	,71443	,95334	1,32777
Total	Mean	4,0303	4,1452	3,9024
	Std. Deviation	1,13010	,87604	1,18020

Table 1 Report

Statistically significant is only one coherence of school qualification to the attitude to work, and it is "a good work is the one where is always clear what should be done and how."

There are no statistically significant differences among examinees related to general demographics characteristics. Therefore, there are no differences in tolerance to changes of

the emploeeys if sex, age and working experience is concerned, but in a relation to the school qualification, it is established the existance of significant differences, especially related to aspect of tolerance to changes when hardly solvable problem should be solved (Table 2).

	Sum of Squares	df	Mean Square	F	Sig.
Acceptance of the new	,493	3	,164	,125	,945
things * Qualification	124,666	95	1,312		
	125,159	98			
Tolerance to complexity of	,837	3	,279	,356	,785
situation * Qualification	74,373	95	,783		
	75,210	98			
Solving hardly solvable	11,554	3	3,851	2,928	,038
problems * Qualification	124,946	95	1,315		
	136,501	98			

Table 2 ANOVA

Tolerance to the changes still does mean an active attitude to the changes, and also does not mean readiness to changes. But, it represents the first neccesary step in the way of thinking and behavior, without which is impossible to implement changes and create an atmosphere in which the change is viewed as a new opportunity.

# 5. Conclusion

Public sector modernisation is much more than efforts to make effecient public sector. It also includes the responsibility of the state or region to the people. In the case of public sector, people can not be fully treated as consumers in private sector, but as citizens having right to demand government accountability for what was done or what has failed to be done. Citizens certainly want an effecient public sector, but they also need their rights to be protected and values and needs to be respected. Therefore, the issues of control and response to the needs of citizens should be at least equally treated as issues like economical and effecient public sector. Tolerance to changes can not be developed in the conditions where the negative experience of implementing change as well as the fear of the changes are dominating. Changes in the public sector require a clear definition of public sector developing directions, communicating the vision of change to the employees, which increases the tolerance to change and commitment to the adopted concept of change. In establishing the goals of changes in the public sector, there are only two relevant questions: what the public sector we really need and what is in the public sector what can really be changed? Both responses involve recognition of political, economic, human and social reality.

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# Work Time Structure Measuring – The Means for Making Decision and Processes Management

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Work and non work/ losses areas and its belonging times do Work time structure *WTS*, with basic unit one work day or one work shift for its establishing and analysis. Every structure of work time for physical and/ or mental work can be, most often, established by means of famous methods *FWD* (Figure Work Day) and *RDS*/ *WSM* (Ratio Delay study/ Work sampling method). By knowing possibilities, aims and results, more rational making decision and processes management is assured to experts. In introduction, the application is performed on examples from aeronautical industry.

#### **Keywords**

Work time structure WTS, WTS measuring, making decision, processes management, aircraft industry

#### 1. Introduction

Basic processes of belonging systems are: technological, productive and business. Activities of work and non work/ losses in aforementioned processes can be classified by analytical procedures according to three criteria: on hierarchical levels of composed parts, on composed elements of process and operations, and on manual, machine and machine-manual work on basis structure of work subject. For all work elements, it is possible to associate corresponding time, which can be established by measuring, determining and designing approaches and corresponding methods, techniques and procedures. Work and non work/ loses activities and its belonging times form Work time structure *WTS*, with basic unit of one work day or one work shift of its establishing and analysis. Every structure of work time for physical and/or mental work can be, most often, established by means of famous methods, *FWD* (Figure work day) and *RDS/ WSM* (Ratio Delay study/ Work sampling method), By knowing possibilities, aims and results, more rational making decision and processes management is assured to experts. Previously exhibited hypotheses from the introduction are applied on examples from aeronautical industry.

# 2. Work time structure

#### 2.1. Basic characteristics: definition, aim, purpose and tasks

Although beside the rough review of literature from Work study area, especially its part Time study (Norming, Time determining and design) and Work time structure *WTS* topics/ themes, it is possible to establish existence of determined perimeter of the Work time structure characteristics, while there are not always known answers in a sufficient measure for some basic characteristics. Because of limited space, the abstract exhibits just the main characteristics.

The Definition of the notion *WTS* frequently isn't even given, or isn't given explicitly, but is, frequently, expressed implicitly, by means of two groups of work time/day characteristics, and those are: the content of some theoretical characteristics (aim, purpose and conditions of application, affecting factors on elements and structure characteristics, etc.) and the dominant quotations of method existence and application techniques (*FWD* and *RSD*/*WSM*).

About the previous starting definitions witness also the works of some of the most familiar researchers of the Work study area, of which, for instance, one has been shown: "During work (shift), the workers spend the time on different jobs, on the break, on the delays that appear for different causes, etc. Research of the *WTS* is a necessity, because of different purposes, of which the most important are shown here. For the previous purposes to be realized, all forms of spendings have to be classified according to the same-typed groups (categories), in harmony with the same objective characteristics, to systematize them and then also analyse it", [1].

Beyond starting the previous definition of WTS, given in [2], but in accordance with the necessary basic characteristics in definition content, his own suggested definition was given, with the following form and content: "The WTS represents the belonging individual kind, subkind or the type, or their combination, structure projecting with established permanent or changeable work time (static part of the structure), which is expressed in a time or percentile amount, for the chosen (non)activity of the worker and/ or the equipment, expressed by means of the corresponding components ratio of the physical and mental/mind acting in the prevalent material modification and/ or in the prevalent information/ administration modification, along with adequate individual form, or their combination, the usage (elements of technology, dynamics, etc.) of the available equipment capacity and/ or time worker fund for the belonging type of projecting structure (dynamic part of the structure) in the conditions of the existence of watched systems and processes without significant deviations, and all because of the accomplishment of the proposed aims and purposes. The results of the individual and/ or interactive influences of the mentioned factors are expressed for periods of the basic calender or business/ work terminal unit. Measuring unit is one working shift and/ or one work day, where the sum of average components proportion of structure amount to 100%, and the sum of time amounts are duration time of work shift and/ or work day. Situation of more work shifts in one work day is solved theoretically and practically in more different ways and different than situation with one shift as a starting and basic measure to more, most often four, shifts and different alternative forms, taking into consideration the mathematical-statistical, physiological, sociological, psychological, economic and other requested and realized hypothesis and conditions, [3].

Aims and purpose, applying possibilities relatively, Work time structure WTS, really, represent reasons of needed for WTS aplication, application areas relatively, and this ones would be numbered ten at least.

The kinds, subtypes and types of WTS, toward [4, 5, 6, 7, 8] and according to the different characteristic it can assimilate, *WTS* can be classified in the following ways:

- classical form *cWTS* (number of shifts in one working day: one, two, three, four),

- alternative form aWTS (the typical structure and named tWTS, the notion of flexible work time and named sWTS and also work at home structure and named hWTS).

#### 2.2. Basic elements of WTS

Every solution and system and process model changing of work subject in product is possible, in the first level and toward one explicite criteria, to show for: the complementary pairs of chosen structure level the belonging measure of system and process and measured parameter, by example in level of layers Work W and Nonwork/ Losses NW/L, components of total work time structure and production cycle, expressed in percent % for p and q and in measuring time units MTU:

work W+ non work NW/ losses L= total changing of work subject in product (1).

along with the condition

$$p\% + q\% = 100 \%$$
, or  $p + q = 1,00$  (2).

Single areas of Science have their own views on work, and one such with complementary pairs of ideas, and which is not finished, is shown in [9]. Basic deal is on kinds of work from the view of work subject. The first kind, as a concequence of historical justified reaction, consist subkinds of work aims and tasks, conditions and work design, with total of 20 pairs. The second kind, which necessarily takes into account the consequences of work, consists of subkinds view, education, request of work and organization, total 18 pairs.

For research, there are three models with complex or integrated views or criterias that are chosen, and because of limited span of the paper for it, only an introduction to models with criteria structure and some features is exhibited.

Models and its characteristics

# Model 1: Classification of process according to hierarchical and horizontal correlation of components of work and losses, [10]

Hierarchical and horizontal correlation of single process and its components can be shown by the following basic relations:

technological process= (technological) operations + (between-operational) work

production process= technological process+ control+ transport+

business process= production process+ rest of djelatnosti/ function+ delays (k) (6).

Model 2: Classification of (work and nonwork, along with the belonging) process times and their components,[11]

While this model was being created, following individual criteria were used:

- (not) practicing of production: the division on productive time - nonproductive time,

- active operation in the morphing of the work object from raw material into the finished form of the product, or rather the process of direct creation of the new usage value: division on technological time – nontechnological times-between operations time.

By the shaping of the previously integrated individual criteria, following the classification, process time and their components (work and nonwork, along with the belonging) were determined, or rather the vertical or hierarchy like connection of stated entities, with the

belonging characteristics:

productive time: technological time, non-technological times: times, between operational time;
 non-productive times (still time)

a) *ready time:* material stock time, drive stock time, finished products stock time, time for overhead jobs/jobs in accord: drive production, in the workshop, offices outside of the production spaces, the time of the management production, special part are the product development works, tightly connected to the production, but aren't the production and are connected into the production works and time, during the production works/time, the jobs of various functions happen as a support to the production and those are: administrative (commercial, financial, legal, etc.), and technical (product development and the production, work preparation, production organization, etc.);

b) still time: waiting time, still time in the shift, still time outside the shift,

Model 3: The Classification according to the criteria composed elements work and non work belonging times of operation and processes, [12, 13]

Component elements of the structure of every work and non work, along with the belonging time, are:

1) preliminary – finishing work  $\mathbf{R}_{PF}$ , with the belonging preliminary – finishing time  $\mathbf{t}_{PF}$ ,

2) technological work  $R_t$ , with the belonging technological time  $t_t$ ,

3) subsidiary (auxiliary) work  $\mathbf{R}_{a}$ , with the belonging subsidiary time  $\mathbf{t}_{a}$ ,

4) additional "work" (technological, productive, organizational and other losses, along with the worker's rest) "R"<sub>a</sub>, with the belonging additional time  $t_a$ .

Basic relations, that connect the cited component elements are:

$$t_i = t_t + t_t \tag{7},$$

$$t_{l} = (t_{t} + t_{s}) + t_{a} = t_{l} + t_{a} = t_{l} * (1 + K_{d})$$
(8)

$$t_{N, RD} = t_{Df} + Z_N * t_I$$

where are, with the already known component time elements:

t<sub>i</sub> - execution time,

 $t_l$  - time norm or unit time (product, operation, worker),

K<sub>d</sub> – complementary coefficient of the additional work,

 $t_{N,WO}$  – time for the (work) order, or rather, the work day or work shift,

 $Z_N$  – series size, or rather unit number in the series.

# 2.3. Methods, techniques and procedures of measuring : theoretical hypothesis [12, 13]

#### 2.3.1. Method WDF

Definition: **WDF** is a method of duration time measuring of individual activities in order they appear during the entire shift.

Technology: Work place and/ or worker do individual activities, and time analyst, who spends his entire shift beside mentioned entities, follows, notes down and measures the duration time of the entities by means of a chronometer/ stopwatch, a watch or some similar instrument for time measuring, using the flux method without the performance rating, and writes the results down into the measuring list.

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#### 2.3.2. Method RDS/ WSM

Definition: *RDS/WSM* is a method of mathematical-statistical overseeing of the phenomena by means of their frequency, which is based on the sampling theory by counting from the two-layered discontinued groups, for which the random variable can receive only integer values.

Mathematical-statistical basis: The result of the phenomena overseeing, mathematically defined, belongs to the discontinued random variable, whose belonging integer values do discontinued series of numbers. A typical representative of the discontinued distribution is the binomial distribution.

# 2.4. Possible areas and results of WTS application - backgrounds for making decision and processes management

Aims and purpose of applying for *WTS*, really, represent reasons for need of its application, application areas relatively. The most important of previously mentioned, without tendency of exhibition for its explanation according to importance degree, knowing which are fitting together with adequate results of *WTS* of cited ones, are:

1) impact/ influence of structure and belonging elements on business success

One such element are time losses in work. This parameter is in correlation with facts, that the most influencing factor on growing of production and productivity are not equipped with machines, instruments and other equipment, new investment and new machines will be used to apply "existing bad organization" relatively, non rational work method relatively, by whose existent losses will multiply, but these are ways of equipment using, behaviour of men and in firm and its including in problems solving, and that means influencing factors degree of technological development and new work method application, "better work organization" (more rational work method) and diminishing of all losses, optimal use of work time.

Although losses are necessary phenomena in every work, only that is the question of its structure and amount. Taking of diminishing action request, at first, establishing of existing status (percent of work and losses), and then its quantifying, besides of activities classifying structure, on justified (aforementioned ones can be, and have to be planned and acknowledged in norm) unjustified (that ones dont have to be planned and acknowledged in norm, even thought they exist),

2) impact of higher prioritized parts of structure on business success

It is not unimportant which part of structure is to be chosen for analysis and rationalization, because the parts of this structure have different impacts on business success.

The impact of losses establishing and analyzing of its causes is more important than the impact of work establishing, and that means it is possible to reach some effects by its rationalization, but more often, more important and greater effects can be realized by rationalization of losses. More precisely, it is not necessary to rationalize exclusively work elements (preliminary-finishing work/ time, technological work/time, auxiliary work/time) as long as in the existing work method (in new work method it can be, or it is, necessary and justification because of new equipment, new technology and etc.) exists reasonable possibility of acting on losses rationalization.

3) impact of the chosen part of the structure on appearance of adequate investment amount.

The analogous starting hypothesis about an independent variable is valid here (part of structure), expressed in starting position of previous 2), with difference that dependent variable is a result of an adequate amount investment.

By rationalization of losses, it is possibly easier to reach the greater degree of realizing some of work study purpose (work humanization, diminishing of fatigue and growing of security, as well as diminishing expenses and growing of production, along with *negligible investment* or

*even without ones,* but work rationalization which often requests change of technology, and by doing so, provokes appearing of investment in determined amount.

4) impact of using capacity and fund of work time structure on employment, inflation and some of the other business parameters.

Once, when the full employment is reached and factories produce near *maximum* of *capacity*, every added growing of spending can influence on growing price on basis of more growth (progressive) rate. The reason is simply in the fact that the balance of supply and consumption is disturbed";

5) importance of structure in work study tasks

Time study (determining, measuring and design) is a part of Work Study area. The second task in order consists of analysis of losses in work and its rationalization, and it can be considered a necessary reason for direct analysis of structure.

Solely by analyzing and rationalizing of losses, the degree of work possibilities is established, and then that would be growing of production and productivity, but filling the others aims and purpose of work study;

6) impact on finding of priority causes of losses in work:

Even when the structure and amount of losses are established, aim is not realized. It is needed, even desirable, to establish priority cause and causes of losses and find inside the production or business system the sub systems, which are the greatest "producers" of losses and which should get the most attention in the future;

7) influence on uncovering reserves of capacity and/ or time fund,

Even when structure of losses is established, aim is not realized. It is needed, even desirable, from established structure and amount of losses to conclude uncovering of needed and not needed times, just like the uncovering of existing reserves, savings, beside establishing of the work time usage, and the purpose of possible growing effectivness of production or business system, etc.;

8) expressing of realized production by adequate indicators, (14, M.Klarin, 1984.)

All activites in the firm management can be expressed by the realized production, where it is necessary to take in consideration the natural and financial indicators, and mention that it is possible to express in quantitative mode by measure of "degree of using capacity and degree of using time fund", what is not always possible across economical indicators and applying of the analitical method of weighting for production factory and losses, whose ways give only general figures about the level of the organized firm;

9) design of backgrounds of comparison for different structures

One of the most important purposes, practical use of knowing hypothesis about structure relatively, is watched in the following facts, (15): "Problem of partial establishing of work time structure is watched in a series of realized researches. Such approach has a consequence, beside some of the others, impossibility of objective comparison for different work day structure between firms, and toward (1), belonging branches and areas of activities by different parameters. In this way, it declines a possibility of finding adequate legalities of establishing of the work day structure and its applicability in industry and more wider, in society. Mentioned problem is watching in (12): "When such capacity measuring would be organized in a single expert Unions' and compare single similar firms, it would be given very useful data about real use of single machines, departments especially. By analysing the aggregated data and establishing of firms with the best use of capacity, simultaneously with the least losses, it would be performed in such a way that the rest of firms can find themselves inside those limits. On conferences, which will be organized by unions, it would be possible to reach between interested firms agreement about transferring experience of better firms, the ones with less percent of losses, and vice versa. This way, much faster growing of productivity would could happen (time saving, and growing of production and productivity), and in this way, this union would assure help to more of weaker firms"; Proceedings of

10) importance and position of work time structure in system and processes of work study Both in theory and in practice, it is possible to confirm it with quality and careful design, along with planning, preparing, performing, aims and purposes of determining of time standard of chosen operations, products and work time structure as well as, at the end, to exhibit time standards of single and independent activities, and simultaneously, these are time standards of successive elements, dependent on each other in the observed work time structure.

#### 2.5. Application of measuring WTS in aircraft industry

On basis of backgrounds from [16], application of measuring WTS is shown in the introductions for research in the chosen firm for general repairing and servicing of aeroplanes and helicopters and the belonging radio, electronic and communicating equipment. In Service for production, department of machine tooling, a research by one machine and operation (lathing and milling) in manufacturing of reserved parts for general repairing and service of flying objects is chosen, where measuring of *WTS* only for method *FWD* is performed, of total two applying methods, in duration some greater of three days/ shifts for every of total two references, [17, 18].

For illustration, in Table 1., only the chosen partial results of measuring from both of references only by method FWD are shown, which represents to authors of references a detailed background for analysis, for making decisions and measure for cited process and operations management, and analogous to that, for previously mentioned, but for the whole research area too, simultaneously experts in the firm and wider can also use the results.

	[17]			[18]
Groups of activities	t,min	x,%	t,min	у,%
Work W	913	66,2	891	65,5
Planned losses LP	253	18,3	293	21,6
Unplanned losses LU	214	15,5	176	12,9
Total	1380	100,0	1360	100,0

**TABLE 1** Groups of activities, %, method FWD in [19,20]

# 3. CONCLUSIONS

Activities of work and non work/ losses in aforementioned processes is possible by analytical procedures to share according to three criteria: on hierarchical levels of composed parts, on composed elements of process and operation, and on manual, machine and machine-manual work, according to the structure of the work subject. Corresponding times can be associated with all work elements, which can be established by measuring, determining and projecting approaches and corresponding times form the Work time structure *WTS*, with its basic established unit of one work day or one work shift. Every structure of work time for physical and/ or mental work can be, most often, established by means of famous methods *FWD* (Figure Work Day) and *RDS/ WSM* (Ratio Delay study/ Work sampling method). Knowing possibilities, aims and results, more rational making decision and production management is ensured to experts (designer, planner, technologist, chief of manufacturing and etc.)

Previously exhibited hypotheses from the introduction are applied on examples from aeronautical industry.
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# Key competences in new ventures: A model for evaluating

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This research studies from an internal view based on the Competency-Based Perspective (CBP), key organizational competencies developed for small new business. CBP is chosen in an attempt to explain the differences characterizing the closed companies from the consolidated ones. The main contribution of this paper is the definition of a set of key organizational competencies for new ventures from services and low technology based sectors. Using the classification proposed by [1] and a review of the entrepreneurship literature, the main competencies were defined and classified as: managerial, input-based, transformation-based, and output-based competencies. The proposed model for evaluating new ventures organizational competence is tested by means of Structural Equation Modelling (SEM) and a sample of 526 small firms created between 2003 and 2008 in Catalonia (Spain).

#### Keywords

Business consolidation, Business failure, Entrepreneurship, New ventures, organizational competences.

#### 1. Introduction

The competency approach has become an increasingly means of studying entrepreneurial characteristics and process [2]. However, in the entrepreneurship field, most of the studies focusing on competences analysis have concentrated on individual competences [3], [4], [5]. One of the main reasons is the strong identification of new ventures with their founders. At the beginning of business activity the entrepreneur has a decisive influence on the development of newly established company; even some researchers believe that new ventures are extensions of their founders [6], [7], [8], [9]. In this line, [2] identified some areas of entrepreneurial competences that are important for the entrepreneur and can influence new venture performance. As defined by [2] those areas are:

- Opportunity competencies: Related to recognizing and developing market opportunities.
- Relationship competencies: Communication and interpersonal skills.
- *Conceptual competencies*: Different conceptual abilities, e.g., decision skills, risk-taking, and innovativeness.
- Organizing competencies: Capabilities for organization of different internal and external resources (e. g. human, physical, financial and technological resources, including teambuilding, leading employees, training, and controlling).

- Strategic competencies: Setting, evaluating and implementing the strategies of the firm
- *Commitment competencies*: Competencies that drive the entrepreneur to move ahead with the business

However, from an organizational perspective, it is needed to take into consideration a set of organizational competences fostering a new company performance. Competency-Based Perspective (CBP) provides a useful theoretical framework to understand which organizational competences are important in first years of company life and to explain the survival of new ventures. These competences will be strongly influenced by the figure of the entrepreneur and its individual competences (as described above). CBP theory is focused on explaining how competences are created, developed and accumulated [1], [10].

In order to add knowledge to the entrepreneurship study field, we propose a model for measuring key organizational competences and we believe that these organizational competences will have a positive influence on the survival probability of these new companies. To validate the model of the organizational competences, the present study uses a sample of new ventures from Catalonia (Spain). The sample includes 526 new ventures from services and low-technology based sectors. In the following the theoretical framework and the methodology of the empirical study are presented. Then, the empirical study shows the obtained results. The paper concludes with some conclusions and some suggestions for future research.

# 2. Theoretical framework

Regarding an organization, competences are basically a set of routines, which form the organization's main system for storing knowledge and determine the regular patterns of behaviour (Turner and Crawford). As mentioned by [11], talking about competences is *"emphasizing what the company does as opposed to what the company has"*.

In the literature, the authors have developed different ways of categorizing competencies [12], [13]. This article follows the classification proposed by [1]. These authors suggest a classification of four main organizational competences that can influence the obtaining of competitive advantages in the company:

- *Input-based competences* comprise those resources, knowledge and skills that enable a firm's transformational process to create the product or service.
- *Managerial competences* include the unique capabilities of the organization's strategic leader to articulate the objectives of the organization.
- *Transformational competences* describe the organizational capabilities to convert inputs into outputs.
- Finally, *output based competences* include those competences that are developed over a period of time and are not freely tradeable, being sources of sustained competitive advantage, such us reputation or image, product or service quality or customer loyalty.

This classification is based on the premise that managerial competencies and strategic focus are responsible for attracting and generating specialized resources that are combined, transformed, and channelled to market goods and services enabling firms to attract and hold on to their customers [11].

#### 2.1. Key organizational competences in new ventures

Based on the proposal of [1], a review of the literature in the entrepreneurship field was used to identify some key organizational competencies regarding the survival and consolidation of new ventures (see Figure 1). Proceedings of International Conference for



Figure 1 Key competencies related with new venture survival/consolidation

#### Input based competencies

*Employee know-how.* Employee know-how, especially from people related with production and customer service enhance the productive capacity of the company, allowing resources and time of their human capital could be spent on activities that bring higher value for the company creating a basis for their competitive advantage [14].

Acquiring and maintaining firm's resources. At the time of forming a new business, not all entrepreneurs are able to build and use company's specific resources (especially those which are not part the company's central activity). The fact that the company is able to internalize the use of tools, equipment and technology support or account management will help significantly to the achievement of core business [15], [16].

#### Managerial competencies

*Enacting the market.* From the point of view of a new organization that began its activity, all the practices that enable customers better understanding have a decisive influence in the strategic decisions that the entrepreneur or entrepreneurial team has to take. That is, if the company has the ability to do market research and promotional activities will allow the company to have a competitive advantage over their competitors and leading better performance. In other words, market investigation, sensitivity to market needs and ability to spot suboptimal deployment of resources may help an entrepreneur to develop opportunities [17].

Deploying organizational objectives. As an organization strategic vision is socially constructed, the deployment of the organizational objectives in the first years of a firm operation is extremely desirable. The understanding of the organizational objectives by the entire new venture's staff, as well as the defined organizational architecture, become the platform to combining and mobilizing resources and focused the organization on the achievement of its strategic vision [18].

*Bargaining power.* As it is well recognized, for all organizations the relationship with its suppliers is crucial. In the case of new companies, this could be considered as one of the keys of their survival. A good coordination of their purchases of raw materials will not produce broken stocks, a fact that may adversely affect the initial image the company is shaping. In addition, good communication with suppliers and the capability of the company to gain some bargaining power will allow the company to reduce initial costs and to ensure quality and delivery times, vital aspects for a new organization [19].

#### Transformational competencies

*Process planning and flexibility.* The companies under study, generally, have little operational experience and, in most cases, operate using little immature and developed routines [20]. However, although we cannot talk about processes standardization in its entirety, the ability of the organization may have acquired in their first months of life to plan their production and servicing processes, as well as to provide the necessary resources in relation to its demand, could help streamline processes and could positively affect business performance.

#### Output based competencies

Developing firm's reputation. This competency is defined as the key one in the early years of a venture. It represents the ability of a new company of shaping a good reputation based on, for instance, meeting its customer's expectations, transmitting a quality image and having the flexibility to meet its customer's new expectations. In the early stage, having this competence will be crucial to the venture as the company's reputation begins to take shape. Due to their relatively brief production experience, limited track record, lack of resources, and the considerable uncertainty they face, new firms face a challenge in signalling the quality of their products to customers and other stakeholders [21], [22], [23].

#### 3. Methodology

#### 3.1. Objective

The main goal of this research is to identify the structural dimensions that constitute key organizational competences for new ventures. This analysis has lead to a second order factor proposed model, which is tested using Structural Equation Modelling (SEM). Seven first-order constructs related with CBT for new business are defined and operationalized (see Table 1).

#### 3.2. Survey development and Data collection

Guided by the literature (see Section 2) individual items for the seven constructs were identified. A survey instrument was then generated to provide test of the items and constructs under investigation. The survey instrument was validated by a team of researchers and entrepreneur consultants. The validation team discussed and assessed each of the survey items. Finally, collected suggestions were aggregated and the corresponding items were amended and/or reworded.

This research is part of a study which looks for the establishment of significant differences between new closed ventures (that close before its consolidation) from those that arrive to their consolidation (considering it as overcome 3.5 years in operation after its foundation). In this sense, the sample collection includes 113 organizations closed before 3.5 years of operation, and 413 organizations in activity (268 non-consolidated and 145 consolidated). Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

Response scale for survey items was eleven-point Likert-type (from 0 to 10). As exentrepreneurs are an elusive sampling group (see [24] for considerations) a large datacollection effort was conducted. In pursuit of this aim, a web survey was conducted in 2008 (The questionnaire-based, self-administered, survey was available on request). The survey was delivered to entrepreneurs, by means of entrepreneurial support institutions in Catalonia.

## 4. Proposed model and results

As shown in the previous sections, the model proposed to evaluate the organizational competence of new ventures is a second order factor model, and it is tested by means of SEM, and specifically using a Confirmatory Factor Analysis (CFA). Tables 1 and 2 show the path of standardized loadings for the proposed constructs. The standardized loading, standard error and reliability obtained for each of the proposed first order factors (constructs) are presented in Table 1. Reliability is the assessment of the internal consistency of the items of an individual construct and in this case is measured via composite reliability [25]. A scale is deemed reliable if the composite reliability exceeds 0.70 [26]. Results are noted in brackets in Table 1. As shown, all seven constructs exhibit acceptable levels for this measure. In Table 2 the path of standardized loadings and standard errors for the second order factor is presented.

In our case, the final results for the model show statistically-significant effects from the variables in the second order factor model using Structural Equation Modeling approach. The fit of the model shows a  $\chi^2$  of 452.127, with 125 degrees of freedom and p=0.000. Other fit measures obtained are the Compared Fit Index (CFI) equals to 0.923 (acceptable above 0.90), the Root Mean Square Error of Approximation (RMSEA) of 0.071 (adequate below 0.10), and the Standardized Root Mean Square Residual (SRMR) equal to 0.048 (acceptable below 0.05). Thus, the measures show a good fit of the model. However, these measures are sensible to large sample size, as in our case. For this reason, we checked for misspecifications in the model. However, misspecifications were not found, in other words, any other theoretical significant effect exits in the model. All effects in the model are significant at 95%. The relationships and effects are provided in the structural part of the model (Figure 2). The related standard errors are given in brackets.

Results for our model show three latent variables to be more related with the organizational competence concept. The first two variables are related to managerial competences, *bargaining power* and *deploying organizational objectives*; and the third one, *process planning and flexibility*, is about transformational competences. Responses from the sample suggest that bargaining power (Coordination of purchases, communication and ability to negotiate with suppliers) could be thus the most important component of the managerial competences, and in general, of the organizational competence for new ventures in services and low-technology sectors.

ltems	Standardized Loadings	Standard Errors
Acquiring and maintaining firm's resources (0.978)		
INP1. Accounting management of the company	0.663	0.033
INP2. Support equipments and technologies	0.669	0.034
INP3. Production / service provision facilities	0.763	0.028
Employee know-how (0.979)		

Table T First order lactors	Table 1	I First	order	factors
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INP4. Training of customer service staff	0.741	0.031
INP5. Training of production staff	0.921	0.026
Enacting the market (0.970)		
MAN1. Ability and resources to undertake market research frequently	0.542	0.045
MAN2. Resources for promotional activities and sale of the product / service	0.647	0.038
MAN3. Business background of the manager	0.798	0.038
Deploying organizational objectives (0.970)		
MAN4. Understanding of company procedures and aims by all company members	0.729	0.033
MAN5. Clear organisational structure (organisational chart)	0.736	0.033
Bargaining power (0.983)		
MAN6. Coordination of purchases of raw materials	0.822	0.027
MAN7. Communication with suppliers	0.764	0.028
MAN8. Ability to negotiate with suppliers	0.683	0.031
Process planning and flexibility (0.988)		
TRAN1. Planning of production process / service provision	0.896	0.016
TRAN2. Production / service provision capacity in relation to demand	0.837	0.019
Developing firm's reputation (0.987)		
OUT1. Delivery of the product / service on time	0.854	0.020
OUT2. Maintenance of the quality of the product / service during distribution	0.813	0.022
OUT3. Flexibility, in order to meet the new expectations of clients	0.702	0.028

Parameters statistically significant at 95%.

Table 2	Second order	factor:	Competence.
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First order factors	Standardized Loadings	Standard Errors
Acquiring and maintaining firm's resources	0.877	0.027
Employee know-how	0.809	0.030
Enacting the market	0.717	0.039
Deploying organizational objectives	0.890	0.032
Bargaining power	0.907	0.027
Process planning and flexibility	0.889	0.019
Developing firm's reputation	0.825	0.024

Parameters statistically significant at 95%.



Figure 2 Proposed model for evaluating new venture's organizational competence in services and low-technology based sectors.

### 3. Conclusions

An empirical attempt to define and validate the new venture's organizational competence construct is presented in this work. Previous studies are mainly focus on a specific competence or on the entrepreneur individual competences (as shown in Section 2). Results presented are a first approximation to operationalize the assessment of organizational competences in new ventures from services and low-technology sectors. The proposed model provides an alternative to better understanding and analysing the new venture's activity from an internal view based on the CBT. Next step in the research is to apply the obtained construct to assess the organizational competence of new ventures, both closed and in operation. It is expected that the relationship between competencies construct and the business current situation (i.e. organizations closed before 3.5 years of operation and organizations in activity -non consolidated and consolidated-) results significant for the companies in the collected sample. Future research can also include the study of the process in which entrepreneur's personal competences become (or allow the development of) organizational competences in new ventures.

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# Impact of Knowledge Management on the Performance of Start Up Companies During the Process of Incubation

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Until now, the great attention has been focused on measuring various economics parameters in order to find a model for monitoring and forecasting performance of the ideas that enter and pass through business incubators. Knowledge economy imposes necessity for monitoring non-economic parameters that according to their nature are qualitative and intangible. The paper explores the possibility of defining relevant noneconomic parameters as a measure aimed at improving efficiency and effectiveness of management of startup companies.

#### Keywords

Knowledge Management, start up, incubation, innovation

#### 1. Introduction

It is widely recognized that small firms make a significant contribution to economies and so understandable that there is a persistent empirical research theme that addresses issues of small firm growth. Within this body of research, there is a preoccupation with the creation, capture and transfer of knowledge that may help to stimulate and support growth. This link is considered a legacy of Penrose's (1959) seminal text The Theory of the Growth of the Firm (1), in which she proposes that growth is dependent on the application of entrepreneurial and managerial knowledge configured as resources. Entrepreneurial resources are essential for opportunity recognition and innovation, while managerial resources are necessary to provide systems and processes to enable opportunity exploitation. Therefore, for Penrose, expansion is intimately associated with the processes through which knowledge is acquired and applied. Thus, the possession of knowledge defines the shape and trajectory of a firm's growth (2), and a lack of managerial knowledge resources, or competences, may undermine a small firm's ability to grow (3).

Of crucial importance for startup, companies may have their relation to knowledge that is largely in tacit form. Companies that enter into the process of incubation have very little knowledge is translated into procedures and rules and a large part of knowledge is in the form of tacit knowledge is intangible and heads the team that bears the initial idea. Companies in this stage, very sensitive to sudden changes. Quote that is often used by people engaged in business "better give me a team and plan B, but A and Plan B team." This philosophy is one of the key levers of success for many companies. Success always depends on the people, the team behind the implementation of ideas into practice. Most of the skills of the team, its operation is guided and spontaneous feeling. Stable teams, who

have good communication and understanding have a chance to be successful. Teams like the system, and our need for teams is that team's strength must be greater than the sum of the individual elements of the force (of) team. Incubation process is put in front of teams that need to grow into the company's many challenges.

Flows of knowledge that High-tech incubators must take into consideration is the knowledge flow from University. Incubators must be in partnership with universities and researchers who enter the incubation process must find a model that will satisfy the interests of all stakeholders. In the paper University–incubator firm knowledge flows: assessing their impact on incubator firm performance (4) give an example of Georgia Tech in period 1998 – 2003 in the case of 79 companies.

For young firms, the race for survival and growth is very much a race for learning. Learning results in the accumulation of distinctive firm-specific knowledge, which in itself constitutes a driving resource for growth (5); (6). As organizational learning is largely driven by knowledge combination, a young firm needs to become efficient in combining and assimilating diverse items of externally sourced knowledge with its internal knowledge base (7); (8). To achieve this and to grow, young firms need to establish learning relationships with external sources of knowledge (9).

Speed the adoption of new knowledge can be of crucial importance for Spinoff Company because its success depends on the ability to translate technological knowledge into a business model in an efficient manner. Most spinoffs company has very strong technical knowledge related to the narrow expertise is based on the ideas and innovations that they want to translate into a product, but they lack the skills and abilities of business thinking. The incubation period, the chance for success will be only those companies who recognize that new knowledge must be adopted, that must be developed while growing.

### 2. Knowledge relatedness and learning

Learning theories suggest that knowledge held in common is important for the firm's absorptive capacity, and therefore, for efficient learning and new knowledge generation from sources external to the firm (8). Related knowledge (i.e., knowledge held in common) enhances the ability of the firm to evaluate effectively the value of external knowledge, to discard irrelevant knowledge, and to concentrate its learning efforts on valuable knowledge sources (10).

The essence is not in learning, gaining knowledge, but in the adding of new wealth, creating meaningful knowledge, or as Rene Tissen emphasized in Knowledge Dividend (11) Don't dig deeper for more knowledge, capture only meaningful knowledge and build on the value it has. To deal with the inflow of information, the spin-off firm needs to develop information filters for identifying valuable knowledge and rejecting irrelevant knowledge (12). Such filters are built via existing operations and are best suited to processing and using knowledge similar to that from which they were built. Therefore, firms learn most efficiently close to their existing knowledge domains. New Startup Company will have better chance to survive if they have network support system. Network support system is combination of other startup company in different fazes of incubation and some well develop company.

In short, up to some point, increases in knowledge overlap with the network should increase the productive capacity of the spin-off firm, thereby enhancing its potential for growth. Related knowledge also contributes to the efficiency of communicating external knowledge from the network and of assimilating it into the spin-off firm's knowledge base (10). According to (10), for the transfer of knowledge to occur, those exchanging information must possess shared language, codes, and symbols: "The higher the level and sophistication of common knowledge among the team, whether in the form of language, shared meaning, or mutual recognition of knowledge domains, the more efficient is integration likely to be." If external knowledge is closely related to the previously held knowledge in the organization, its communication will be smoother and face less resistance. Closely related external knowledge resonates with the organization's established beliefs about relationships between the firm's actions and the outcomes of those

actions, thereby enhancing its acceptance within the receiving organization. Because closely related external knowledge is also likely to be more compatible than unrelated knowledge with the organization's existing systems, it will be incorporated more efficiently with these. For example, it is easier for the company to absorb production process knowledge inputs that are similar to its experiential knowledge on its internal production systems. Similarly, knowledge about "what works" in marketing is more likely absorbed if it resonates closely with the firm's own experience; e.g., a payment scheme innovation will more readily be incorporated by a firm expert in pricing tactics than one focused solely on channel selection tactics.

Knowledge not held in common is also important for learning and growth because new knowledge is created through combinations of existing knowledge with new items (7). The more different the combined knowledge items, the greater the novelty value of the created new knowledge. On this basis, knowledge diversity contributes to learning by enabling individuals to make new associations between apparently unrelated knowledge items. As the amount of related knowledge increases and unrelated knowledge diminishes, the potential for new knowledge creation will be diminished. A great degree of overlap among values, systems, and accepted beliefs may also reduce the willingness of the spin-off firm to challenge critical assumptions and to discover novel solutions to existing problems. An important part of an organization's knowledge is constituted by established beliefs about "how things work" or relationships between actions and the outcomes that those actions generate (13).

Our foregoing arguments have implied that increasing knowledge overlap up to a point will increase a spin-off firm's learning and growth potential; however, beyond some optimal point further increases in knowledge overlap (i.e., decreases in unrelated knowledge) will diminish the spin-off firm's ability to create new knowledge necessary for growth. Indeed, reconceptualization of absorptive capacity emphasizes the importance of both complementary and diverse knowledge for the creation of a dynamic capability that can lead to increased profitability and sales growth, among other types of superior performance (14). Such a mixture exists at intermediate levels of knowledge relatedness.

# 3. Types of knowledge relatedness and spin-off growth

Because knowledge relatedness between the spin-off firm and the network affects the speed and novelty of the spin-off firm is learning, it will affect the ability of the spin-off firm to realize future sales growth (15). Areas of knowledge relatedness critical to growth include production, technology, and marketing (16). Production knowledge affects sales growth because it involves the ability of spin-offs to meet variations in demand level and changes in customer specifications. A spin-off will be able to learn about production techniques to the extent that it shares some production knowledge with the network. This knowledge will be valuable in helping spin-offs to realize sales by providing them techniques for meeting demand rather than losing sales to more efficient competitors. Similarly, spin-offs can learn techniques from the network for efficient and effective customization of production. This knowledge will not only allow them to meet the changing demands of their current customers but will also allow them to increase sales by reaching new customer groups. To the extent that the spin-off firm shares some technological knowledge with its network, it will be able to augment its technological knowledge base by learning from its network.

A solid technological knowledge base will allow the spin-off firm to design products that offer greater technological performance than already available in the market, allowing it either to charge higher sales price or to increase the volume of sales because of superior cost-to-performance ratio. A solid technological knowledge base will also allow the spin-off firm to cut the development time from product idea to commercial product, thereby helping it generate sales earlier. Superior product development efficiency will also enable the spin-off firm to introduce a greater variety of products, thereby allowing it to reach more customer groups. Indeed, (14) provided some empirical evidence for these arguments by showing that technological learning be positively related to sales growth in new internationalizing firms.

Marketing knowledge affects sales growth because it enables the spin-off firm to identify the customer groups that offer the greatest sales potential and because it enables the spin-off firm to design and implement more effective marketing strategies. To the extent that the spin-off firm shares some knowledge with its network about customer groups, distribution channels, and marketing strategies and expertise, it will be able to strengthen its marketing competencies by learning from its network.

A greater depth of knowledge on customer groups will allow the spin-off firm to position and price its products optimally for maximum sales and to target the best customers. A firm's knowledge of appropriate distribution channels, and of how to get access to these, will further enhance its ability to increase sales. Above, we argued for a relationship between three types of organizational knowledge and spin-off firm sales. Because both related knowledge and unrelated knowledge are required for organizational learning, learning in an interorganizational relationship should be a curvilinear function of the knowledge relatedness between the knowledge bases of the respective firms. Minimal knowledge relatedness (no overlap between the knowledge bases of the firms) hampers learning because local search and assimilation suffers. Extreme knowledge relatedness (i.e., very high overlap between the knowledge bases of the firms and network) hampers learning because the potential for novel knowledge combinations is reduced. To sum up, the relationship between knowledge relatedness and learning should be an inverted U-shaped function. Such a relationship was anticipated (but not empirically tested) by (8): "While common knowledge improves communication, commonality should not be carried so far that diversity across individuals is substantially diminished." Of course, a networked environment on its own is not enough; entrepreneurs face the challenge of maximizing the value of new network relationships not only as a source of specialist knowledge, but also as a lever for industry advantage (17). In paper, Critical junctures in the growth of university high-tech spinout companies (18) discus about demands on entrepreneurs change over the life trajectory of a new technology venture. They argue that in order to reach full potential, a venture must successfully make the transition between different phases of growth, overcoming what are termed 'critical junctures' as they move from one phase to the next. The critical junctures concern the absence of key resources or capabilities required by the firm, some of which are tangible business necessities, such as finance, others are less tangible, associated with the knowledge needs and management capabilities of the aspirant entrepreneur. In the early stages of opportunity recognition, they need business management skills to embrace the realities of the market in their target industry with regard to generating commercial returns from their technology. Later on, once appropriate framing of the opportunity has taken place. (18) contend that, at least for academic entrepreneurs, the steepest learning curve must now take place. Time must now be spent gaining the commitment of key individuals, leveraging social capital to enable the venture to commence business operations.

The entrepreneur must be able to screen, evaluate, benchmark and appoint new members of the management team through their own network of contacts, through networks of potential investors, or through professional recruiters. If this does not take place, through limited access, or insufficient entrepreneurial expertise, then the venture's ability to achieve strategic objectives and growth in later phases through interaction with customers, competitors, suppliers and potential investors is compromised. Points to the importance of the relationship between the incubator manager and business owners and found that the incubator manager's skill in determining the timing and frequency of business support intervention and preparing businesses to exploit such activity is critical to the business development process (19). In terms of knowledge flow to new entrants to the incubator, (20) identified three possible sources: internal networks (between firms in the incubator), external networks (mentors, professional service/course providers) and the Director. They use model from (18) work, which gave them possibility to identify key phases where knowledge transmission must occur: firstly, the acquisition of basic business understandings towards

the development of a business plan; secondly, the leveraging of social capital in the chosen industry networks.

## 4. Key knowledge processes steps

According to the literature, to succeed, incubator entrants must know very quickly how to craft their early-stage ideas into realistic business plans, and must therefore engage with basic business development functions, including marketing, finance, intellectual property management and strategic analysis (21). This is in line with Vohora et all's phases (1) and (2). Further, it has been argued that they must develop high added value networks support the development firstly, of an embryonic organizational infrastructure, and secondly, a customer / supplier / investor base to support the organization's competitive position in its target industry financially (17).

#### 4.1. Pre-incubation and entry

Many of startup companies claimed that they had little understanding of the incubation process prior to joining the incubator, but there was a commonality about why they were joining: they were strong in technological skills, but weak in marketing, financial acumen and the wherewithal (knowledge and contacts) to build an organizational infrastructure capable of competing in their target industry (20). It is common agreement that the incubator offers subsidized office space, a sense of legitimacy and place, an opportunity to be around likeminded individuals and that help would be available with business planning. There were a number of references to a need for help with specific functional issues within the overall planning process such as marketing, obtaining finance, accounting and intellectual property issues. In early stages of engagement with the incubator, new startups are very dependent on the Director, or Incubator Management Board (IMB), who knead to take them through an informal induction process. This involve, to different extent, the production of a business plan, at least in outline, that related to potential market opportunities discussed with the Director or IMB. At this point, although business management is now obviously a learning priority, no targets, milestones or participation agreements were made, nor were any training needs formally identified. In this stage Incubator, knead to create opportunities for networking, probably at informally events and warm introductions to industry contacts and mentors. During this phase, the role of Director and IMB in the learning process is significant. This key role is in line with (19) who points out the importance of Directorial advice in fostering successful business development.

#### 4.2. Ongoing review and development

Once firms were fully accepted into the incubator, they were expected to rework, develop and realize their business plans in the hope and expectation of leaving the incubator with at least a degree of financial self-sufficiency, whether through customer-based revenue streams, or external finance, or both. During this phase of development startup companies are expected to be self-reliant in identifying training and knowledge gaps from the advice given, and developing new business skillets that are necessary from the provision in the incubator and other support providers, and also nurture and exploit new network contacts that will be obtained through the incubator and/or mentors. The Director attached great importance to fostering entrepreneurial acumen in the founders through the freedom to operate independently; while at the same time, asking for (and receiving) help as and when they needed it. In this step of process startups developing and improving the necessary vocabulary and expertise in marketing, finance and intellectual property. Their new abilities

arise mainly from a 'needs must' immersion in the commercial world, that is supported by formal and informal interactions with new network colleagues in the incubator's external network (20).

Proactive approach to network exploitation, the leveraging of high value social capital, had been part success, for example, from the founder of one of company from study (20): "...what I was looking for was connections to all those skills that we just didn't have, so I was looking for mentoring and access to people with high-tech startup business experience, access to venture capital [lawyers, banks, accountants] which didn't feature in the world of a pre-incubation company....I think there were about 3 or 4 [mentors] that we could have considered and [the Director] felt quite strongly that the one we chose...was the one that was right...he had a lot of experience in high tech start-ups. He had a lot of experience in the sort of corporations that we were going to have to make friends with, and he had a lot of experients and our customers. But not get buried in it...He helped us through in a way that we probably wouldn't have done very well on our own". The mentor here acts as a conduit to legitimacy in the necessary industry networks, not just as a source of knowledge. Confidence is a very important element in the success of the process of incubation. Trust is the basis for knowledge sharing, if there is no full trust cannot be counted on the free flow of knowledge.

### 5. Conclusion

It is required to understand the interactions between firms in incubators and with firms in the external network (22), with particular reference to the need for aspirant entrepreneurs to acquire knowledge concerning business management (21) and to leverage industry knowledge through network interactions. The knowledge acquisition is described as a twostage process where firstly, knowledge was gained about business planning from the Director, then firm and industry specific connections provided a unique set of knowledge flows that supported the firm through the incubation process towards exit (20). A very significant 'tipping point' occurs when the firms begin to leverage the social capital themselves, weaning them away from the Director. In study, conducted by (20) firms that were able to do this did well. It was noticeable in a case that the internal networks added little value—the external networks were all important. We must not forget that it is important and internal stability of the team that represents a startup company. Results that occurred the survey conducted by the (20) support (19) in his identification of the importance of the role of the Director. It is necessary to carry out further research to identify different factors that can influence the flow of knowledge in the process of incubation. Walked flows of knowledge, confidence, and developed internal and external networks definitely play an important role in the success of new startup companies during period of incubation.

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# Significance of Social Networks and Communities for Innovative SME Enterprises

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This paper considers incubators, innovation-supporting value networks and communities and examines how they can be used to help a SME firm to improve its bossiness. This paper pays particular attention to the importance of social capital, organizational learning, and trust in networks and to the role of incubators. Focus will be more on the way firms operate within the networks and communities to which they belong and the management challenges involved in using them to best effect. Strength of networks (especially for smaller firms) is that they offer a way of bridging gaps between what firms do and what is possible (best practice). For high-tech Company, incubator is the hub for process of their networking in the business world. High-tech incubator management includes process of management networks tangible and intangible flows.

#### Keywords

Incubators, value networks, communities of practice, high-tech

#### 1. Introduction

The greatest future breakthroughs will come from leaders who encourage thinking outside a whole building full of boxes. Inside the-building thinking is the hallmark of establishments, whose structures inhibit innovation. Once the architecture is set, stakes divide the floors and reinforce existing patterns and practices. Even change-oriented inside the building thinkers take organization and industry structures for granted. They pay most attention to similar-looking competitors in markets already served. (1)

Evidence from SME and entrepreneurship studies suggests that a key condition for small firms to be innovative and grow is that they should have network mobilization capability; i.e. the ability to establish networks of collaborates (2). Social capital and relationships are key facilitators in this establishment process (3).

To foster innovation and transformation, leaders should focus on impact, not inputs. They should identify unsolved problems, map the wider system influencing results, and determine weak links to strengthen or gaps to fill. Nevertheless, to do all that effectively, they must first jump out of the box and leave the building (1).

Further, more they knead to see enterprises from different perspective. They knead to se company truth-value sheering prism.

To manage companys in that are primary driven on knowledge, companys that depend on work of knowledge workers, menager knead to change focus and put on glases that will gave them power to see tangible and intanguble flows in organization and market. This means that managers kned to change perspective, walue systems and system qontrol. In this proces management will observe types of exchanged value.

Limited research has been aimed at identifying sources of innovation and integrating supporting processes of innovation from a knowledge-based perspective for SMEs (4).

# 2. Social networks

In order to adapt to certain terms that allow assessment of the intangible value it is necessary to recognize the importance of social networks. Nahapiet and Ghoshal (5) combine the external and internal dimensions in their comprehensive framework by defining social capital as the sum of resources embedded within, available through. In addition, derived from the network of relationships by an individual or a social unit. We knead to adopt this view and take up the three dimensions proposed by Nahapiet and Ghoshal; the structural, the cognitive and the relational, in futher analysis. The structural dimension is reflected in the network ties the firm has and in the network configurations within which it is embedded. It has been shown that the number and diversity of existing networking relationships have a positive influence on firm growth (6). This seems to be conditioned by the centrality of the firm in the network and by its networking activity (7).

# 3. Value networks

One of the most important and challenging questions in working with intangibles is, "How do we convert intangible assets such as human knowledge, internal structures, ways of working, reputation, and business relationships into negotiable forms of value?"

Intangible assets include relationships, employee know-how and competency, the effectiveness of the organization's work groups and structure, the efficiency of the organization's production and service processes and the level of trust between the people or organizations forming the relationships. Trust is an expression of high degrees of social capital, both within the organization and externally expressed as reputation and brand. Tangible assets are financial resources and other capital-based resources that are controlled by the firm.

Purposeful networks, such as organizations, consist of specific roles and value interactions oriented toward the achievement of a particular task or outcome. The active agents of the network are real people who participate in the network by playing particular roles in which they convert both tangible and intangible assets into negotiable offerings and fulfill different functions (8). In the case of companies that appear in the incubator according to the tangible and intangible values that I provide them with the incubator. Practice has shown that the intangible value that provides incubator management is crucial for the successful development of startup companies.

These activity-focused networks, therefore, can be considered value conversion networks, or value networks. A value network is any set of roles and interactions in which people engage in both tangible and intangible exchanges to achieve economic or social good. Internal value networks include activity-focused sets of relationships between individuals (e.g., the chief executive officer and the chief financial officer or team members) within and among work groups (e.g., those within and between the manufacturing, research and development, or sales departments), and between and among the various work groups that make up the organization (8).

External-facing value networks include those between the organization and its suppliers, its investors (including venture capitalists); its strategic business partners (e.g., a business with a complementary product); and its customers. Other kinds of networks cross organizational and industry boundaries, such as innovation networks or networks of people with the shared purpose of creating a particular social good or outcomes, such as improving education. Terrorist and criminal networks are also value networks, of course. The network is a value conversion mechanism that achieves not only positive goods and outcomes, but nefarious and negatives ones as well, according to the values and intent of those who serve the network. Still, as long as the principles of a healthy value network are followed, the network will be sustained and fulfill is purpose (8).

### 4. Role of networking in business incubation

Clusters are a form of network. Some clusters focus on the 'horizontal' nature of relationships between SMEs that both compete and collaborate. Others would see the relationships between large firms and their core suppliers as leading to clustering in many cases. These are essentially hierarchical relationships, which happen to involve inter-firm rather than intra-firm relationships. The equality of relationships between firms found in such clusters derives from the technological interdependence of a group of large and often international firms. Some observers, most notably Porter (9), have assigned great importance to the presence of demanding customers as stimulants to innovation in different clusters. In some industries, customers are the critical elements in the development of new products.

There is some debate as to whether the firms involved in clusters are in the same or related industries. In the wool textile cluster in Prato, Italy, for example, there are both textile companies and the engineering firms that make textile equipment. Similarly, in the Finnish forest cluster, machinery manufacturers are an essential aspect of the cluster's success. The cluster includes both paper manufacturers and the emerging firms that clean up environmentally after the paper processes. In that cluster, the 'forest' is the key link between the economic activities. In other work, clusters are more strictly defined as parts of an industry (all making leather goods or ceramic tiles, for example), but linked through their inputs to different activities in the production chain. These policies are commonly overly simplistic in their prescriptions, with little appreciation of the specific industrial, technological, and cultural contexts that so influence comparative advantages and mitigate against 'off the- shelf ' policies (10).

Learning is exchanged not only between the actors in a particular network, but also potentially between the broader networks of participating firms. One of the key requirements of successful collaboration is for participants to understand the nature, process, and likely outcomes of partnerships and to adjust the ways in which they behave to enable the team to deliver more than would have been possible had they worked on their own. Behaviors associated with team working and developing an appropriate set of values and cultures is an important prerequisite for success in collaboration.

While learning from experience is likely to be the major form of instilling such knowledge, it is noteworthy that the approach taken by the Japanese government's Plaza Program eases firms into collaboration by a lengthy 'getting-to-know-you' procedure, before joint projects are established. The cautious approach to forming partnerships and the recognition of the need for a high level of trust between technological collaborators is a feature of the Japanese public-policy approach to forming technological linkages(10).

In recent years, we have seen the emergence of a new incubator model: a networked incubator, which is a hybrid form of the archetypal business incubators (BIs). Much research on BIs tends to take a rather descriptive and theoretical approach, typically in the form of extensive documentation of the various services provided, e.g., monitoring the number of training programmers carried out, keeping track of how many firms have left the incubator, reporting how

many distinct services are available to clients, average incubation time, and networking activities (11).

Bls are generally perceived as a kind of infrastructure geared to support and nurture the establishment and development of small and medium-sized enterprises (SMEs). Recently, there has been a significant increase in the number of incubators (11). The increasing diffusion of these BIs calls for a more detailed look at what this phenomenon actually is the specific sources of value it provides to entrepreneurs and entrepreneurial activities, the organizational settings under which it works, and the practices, resources, and/or services it employs to facilitate or hinder new start-ups and subsequent growth. BI is an umbrella term for any organization that provides access to affordable office space and shared administrative services (11). Over the years, BIs have been marketed under a variety of more or less synonymous labels, including 'Business Accelerators' (12); 'Research Parks' (13); 'Science Parks' (14); 'Knowledge Parks' (15); 'Industrial Parks' (16), 'Innovation Centers' (17), 'Technopoles' (18), and 'Networked Incubators' (19). In other words, the 'wonder child' has many names. Thus, some incubators have been established to accelerate regional economic development and to help capitalize investment opportunity, while others have been established for the purpose of commercializing academic research, typically by bringing small, high-tech firms into contact with high-tech university campuses.

The American National Business Incubation Association (www.nbia.org) defines a BI as "an economic development tool designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services". According to (20), these support services include assistance in developing business and marketing plans, building management teams, and obtaining capital and access to a range of other more specialized professional services. They also provide flexible space, shared equipment and administrative services.

An interesting feature of BIs is their potential for creating and exploiting synergy. The combination of different resources, services, and skills is thought to create a synergy for incubatees. This means that the incubator becomes more than just a physical arrangement with a specific geographical location where a new venture can minimize start-up costs by accessing affordable space, shared services, and business assistance (21). Incubators typically seek to provide a nurturing business environment by actively ensuring that start-up firms get the resources, services, and assistance they need. These resources are often a luxury that new ventures lack or cannot afford yet. In this sense, incubators try to address many of the failures of the market: information costs, lack of services and business assistance, and financing.

Researchers from various disciplines have in recent years increasingly focused on social capital theory, i.e., on interpersonal relationships in social systems (22). Social capital can be seen as resources embedded in a particular social structure, while at the same time being made accessible and mobile by purposive actions, (23) summarize previous research on social capital by concluding that individuals work together more effectively and efficiently when they know one another, and trust and identify with one another. Strong social ties based on personal relationships may also play important economic and social roles during entrepreneurial agency. Personal ties result in improved company performance (24). Support, knowledge, and complementary resources may be acquired through such social ties, resulting in social cooperation between key players. During a social exchange, one individual typically, and usually voluntarily, provides a benefit (e.g., information, advice, resource access, or other services) to another individual. This places an obligation on the receiving party to reciprocate by providing some benefit in return. Due to the inherent voluntariness of such exchanges, however, the provider cannot be sure that such benefits will automatically be reciprocated. Trust is a key moderating factor during such exchanges. This, however, will not be discussed further here.

Incubatees can utilize two kinds of networks: internal and external networks. These are equally important inasmuch as they both help the incubatee gain access to business networks. Internal networks are particularly useful to social capital building inasmuch as they enable multiple

companies to share all kinds of resources. External networks, however, are also crucial to incubatees as they link tenants with potential partners, customers, local business, etc.

Social capital is increasingly perceived as important in terms of business networks (25). Some studies, for example, have described how both actors and organizations function in the context of a network. At the heart of social capital are relationships between individuals and organizations based on expectations, obligations (norms), and trust. Recent studies in the biotech sector have also demonstrated the importance of social networks as a source of learning (6).

It should not be overlooked, however, that networks are not 'given' but created by individuals and their social interactions with other individuals. This means that they are not distinct entities from the goals of the individuals comprising the networks. By its nature, an incubator may help build social capital. Tenants are given the opportunity to get to know each other and to work together in a variety of ways. This is what makes these incubators "hubs" for networking activities. Within the network, the individual entrepreneurial actor has private concerns as well as economic and social interests. Thus, both the nature and context of social and business relationships are important (26). It should be emphasized, however, that social capital can be difficult to build and even more difficult to maintain.

# 5. Conclusion

Various studies have looked at the services that are used the most and are found most useful by tenants. Here, it is necessary to differentiate between the services that are used more or less regularly and those that are the most crucial inasmuch as these will not necessarily be the same. In the studies, services are often divided into (i) shared office services and (ii) business assistance and networks (27). Existing small businesses can play a critical role in linking entrepreneurial actors to both informal and enterprise support networks (21). Many firms used the incubator as an internal market place (17). He found that two fifths of the firms having left the incubator had purchased goods or services at least once from other firms in the incubator, and about a guarter had sold to other incubator companies. More specifically, a social connection between the tenants is very important to networking and cooperation. With regard to networking, another important aspect of the construction of the incubator is the values on which it is based. Entrepreneurial actors in general could benefit from being more aware of the role and importance of social networks during the process of establishing a new venture, including how they can improve their rather limited insight into the actual constituents of their networks. Entrepreneurial actors in incubators and in networked incubators in particular should be made explicitly aware of this before joining such arrangements. Networks are crucial to entrepreneurial actors. Thus, the ability to connect up to strategically important clusters of networks is a critical managerial skill. Such networks can give entrepreneurial actors the necessary legitimacy, skills, and resources needed when launching a new venture

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# **Value Management**

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Value Management is a method that provides an operating technique using a creative and organized approach. The Value Management includes Value Analysis managed by a group, each of them selected by their expertise in specific subjects and coordinated by a Value Analysis expert. The paper presents a complete study of Value Analysis applied specifically to one equipment, with one finality: re-design two selected pieces (the Flywheel and the Bearing). The phases and iterative operation of the Value Analysis method are presented. Value Analysis combines both engineering and economics without, however, placing neither engineering or economics first. They both are similarly important, as can be concluded by the end of this paper.

#### **Keywords**

optimum variant, value, value analysis, value management

#### 1. Introduction

Value Analysis is a method that provides an operating technique utilizing a creative and organized approach.

It is managed by a group, each of them selected by their expertise in specific subjects and coordinated by a Value Analysis expert.

The Value Analysis group activity is managed in seven stages:

- 1. formation and functional analysis,
- 2. creativeness,
- 3. evaluation and selection of the proposals,
- 4. the creative phase,
- 5. development of the selected proposals,
- 6. presentation of the selected proposals, set in order by priority,
- 7. implementation phase.

An example of Value Analysis is presented, applied to the re-design of a jaw crusher used for primary crushing of a wide variety of materials in the mining, iron and steel and pit and quarry industries.

Next the establishing mode of the optimum constructive solution is presented from the technical and economic viewpoint for *two parts participating in two functions with a high cost:* 

1. the Flywheel who contribute at the function F7 (ensure uniformity of the movement) and

2. the Bearing who contribute at the function F4 (supports the assembly).

Table 1 presents the list of functions of the jaw crusher.

Symbol	Function	Type of	Technical dir	nension of fur	nction
		function	Name	UM	Value
F1	Ensure milling	FS*	blast degree	-	3 - 12
F2	Ensure protection of	FC**	moment,	daN*m	200
	machinery		force	daN	100
F3	Ensures adjustment	FC	length	mm	10 - 25
F4	Supports the assembly	FS	weight	daN	20000
F5	Aesthetics	FE***	colour, form	-	7
F6	Supplies working energy	FS	moment	daN*m	100
F7	Ensure uniformity of the	FS	revolution	rpm	-
	movement		pulsation	rad/sec	
F8	Capability of work	FC	volume	m³	2
F9	Wear resistance	FC	eroded material	g/year	
F10	Part evacuation	FS	debit	m³/h	1 - 2

Table 1 List of functions

\*FS – Service function \*\*FC – Constraint function \*\*\*FE – Estimation function

### 3. Establishing the levels of importance of the functions - step 1

Table 2 presents the value weighting of the functions.

The following percentage values of the functions value weighting result:

 $X_{F1}$  = 22,2 %,  $X_{F4}$  = 19,4 %,  $X_{F3}$  = 16,7 %,  $X_{F7}$  = 13,9 %,  $X_{F5}$  = 11,1 %,  $X_{F6}$  = 8,33 %,  $X_{F2}$ =5,56 % and  $X_{F10}$  = 2,78 %,

The product value is equal to the sum of the functions levels and is equal to 36.

Table 2 Value weighting of the functions (\*X coordinate)

Functions	F1	F4	F3	F7	F5	F6	F2	F10	Total
No. of points	8	7	6	5	4	3	2	1	36
Ratio	0,222	0,194	0,167	0,139	0,111	0,083	0,056	0,028	1
*Percentage %	22,2	19,4	16,7	13,9	11,1	8,33	5,56	2,78	100

# 4. Economic dimensioning of the functions

Costs were assigned to the various functions by means of the functions-costs matrix shown in table 3. The percentage values of the functions participation in the total cost are:  $Y_{F1} = 16,7 \%$ ,  $Y_{F4} = 24,2 \%$ ,  $Y_{F3} = 13,2 \%$ ,  $Y_{F7} = 17,7 \%$ ,  $Y_{F5} = 11,6 \%$ ,  $Y_{F6} = 6,73 \%$ ,  $Y_{F2} = 5,47 \%$  and  $Y_{F10} = 4,43 \%$ .

No.	Parts			F	unction	6				Cost
		F1	F4	F3	F7	F5	F6	F2	F10	part**
			40			90	90		25	245
7	Flywheel	10			300			25	5	340
	-			25				30	15	70
17	Bearing	280	500						15	795
		600	800	730	750	510	410	220	203	4223
Total	cost	990	1440	785	1050	690	400	325	263	5943
Ratio		0,16	0,24	0,13	0,17	0,11	0,06	0,05	0,04	1
*Cost	of functions %	16,7	24,2	13,2	17,7	11,6	6,73	5,47	4,43	100

 Table 3 Distribution of costs on functions (\*Y coordinate, \*\* monetary units)

# 5. Diagrams

The construction of the diagrams is presented.

Based on the values for coordinates  $x_i$  and  $y_i$  presented in table 4 the diagrams of figures 1, 2 and 3 are plotted.

The parameters have the following computed values: a = 0.97,  $\alpha = 44.3^{\circ}$ , S = 84.65, S' = 0. Table 4 provides the necessary values for constructing the following types of diagrams:

1. in figure 1, the diagram of the functions value weighting,

- 2. in figure 2, the diagram of the functions cost weighting,
- 3. in the figure 3, the diagram of the functions value and cost weighting.

**Table 4** Computational elements for plotting the diagrams (\*S' = 2 \* a \*(X  $_i$ )<sup>2</sup> – 2 \* X  $_i$  \* Y  $_i$ )

No	Computational elements				Func	tions				Total value
		F1	F4	F3	F7	F5	F6	F2	F10	
1	X i	22,2	19,4	16,7	13,9	11,1	8,33	5,56	2,78	100
2	Y i	16,7	24,2	13,2	17,7	11,6	6,73	5,47	4,43	100
3	$(X_i)^2$	493,8	378,1	277,8	192,9	123,5	69,44	30,86	7,716	1574
4	X <sub>i</sub> * Y <sub>i</sub>	370,2	471,1	220,1	245,4	129	56,08	30,38	12,29	1535
5	$(Y_{i} - a^{*}X_{i})^{2}$	25,07	27,81	9,243	17,03	0,605	1,942	0,002	2,949	84,65
6	S' *	222,5	-205	101,3	-114	-17,2	23,23	-0,58	-9,54	0

Figure 1 shows the ranking of the functions by their value.

Figure 2 shows the ranking of the functions by their functional cost.

The diagram reveals a Pareto type distribution, meaning that 20 - 30% of the total number of functions include 70 - 80% of the total costs of the functions.

These functions are F1, F4 and F7.

In the case of such a distribution, the first functions in the order of costs, representing 20 - 30% of the total number of functions (in the above example functions F1, F4 and F7) are considered to be very expensive functions.

The real situation is represented by the shape of the straight line in figure 3, plotted by means of the smallest squares method, and showing disproportions in the distribution of costs and in the contribution of the various functions to the value of the product.

An analysis of the diagram of figure 3 shows that functions F10, F4 and F7 are located above the regression line, indicating high costs, not justifiable in relation to the value.

These aspects allow the assumption that these functions are deficient, hence the solutions to be identified are to focus on those assemblies, parts, materials and technological operations that contribute, within the general structure of the product, to the achievement of these functions.

A basic criterion of Value Analysis is obtaining a minimum value for S'.

In order to diminish estimator S' the points need to be aligned as perfectly as possible along the straight line y = a \* x, with a tilt of 45°.

Firstly, in order to diminish costs those functions will be re-designed that are located above the straight line.

For the points below the line the problems is more complicated. By diminishing the cost of the functions above the straight line, it may change its tilt and the points initially located below the line may appear above it.





Figure 1 Diagram of the functions value weighting

Figure 2 Diagram of the functions cost weighting

It is also evident, that by diminishing the cost of certain functions the total costs of the product decreases, the weighting of the functions that were not modified increasing implicitly. This is another cause for some points relocating from below the straight line to above it, without, however, any modification occurring in the absolute value of the costs of these functions.

Secondly, the minimization of S' needs to be understood in the sense of growth the value/cost ratio as much as possible, and not in the sense of imposing S' = 0.

Thirdly, Value Analysis also admits the increase of the costs of some functions, provided their value increases at a faster rate than the costs.

Practically, the criterion of minimization of S' leads most often to cascading Value analysis studies, the optimisation of the constructive solution being thus an iterative process.

At first the functions above the regression straight line are analyzed and their costs reduced, then the regression line is re-plotted and the functions relocated above it are noted; these functions too are analyzed in view of reducing their costs, followed by the re-plotting of the regression line, etc. etc.

Hence the constructive solution is improved from one iteration to the other.



Figure 3 Value and cost weightings of the functions

# 6. Establishing the functional-technological form of the parts in view of cost reduction for the flywheel

An analysis from the technical and economic viewpoint will be carried out in order to select a technically optimum variant for *two selected pieces of equipment: the flywheel and the bearing.* Four constructive variants of flywheel will be studied and eventually the most cost effective and the most competitive one from the technical and economic viewpoint will selected. Figures 4 and 5 presents a flywheel made from the welded semi-products.



Figure 4 Flywheel made from the welded semiproducts



products

The functional characteristics for this type of part, are the following:

1. maximum diameter, diameter of engagement, geometrical elements of connecting gear,

2. internal diameter of wheel hub, concentricity between flywheel axis and diameter of engagement,

3. wearing resistance, reconditioning method.

Figure 6 presents a flywheel screw assembled and figure 7 presents a flywheel made from a cast semi-product.

All variants are technological and the selection of one of them depends on the level of endowment of the company.

The constructive variant of figure 7 obtained from a cast semi-product ensures the best functional characteristics, if the technical conditions for heat treatment are provided. It has, however, the disadvantage that it allows only one solution for reconditioning: build-up welding and re-machining to the initial functional dimensions.



Figure 6 Flywheel screw assembled



Figure 7 Flywheel made from a cast semiproduct

# 7. Comparison of the variants for flywheel

Table 5 presents the denoting by 9 assessment criteria of the analyzed constructive variants of a flywheel.

The variant of figure 7 has obtained the highest score, and will thus be selected as the constructive solution within the assembly of the jaw crusher.

No.	Analysis criteria	Figure 4	Figure 5	Figure 6	Figure 7
1	Functional characteristics	4	4	4	4
2	Semi-product	1	2	3	4
3	Mechanical machining	1	2	3	1
4	Mounting	4	4	4	4
5	Repair	4	4	4	4
6	Rigidity	3	3	2	4
7	Ergonomics	2	2	2	4
8	Aesthetics	3	3	3	4
9	Cost	1	2	3	4
	TOTAL	23	26	28	33

Table 5 Synthetic table with the analyzed constructive variants for flywheel

# 8. Establishing the functional-technological form of the parts in view of cost reduction for the bearing

An analysis from the technical and economic viewpoint will be carried out in order to select a technically optimum variant for the bearing. Six constructive variants of bearings will be studied and eventually the most cost effective and the most competitive one from the technical and economic viewpoint will selected.

The analysis of the constructive variants for the support (bearing) of figures 8, 9, 10, 11, 12 and 13 is presented on.

The figures 8, 9 and 11 shows three constructive – technological variants of the support (bearing): welded semi-product made of three, six and five modules, the figures 10 and 12 shows two constructive cast semi-product and figure 13 present a complex bearing.

The constructive variant of figure 12 obtained from a cast semi-product ensures the best functional characteristics, if the technical conditions for heat treatment are provided. It has, however, the disadvantage that it allows only one solution for reconditioning: build-up welding and re-machining to the initial functional dimensions.



Figure 8 Support made from welded semi-products



Figure 9 Support made from welded semi-products



Figure 10 Support made from cast semi-product



Figure 11 Support made from two welded semi-products



Figure 12 Support made from cast semi-product



Figure 13 Complex bearing

# 9. Comparison of the variants for bearing

Table 6 presents the denoting by 9 assessment criteria of the analyzed constructive variants of a bearing.

No.	Analysis	Figure 8	Figure 9	Figure 10	Figure 11	Figure 12	Figure 13
	criteria				<b>A</b> A	<u>e</u>	0
1	Functional characteristics	6	6	6	6	6	6
9	Cost	5	4	4	3	6	2
	TOTAL	45	40	42	39	51	41

Table 6 Synthetic table with the analyzed constructive variants for bearing

But in many cases the bearing must be made of two parts, to facilitate quick installation and removal of all assembly (figure 14 and figure 15). The bottom can body with the cradle, can be incorporated into the cradle.



Figure 14 Complex bearing





Figure 15 Bearing incorporated in cradle

Given the option of figure 14 and 15 the Value Analysis study be repeated, for comparing the share value and cost functions and this is the next step of study and the table 7 presents the new denoting by 9 assessment criteria of the analyzed constructive variants of a bearing. Variant of figure 12 obtained a score better than the version in figure 15, but in many cases the bearing must be made of two parts, to facilitate quick installation and removal of the assembly.

The score obtained by the variant of figure 15 is less than the cast version of figure 12, but choose the variant of figure 15, because the weight of the advantages is greater than the weight of disadvantages for variant of figure 12.

The version in figure 15 has the following advantages over the version in figure 12:

1. installation and removal are all much easier,

2. maintenance runs also easier,

The disadvantages of the variant of figure 15 to the variant of figure 12 are:

1. the process of obtaining semi – product: it can see in this choice the piece is composed of two modules,

2. the machining by cutting: machining process is longer, more complicated and costly,

3. the functional cost of this variant is greater, but the difference is not significant.

No.	Analysis criteria	Figure 10	Figure 12	Figure 13	Figure 15
			-L	e Ob	O
1	Functional characteristics	6	6	6	6
9	Cost	4	6	2	3
	TOTAL	42	51	41	49

 Table 7 Synthetic table with the analyzed constructive variants for Bearing

#### 10. Establishing the levels of importance of the functions – step 2

Table 8 presents the value weighting of the functions, in the second step of the Value Analysis study, the final situation.

No.	P	arts	Functions								Cost
			F1	F4	F3	F7	F5	F6	F2	F10	part**
	Fixed	crushing		100	30		90		50		270
1	jaw										
				40			90	90		25	245
7	Flywhee	·/	10			200			25	5	240
					25				30	15	70
17	Bearing		280	350						15	645
			600	750	730	700	510	410	220	203	4123
Total cost		890	1240	785	900	690	500	325	263	5593	
Ratio		0,159	0,222	0,14	0,161	0,123	0,089	0,058	0,047	1	
Cost of functions %			15,9	22,2	14	16,1	12,3	8,94	5,81	4,7	100

Table 8 Cost distribution on functions (\*Y coordinate, \*\* monetary units)

By introducing the new data into table 9 the two diagrams of figures 16 and 17 are plotted. These diagrams will be compared to those of figures 2 and 3.

The parameters have the following computed values: a = 0.95,  $\alpha = 43.6^{\circ}$ , S = 61.08, S' = 0. It can be noticed that S and S' have smaller values than in the initial variant.

Table 9 provides the necessary values for the plotting of the following types of diagrams:1. The diagram of the value weighting of the functions. This diagram has not changes, as the value of the system and of the functions has remained the same and is similar to figure 1,2. The diagram of the functions cost weighting (figure 16). The diagram of figure 16 presents

the functional costs of the new variant, step 2. 3. The diagram of the cost weightings of the functions, step 1 and step 2 (figure 17). Figure 17 presents comparatively the old variant, step 1 and the new one, step 2.

No.	Computational elements	Functions								Total value
		F1	F4	F3	F7	F5	F6	F7	F10	
1	X i	22,2	19,4	16,7	13,9	11,1	8,33	5,56	2,78	100
2	Y <sub>i</sub>	15,9	22,2	14	16,1	12,3	8,94	5,81	4,7	100
3	$(X_i)^2$	493	378,1	277,8	192,9	123,5	69,44	30,86	7,716	1574
4	X <sub>i</sub> * Y <sub>i</sub>	353	431,1	233,9	223,5	137,1	74,49	32,28	13,06	1499
5	$(Y_{i} - a^{*}X_{i})^{2}$	27,5	13,34	3,374	8,206	3,081	1,007	0,270	4,231	61,07
6	S' *	233	-142	61,2	-79,5	-39,0	-16,7	-5,77	-11,4	5E-13

**Table 9** Computational elements for plotting the diagrams.\* S' = 2 \* a  $(X_i)^2 - 2 * X_i * Y_i$ 

Only the costs are represented in order to not overload the diagram and to observe the decrease of the value of cost:

1. of function F4, from 24,23 %, in the first step of Value Analysis study to 22,17 % in the second step of Value Analysis study, with a decrease of 9 %.

2. of function F7, from 17,67 %, in the first step of Value Analysis study to 16,09 % in the second step of Value Analysis study, with a decrease of 10 %.









The economic dimension or the cost of the function represents the main criterion for the critical evaluation of functions.

These evaluations aim at identifying those functions, the too costly technical solutions of achievement of which affect the total manufacturing cost of the analyzed product.

A correctly completed critical evaluation will directly lead to the identification of what can be called the deficient functions of the analyzed product that is of those functions that include useless costs.

The deficient functions from the economic viewpoint appear as: very expensive functions in relation to the others.

# 11. Conclusions

In two steps of Value Analysis study two component of jaw crusher, the flywheel who contribute at the function F7 (*ensure uniformity of the movement*) and the bearing who contribute at the function F4 (*supports the assembly*) was redesign and optimized:

1. from engineering viewpoint,

a. from variant of flywheel of figure 4 consists of five welded modules, one complicated part (many components, mechanical machining, turning of metal parts complicated, long and very expensive, etc.) to the variant of figure 7 consists of cast semi-product (one component, mechanical machining, turning of metal parts simple, short and less expensive than the flywheel of figure 4, etc.).

b. from variant of bearing of figure 8 consists of three welded modules, one complicated part (many components, mechanical machining, turning of metal parts complicated, long and very expensive, etc.) to the variant of figure 15 consists of cast semi-product (two component, mechanical machining, turning of metal parts simple, short and less expensive than the bearing of figure 8, etc.).

2. from the economic viewpoint:

a. the cost of function F7 decrease from 17,67 %, in the first step of Value Analysis study to 16,09 % in the second step of Value Analysis study (decrease with 10 %).

b. the cost of function F4 decrease from 24,23 %, in the first step of Value Analysis study to 22,17 % in the second step of Value Analysis study (decrease with 9 %).

3. in the third step of Value Analysis study are analyzed other functions above the regression straight line (for example F1) and their costs reduced, then the regression line is re-plotted and the functions relocated above it are noted; these functions too are analyzed in view of reducing their costs, followed by the re-plotting of the regression line, etc. etc.

4. in the fourth step of Value Analysis study are analyzed other function above the regression straight line and their costs reduced, then the regression line is re-plotted and the functions relocated above it are noted; these functions too are analyzed in view of reducing their costs, followed by the re-plotting of the regression line, etc. etc.

At the end of the Value Analysis study the points are aligned as perfectly as possible along the straight line y = a \* x, with a tilt of 45°, this is the optimal situation, the values weighting of functions and the functions cost weighting are equal.

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# Contribution of Innovation Strategies to Entrepreneurial Competitiveness

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This paper focuses on the theoretical approach to innovation and innovation strategies. It focuses on the importance of innovation strategies as well as their contribution to competitiveness strategies. Theoretically approach to the connection between innovation strategies and competitiveness were applied.

In order to examine the importance of the innovation strategies, analysis and synthetic methods were used. Also induction and deduction were used to examine theoretically relevant aspects of innovation strategies and their contribution to competitiveness. Theoretically relevance and connection between innovation and competitiveness were analyzed. After analyzing the theory concerning innovation strategies and competitiveness strategies, it was founded that innovation is one of the key factors for achieving a sustainable competitive advantage. Innovation strategies were found one of the most important strategic factors which lead companies to achieve results and gain success. Innovation strategies and competitiveness strategies were found strongly connected between themselves.

Based on analyzed theory, it should be visible that innovation and innovation strategies are very important in today's modern way of doing business. Innovation strategies are in a positive relationship with competitiveness strategies and innovation has the key role. Innovation strategies should be observed as one of the major factors in obtaining and achieving competitiveness. Today, in front of the world globalization process, enterprises should gain their competitive advantage by using innovation strategies and by seeking creative solutions for their businesses.

#### Keywords:

innovation strategies, competitiveness, sustainable competitive advantage

#### 1. Introduction

In the first part of article will be explained the definition of innovation and different approach to it. Innovation cannot be separated from creativity as it is an important part of the process of innovating. There will be further explained the four p's of creativity and innovation and its relationship among each other. Innovation strategy types will be listed and explained also. The second part will be about innovation strategy and its different types. Firm can choose among different ways to innovate their selves and choose between innovation strategy which is more appropriate to them. Innovation strategies will be shown and explained each. In the

third part of this article will investigate about competitive advantage and how innovation strategies can help to keep sustainable competitive advantage. Will be shown that we cannot separate innovation from competitiveness and firm strategy. Also will be shown different

types of innovation strategies which help firm to maintain the profit from innovation activities. The block, run and team up strategy will be explained further.

At the conclusion the impact innovation strategies have to competitive advantage will be described. Innovation strategies are one of the key success factors for sustainable competitive advantage. Innovation cannot be divided from strategy and competitiveness.

### 2. Innovation Strategy

Innovation is the process of generating something new that has a significant value to an individual, a group, an organization, and industry, or a society. The result of the innovation process is an innovation – a creation that has significant value. There are many creative ideas and concepts that have value but may not have significant value in their application. Thus, they may not be innovations. [1]

Innovation is the use of new knowledge to offer a new product or service that customers want. It is invention plus commercialization. It is according to Porter, a new way of doing things that is commercialized. The process of innovation cannot be separated from firm's strategic and competitive context. [2] Figure 1. show how new products, low cost, improved attributes and new attributes depend on competence and firm assets. New technological knowledge and new market knowledge also, depend on each other but each separately interferes with firm assets and competences. New knowledge technological and market, contribute to firm competences and their assets.



Figure 1. Innovation overview

Firm competence and asset determine the innovation of new products, gaining low cost products, contribute to improve attributes but also to create new attributes which will help firm in competitiveness.[2]

Innovation cannot be separated from creativity. Creativity is the process of originating something new that has value.[3] There are many original ideas but as they do not have any value, they can't be considered as creative. For being innovative firms need to go more beyond creative and learn how to turn good ideas and change into innovation. Firms need to struggle in high competitive environment and face with many challenges if they aim to survive in business market. [2]

It is important to understand the four p's of creativity and innovation: product, possibilities, process, personal creativity.[4] The product should have significant value to be innovative. "The result of the creation / innovation process; can be a physical product or service or an enchantment to either a process improvement or a marketing or management improvement". The possibilities of innovation according to J.M. Higgins do not exist. The organization

culture does not encourage or require creativity so neither the innovation process can't be realized.

The four p's are important to understand innovation creativity and process to gain it in firm. Creativity, process and personal creativity are one of the most important attributes in the firms. The innovation process need organizational culture but also possibilities to grow. Innovation is strictly related to each of them and they are strictly related to innovation.

The process is used to improve creativity and individuality. Personal creativity is freeing yourself from the restrains on creativity that are the result of early socialization.[3]

The four p's relationship to each other is shown in Figure 2.[3]



Figure 2. The Four P's relate to each other

The prices of creativity can be increased by learning the processes and improving personal creativity in order to do that firm needs to have possibilities and the result of it is innovation.

- There are four types of innovation: product, process, marketing and management.
- *Product innovation* is a result of new product or services or enhancements to old product or services;
- Process innovation is result of improved process in the organization;
- *Marketing innovation* is related into marketing functions and promotion, pricing, distribution as well as product development;
- Management innovation improves the management of the organization.

As a conclusion it is possible to say that innovation in managing the organizational economic functions – marketing, operations, finance, human resources, R&D and management is what separates successful companies form the others.[5]

# 3. Innovation Strategy Types

Management innovation is innovation that improves the organization's management. Innovation strategy is the way organizations react to the market challenges. They have many choices respect their innovation strategy:

- to innovate or imitate;
- to pursue R&D or search development;
- to focus on product or process innovation;
- to invest in old or the new;
- to use "big bang" or continuous innovation;

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- to be driven by market forces or by technology;
- to have selected or total commitment;
- to do basic research or applied research;
- to use speed strategies. [4]

#### Innovate or Imitate Strategy

Companies can choose between innovate or imitate others. By simply imitating else's products without any improvement will not result in a competitive advantage. In case imitation leads to low production costs it can be a possible strategy. If firm chooses innovation as their strategy it is more visible and possible the can gain and sustain competitive advantage. But by choosing product innovation alone it will not sustain competitive advantage. [6] Product and process innovation will both lead to a sustainable competitive advantage which organizations aim to achieve.

#### R&D or S&D

Firms need to achieve innovation and they need to decide how they will do it. S&D leads to the acquisition of firms for the purpose of obtaining their products or services. It may lead to joint ventures or to the licensing of other firms product and services. The major focus of R&D based firms is how much should they spend measured in percentage of sales.

#### Product or Process Innovation

Product R&D funding has long been understood to contribute competitive advantage. Research show that both process and product innovation are necessary to obtain long term competitive advantage. As it was mentioned before, innovation alone can difficult create a competitive advantage. Sufficient fund should be transferred in R&D departments.

#### Invest in the Old or the New

Innovation is the attacker's advantage. Recognize that they must be close to ruthless in cannibalizing their products and processes just when they are most lucrative, and begin to search again, over and over."[7] The S curve shows that at the beginning, at the bottom of curve, there must be a large investment before performance. After the breakthrough happen, technological progress is great and investment is relatively small in the middle of the curve.

The cost of achieving more progress increases again but the rate of progress decreases. At the top of the curve firms must decide when to stop investing or not. So they need to choose to invest in new or old. Today one of the main issues on which firms are fronted is the fast changing product and competitive world market growing rapidly.

R. Foster observe that products and processes follow a S-curve as relationship between effort and performance as shown in Figure 3.[3,835]



Figure 3. The S Curve
#### Big Bang or Continuous Improvement

Big Bang is the major innovation on which new products and processed are based. Such innovations are introduced periodically every three or four year. It is consisted into improving existing products and combining them product improvements with process improvement – but it needs to be continuously.

#### Market Driven Vs Technology Driven Strategy

Firm must be driven by both market and technology strategy. In order to obtain a competitive advantage firm must be active and proactive and always be aware of market forces.

#### Selected Vs Total Commitment

Firm that obtains a sustainable competitive advantage involves everyone in the firm in improving processes and products. They can choose to depend on R&D or they can involve everyone. For instance, in a single year Toyota submitted 860,000 suggestions and implemented the 96 % of them. In Japan about 66 % of employees regularly submit suggestions which are compared to 8 % in the United States, a significant indicator of innovation attitude. [3]

#### Basic Research Vs Applied Research

Firm needs to pursue on both, basic and applied research. It is the only way to gain for sustainable competitive advantage and improve products constantly.

#### Speed Strategies

Speed and being proactive is becoming more and more important and crucial in gaining competitive advantage. The major focus is on speed. Firms adopted product covering as an instant imitation of other firms product. Product churning is rushing new product to market without conducting market research.

#### 4. Competitive Advantage And Innovation Strategies

Competitive strategy focuses on what firm wants to achieve on the market and its basic options to it. Competitive advantage addresses the issue of how it carries out those options.[8] After firm faced with globalization and worldwide market but also competition, gain a sustainable competitive advantage become critical for success. To be competitive firm needs to obtain many goals but one of it is securely innovation.

Increasing the world market by globalization process firm must take a global perspective and find their advantage among global competition. As it was mentioned at the beginning of this article, the process of innovation cannot be separated from firm strategic and competitive context. If a firm wants to be competitive it needs to be proactive and to innovate themselves. There are two kind of innovation impact on firm, incremental and radical. Radical innovation is the technological knowledge which is very different from the existing one, while incremental innovation is knowledge required to offer a product builds on existing knowledge. To be innovative, firm needs to have sufficient funds to finance new products or new processes. They profit from using new knowledge to offer products at lower cost than competitors.

It can be difficult for firms to recognize the potential of innovation. Even if they do recognize their potential there is always a possibility other firs recognized the same and are trying to profit from it too. Firms front other co-opetitors who are also interested into being the first on the market and gain the competitive advantage. Co-opetitors can be suppliers, customers, competitors and complementary innovators who also firm must collaborate to succeed. [9] It is important firm knows who their co-opetitors are. Once firm gain competitive advantage by innovation they need to know how to maintain it. There are three strategies to maintain the profit from innovation. By maintaining the profit the advantage should be maintained also. The strategies are shown on the following Figure 4. [2]



Figure 4. Combination of different strategies to profit from innovation

In the figure is shown how firm can protect its profit from a combination different strategies. The block strategy is how firm prevent entry by others like by protection intellectual property, brand name or distribution channels. In run up strategy firma act proactive and offer its own products. The team up strategy firms invites entry by licensing, copyrights, trademarks or similar cooperating. The combination of all strategies allow the firm to act as any phase of its evolution need better. In the global environment firm aim to keep its competitive advantage by innovating itself and being ahead of the competitors. [2]

#### Block strategy

Competitive firms need to maintain their position on the market and it is possible by prevent the entry of other competitors. In the value chain each stage is unique and inimitable so firm can limit the access to them by keeping out the competitors. Firms are all equal to perform those same activities and incumbents may still be able to prevent entry by giving post entry price. Block strategy works in equal and inimitable industries.

#### Run strategy

Innovators must run for their innovation and profit from it. They must always be ahead of the competitors and innovative enough's to built new capabilities and introduce new products more rapidly than others. The environment is changing fast and firm must adapt to is as better as it can. Running can give a firm advantage in product and process which is the most important in competitiveness among entrepreneurship.

#### Team up strategy

When firm decide to use team up strategy to continue profiting from innovation, they cooperate with others. It can be as strategic alliances, venture capital, and acquisition. Strategic alliances can be joint ventures, licensing, agreements, distribution, co-marketing agreements, technology agreements, design agreements, or other agreements to cooperate in adding value in firm's value creating activities. Firm needs to be useful to each others to team up together. They need to get something one form the other and vice versa, to enter in cooperation and profit from innovation together.

Usually are used all three strategies to maintain profitability. First fast technological changes may suggest to use bloc strategy to prevent entry of competition. But firm may also need to run to innovate to keep their market position and along with it, competitive advantage. Sometimes for firm may be better to team up in order to exploit technology and market unavailable to the firm, and in gain competitive advantage. In order to gain and keep competitive advantage firm need to combine innovation strategies in different phases to maintain its advantage and profit from innovating.

#### 5. Conclusion

Competitive advantage is hard to achieve. Firms are faced with global market and global competition. Each of them try to find its own way to be competitive but in today's changing market, they need to be fast. The major goal to achieve is be better and more ahead than competition. Innovation in product but also innovating in the process has a key role in achieving competitive advantage.

By innovating product and process firm is always ahead of its competition. In global competitive environment it is become crucial to be innovative. Firms adopt their own innovation strategy and try to maintain their profits from innovating. Once firm obtain competitive advantage, innovation strategies can help to gain a sustainable competitive advantage. It is possible to decide to use block, run or team up strategy but it is always important to be proactive and one step ahead towards competitive advantage. Firms who don't innovate themselves can't be competitive on global market as the ones which innovate. If a firm wouldn't do any innovation in business or its process wouldn't be much competitive among others which do innovate. Firm can innovate, imitate, research, innovate product or process, use speed strategies or continuously improve itself but they need to have innovation strategy incorporated into their management plans in order to maintain competitive advantage or gain it.

"Entrepreneurship is an activity that involves discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways of organizing, markets, processes, and raw materials through organizing efforts that previously had not existed" [10] so we can say that without innovation there is no competitive advantage in entrepreneurship. In order to accept that innovation has today increasingly important role in firm's growth and survival, it becomes crucial to identify the sources from which innovative ideas origins. [11] Innovation and creativity but above all innovation strategies become one of the crucial factors in gaining competitive advantage in new entrepreneurial changing environment.

"Innovation distinguishes between a leader and a follower." Steve Jobs

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# Measuring the performance of business segments and divisional management

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Abstract: Multidivisional company consists of several divisions or business segments, usually in the form of profit or investment centers. Business segments are not independent legal entities, but have their own revenues, expenditures, financial result, and if it comes to investment centres decisions on the amount of investment are made. Something useful to a business segment or division may not be optimal from the aspect of the company as a whole. Business segments are also competitors. In those business segments managers have information that is not fully available to management at the highest level. Divisional managers, as agents are motivated to achieve better results in business segments that are delegated to them, and compensation schemes and bonuses can be so set that short-term financial interests of the segment dominate in relation to long-term interest of the owner - increasing the company value.

#### Keywords

business segments, decentralisation, management, performance

#### 1. Introduction

Centralized management of complex business in an uncertain and dynamic environment does not provide conditions for survival and development of a company. The growing instability and complexity of environment and technology, as well as growth and development of the company through diversification requires a certain degree of decentralization of management and flexible organizational structure that will adapt with frequent changes in the environment and the company. Reply of a modern enterprise in a complex and turbulent environment is the complex internal organizational structure that is essential for effective management. By choosing an organizational model company can respond more or less successfully to the action of numerous internal and external factors in the business. Managers of profit and investment centers as decentralized organizational units have the discretion to make decisions, select and implement specific activities. In order to estimate the performance of the managers of these responsibility centers, ways of measuring their performance have to be defined and it is duty of management at the highest level. Top management defines the rules and measures for managers at lower levels, as well as rewards for those managers whose decisions and actions are consistent with the objectives of the company as a whole.

## 2. Decentralized decision making and divisional model of the company organization

Through decentralized decision making and delegation responsibilities to lower levels

specialised information of managers at local levels can be used. They respond more quickly and flexibly to changing customer demands, changes in technology, environment and so on. By delegating decision making, top management is released from operational decisions, and their time as a limited resource is used for strategic decisions making. At the same time, managers at the lower level benefit, because they gain authority and responsibility for decision making in order to acquire the necessary training and experience that can be useful to them in the future and can provide them top management positions. In this way motivation, creativity and entrepreneurial spirit of local managers are encouraged and also those who are able to become decision makers at the highest level are selected. In the modern business environment is almost impossible to process local character information to the top management. It would require too much time and other resources and benefits would not be greater than the costs. Generally there is a view that decisions should be made at the level where the relevant information are produced, stored and processed. When the local managers have authority, they can make and realize some decisions without consulting top management and react timely to changes and problems in the life of a company. This prevents the delay in communication and unnecessary waiting for responses from the highest levels.

The company with decentralized decision making usually apply divisional organizational model where divisions are formed as decentralized organizational units. Divisions do not have legal independence, but have their own revenues, expenditures and results. Division should be profitable in the markets or market segments they serve and should also contribute to profitability and competitive advantage of a whole company. Division as a separate organization unit whose management has special authority and responsibilities in accordance with the objectives they wish to achieve, is known as strategic business unit -SBU. Divisional organizational model requires the definition of the relationship between the divisions and implementation of motivational mechanisms. Divisions are competing with each other, but at the same time try to be profitable and to contribute to corporate profitability. Divisional model is quite flexible due to the short communication lines is more efficient, faster response to the changing demands of consumers with the possibility of direct contact with them. Employees can see their place and role in the division and be motivated through different mechanisms, and top management can control easier performance of a division. The disadvantage of this model is that there can occur a conflict between divisions that are also competing with each other for company's resources, then possible rising costs of joint activities and loss of top management control over the operations of business segments [1]. By implementing decentralized decision making the right measure of delegating authority and responsibility should be find, then actual effects of decentralized units and their management should be assessed and evaluated, and depending on their achievements the incentive mechanisms should be implemented in order to achieve a balance between benefits and costs of decentralization.

### 3. The importance of the forming of profit and investment centers and their characteristics

From the aspect of financial performance, as traditional method of monitoring the success of decentralized organizational units, they can be in the form of cost, revenue, discretionary centers (budgeted) expense, profit and investment centers. Standard cost centers are established when the output is measurable and when the standard prices and standard expenditures are known [2]. Cost center managers are responsible for the efficiency and the effectiveness of its center, ie. for the producing products on time and according to quality standards, which reflects the performance of other organizational units. All other decisions such as production volume, pricing, product mix are made at the level of top management.

Revenue center manager is responsible for sale and distribution of products. If manager has the authority to define the selling price, he is also responsible for the gross income. But if the selling price is defined at the corporate level, revenue center is responsible for sale volume and sale mix. The performance evaluation of revenue center should include some concept of cost, otherwise the center will be interested only to increase revenue, and not to increase marginal profit. Revenue center managers will insist on reducing sales prices in order to increase total sale and spend additional funds to promote low budget products. Although this is the way to increase the total sale revenue, this reduces the profitability of the company.

Centers of discretionary (budgeted) expenditures are formed in the organizational units that do not produce a measurable output expressed in the financial indicators (e.g. department of administration and sales) and in units where there is no stronger relationship between inputs and outputs (e.g. research and development department). Due to the impossibility of measuring the actual results of the center there is a risk of the appearance of information asymmetry.

Profit center manager has the authority in the field of production and sale. He decides which products, at what price and how to produce, sell and distribute. Manager decides to which products he will allocate resources. He should establish an optimal relationship between scope, cost, quality and product cost. Most profit centers managers do not have authority about the level of investment and realized profit is the main short-term indicator of the performance of profit center and its management. Usually it's made the comparison between realized and budgeted profit. Profit centers are important from the aspect of planning, control and motivation in a decentralized company. Regarding the profit center also consists of the cost and revenue center, the costs and revenues are also planned, which is important to the top management who has to adjust the budgets of many organizational units. The higher the degree of controllable factors, the greater is management responsibility for results.

More divisions can create a profit center, but also in one division may exist more profit centers. In order to become a profit center, division should meet the following conditions [3]: 1) to have a critical mass of direct revenue and expenditure, in order to control profit center through the profit, 2) that managers have sufficient authority to take actions that could significantly affect the result, 3) to have their own recognizable external market of inputs and outputs, 4) that the relationship between organizational segments are clearly defined so that profit of each of them is independent of the decision and the efficiency of other profit centers, and 5) that there is readiness of top management to control the success of decentralized units through the realized profit or loss.

Top managers delegate authority to the investment centers managers and on that basis they make decisions on assortment, pricing and the amount and type of investment. In this way, investment centers get characteristics of an entity, but without legal autonomy. An investment center can consists of several profit centers. In order to become an investment center a division should [4]: 1) meet the requirements relating to the establishment of profit centers, 2) organizational segments are recognizable enough and have their investments and costs of capital so that control over the rate of return has meaning, 3) to the managers of these organizational units should be delegated the authority to make decisions that determine profit, but also the type and quality of the investments, 4) the readiness of top management to decentralize decision making and to control responsibility centers and their managers through rates of return and / or residual income.

Although the decentralization process is deepened by forming investment centers, obtaining external funding sources, as well as research and development activities generally remain at the top management level. In order to determine the performance of an investment center, two basic indicators are return on investment - ROI and the residual income or economic value added - EVA. It is no longer enough to use only data from the income statement (as it is case for the profit centers), but also data from the balance sheet, where tha data about amount of assets is used. Managers of profit and investment centers are held accountable to the top management, who had delegated authority to them, unlike top management who is held accountable to the shareholders and other external users of financial statements for the results of the company.

## 4. Measuring the performance of business segments and divisional management

Performance of a company and its segments can be expressed with financial and non-financial indicators. The most common is a profit because it expresses the total performance of a company and it is a common denominator for objectives of a company and its segments. There are different performance measures in manufacturing and service companies, in profit and nonprofit organizations and institutions, and measures depending on the key factors of success such as cost, quality, time, innovation, flexibility and others [5].

Traditionally performance measurement and analysis is based on the financial statements. Company's performance can be expressed by the ratio numbers such as revenue profitability and assets and capital profitability. Revenue profitability ratios are calculated as relation between the different forms of profit and realized revenue. In that way can be determined rate of operating profit, gross profit, contribution, residual or net profit, which shows their relative share in the revenues. Ratios of capital and assets profitability indicate the level of increase of employed assets and capital. It can be counted rate of return on total assets, or only the operating assets, or the rate of return on total capital or only return on own capital. Rates of return are counted as relation between the realized returns in the form of profits and accounting positions by whose engagement is achieved the return on the assets or on the capital.

By measuring profit center performance, results of manager and his responsibility center should be distinguished. Factors that divisional manager cannot control, such as changes in the value of property and equipment of profit center, should not be included in the assessment of his performance, because such decisions are usually made at the highest level. If managers of profit centers or strategic business unit (SBU) have responsibilities about level of investments, then return on investment (ROI) is calculated, when net return before tax is divided to investments.

Regarding capital still has an alternative usage managers should direct capital to those business segments in which the ROI is above the cost of capital. Calculating the ROI is useful from the point of budget the necessary amount of capital in the planning period. Capital is invested in the noncurrent and current assets and through the measuring the ROI an incentive is given to the divisional management to reduce current assets through faster realization of receivables and inventory reduction, or through the acceleration of their turnover.

For evaluating the performance of investment center usually is calculated ROI, but it also has certain disadvantages. In the modern performance measurement systems one of the criteria for awarding divisional management is the level of ROI and thus managers could rejected those projects whose ROI is below average, but above the cost of capital at the level of division. In other words, managers will accept those projects that give higher divisional ROI, but do not increase a long-term value of the division and the company. So it is not enough to calculate a ROI as only success indicator of the of profit and investment center, and as criteria for awarding divisional management. It is necessary to calculate the economic value added - EVA or residual income. Residual income harmonizes the divisional objectives and activities with the decisions that increase the value of the divisions and company. From the point of this indicator eligible projects are those who reject the ROI above the cost of invested capital. This indicator is flexible and varies depending on the rate of risk. EVA or residual income is calculated by subtracting opportunity cost of invested capital from the net business profit after tax. EVA is an estimate the amount above or below the minimum acceptable rate of return for shareholders and creditors. Unlike the market value added, EVA can be counted on divisional level, ie. business unit level. As an economic indicator EVA is based on the idea that the business must cover operating expenses and capital costs.

EVA calculating:

Net sales - Operating Expenses = EBIT - Taxes = NOPAT - Cost of capital (Invested Capital x Cost of capital) = EVA EBIT - Earning Before Interest and Taxes NOPAT - Net Operating Profit After Taxes

ROI indicator is calculated for almost ninety years and has been developed for the first time in the company *Du Pont*, in 1923. Regardless the abovementioned disadvantages, it is a relative measure of the company success and is easy to compare to other relative financial measures - rates, unlike EVA that is an absolute measure of success of the company and its segments.

When incentives are known to the divisional managers, they tend to maximize the defined performance measures of the responsibility centers and those measures are mostly return on investment (ROI) and Economic Value Added (EVA). It is very important to define correctly the rewards and incentives for divisional managers in order to motivate and evaluate their performance. Often managers are motivated to improve short-term performance of its responsibility center, but at the cost of achieving the objectives of other divisions or whole company. For example, a manager of a revenue center may be primarily interested in increasing revenue, although contribution is more important from the company's aspect. As a result, it's more insisted on monitoring strategic (long term) performance indicators of the company and its segments through strategic tool such the BSC is. If divisional measurement are compared only internally, e.g to the previous period performance or in relation to the planned indicators, one could get an unrealistic picture of the division performance. If the conjuncture impact positively on all companies in the branch, the majority of companies and their decentralized units will achieve better performance than expected or the past. Therefore, it is always advisable to consider effects of external factors, such as whether the market share or profitability of the observed division have changed. For this purpose top management need information of divisional management. Another problem in measuring performance arises because most of the performance measures are short-term. Motivated to achieve better and easily measurable results in the current period, on which they get bonuses and rewards, divisional managers avoid investments in intangible assets - research and development, human resources, guality improvement. The effects of these investments are not objectively measurable, appear in the future, and in the current period reduce rate of return, which is the base for evaluation of manager performance. Also the effects of investments in intangible assets manifest later in the period when manager who decided about investment would be on some other managerial position in the same or even in another company. Regardless the great importance of these investments to the long-term value of company, such as increasing product quality, improving employee morale, better services, are hard to measure, visible only in the long term and differ from traditional financial indicators of performance. That is the reason why periodic profit reporting dominates and in order to improve short-term results long-term profitability is sacrificed. The solution may be to define the target values that managers need to achieve in the field of human resources, quality products and services, distribution and other areas or to implement BSC at the divisional and corporate level.

In complex companies there are some decentralized organizational units (divisions) that exchange effects, at prices that are called transfer. Transfer prices depend on whether market-based, cost-based or negotiated model of transfer pricing is applied [6]. From the transfer prices depends income or selling division i.e the cost of purchasing division, which is further reflected on the performance of divisions and their management. Because of that transfer pricing are often a source of conflicts and managers are very interested in the way of determining transfer prices. Whenever it's possible, advantage in the purchasing should be given to the transfers of intermediate products between divisions. But if the transfer prices are set too high division, but not the benefit the company as a whole. Except the price, in the transfer of intermediate products, the quality and timely delivery are also important. Transfer prices have dual, mostly conflict role. On one side they are essential for business decisions and they inform production manager how much to produce and to sale manager how much to order. On the other hand, they help to the top management company to

evaluate performance of profit centers. The problem arises when divisional managers make decisions that misuse the performance measurement of their responsibility center. Guided by the desire to maximize short-term divisional profit, managers take actions that cause falling of corporate profit. Transfer pricing leads to conflict between, on one side the business decision making, and on the other side between divisional performance measurement and their management [7]. Dysfunctional behavior of managers during the negotiations about transfer pricing means that they favor the maximization of short-term performance at the expense of long-term corporate profitability.

By implementing the Balanced Scorecard (BSC) concept the company gets a performance measurement system which identifies factors that enhance long-term financial performance through four interconnected perspectives - financial, learning and growth, customers and internal process perspective. It is based on 15 to 20 different measures that are implemented. The high morale of employees improves internal processes, increase customer satisfaction and improve financial performance of the company. This is the way how to achieve short-term financial goals and at the same time through the successful realization of the other three BSC perspectives, long term strategy is implemented and the value of the company is increased. Regarding most companies are multidivisional and consists of more divisions or decentralized units, each of them can create own BSC, but also contribute to the realization of the corporate strategy.

#### 5. Conclusions

In the company as a complex organization exist many interest groups that attempt to achieve their own goals, even if it does not contribute to optimization of company's goals and interests. As a result, top management faces the problem how to encourage local management to achieve corporate goals through realization of individual interests. At the same time due to opposite interests arise conflicts and top management should be involved in eliminating potential conflicts. Regardless of the difficulties in choosing the best way to measure divisional management performance, it is necessary to assess and evaluate their contribution to the success of their responsibilities centers and company as a whole. Different incentives mechanisms reduce cost of acquiring and processing information, in order to eliminate dysfunctional behavior of divisional managers and to harmonize divisional and corporate goals. Most managers is primarily focused on maximizing short term profits of which depends on the height of their awards. It reflects negatively on the long-term performance of the company. Therefore, the company management assess performance of divisional management and their responsibility centers not only on the basis of financial indicators, such as mostly ROI and EVA are, but also on the basis of non-financial indicators. Through implementation of the Balanced Scorecard concept (BSC) are included financial and non-financial performance indicators of the company and its segments.

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## Transfer price as a factor of effective allocation of companies resources

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Resources of a company are usually limited and their effective use contributes significantly to the performance of the company. If we consider the company consisted of more responsibility centers which exchange intermediate products, revenue of the selling center, are at the same time expenditures of the buying center. Therefore, the selected model of transfer pricing in many ways defines the success and interest of the responsibility centers for internal transactions. The most commonly used model of determining transfer pricing is the cost model, although it has certain disadvantages. Transfer pricing is an important motivator of costs reduction, which also contributes to more efficient spending of limited resources, as well to the better business results of the responsibility centers and the whole company.

#### **Keywords**

divisionalisation, models, resources, transfer pricing

#### 1. Introduction

In companies with decentralized decision making, business segments - profit or investment centers are also competing for companies resources. Resources are usually limited and their efficient use contributes significantly to the performance of the company and its operating segments. Profit and investment centers exchange intermediate products, where the revenues of the selling center are at the same time expenditures of the buying center. Thus transfer price is very important, because operating segments in most cases have the possibility of an external supply. Costs are decisive factor in transfer pricing and cost model is most often applied in practice, regardless of its disadvantages. Costs caused by the acquisition and use of company resources can be variable and fixed. Variable costs depend on the use of resources, while the fixed costs or capacity costs are immutable in the short term, regardless of the capacity employment. It is therefore important to use capacity in the productive way and to rationalize the use of resources alocated to the operating segment.

### 2. Divisionalisation of the company and its operating segments - Profit and Investment Centers

In company with decentralized decision making is usually applied divisional organization model. Divisional model requires the definition of relations between the divisions, as well as the implementation of motivational mechanisms. Divisions as decentralized organizational units are relatively independent, since their managers are delegated authority and responsibility for the results of their responsibility centers. Divisions are competing with each other, but at the same time seek to contribute to the corporate profitability through own profitable business. Divisional model is efficient, flexible and quickly responds to

the changing demands of consumers with the possibility of direct contact with them. Employees can look at their place and role in the division, they are further motivated through different mechanisms and top management may find it easier to control divisional performance. Regarding divisions as competitors for companies resources, conflict situations may arise between them and top management could lose control over the operating segments. Regardless the aforementioned disadvantages of divisional model, increasing volatility and complexity of environment and technology, as well as growth and development of the company through diversification requires a certain degree of management decentralization and a flexible organizational structure that will adapt with frequent changes in the environment and the company.

Profit center manager has the authority in the field of production and sales and decides which products, at what price and how to produce, sell and distribute. Manager decides on which products will allocate resources and he should establish an optimal relationship between scope, price, quality and production cost. He has no jurisdiction about level of investment. Performances of division and its management are evaluated by comparing realised and budgeted profit. More divisions can create a profit center, as well as one division can consists of more profit centers. The division as a profit center must have a critical mass of revenues and expenses and profits and should realise profit as an indicator of performance of management and its responsibility center. Responsibilities should be delegated to managers, and considering that the manager is responsible for manufacturing and selling, profit center should have recognized external market of inputs and outputs. Also top management should be ready to control profit centers through actual financial results [1].

Investment centers are like small companies, but without legal autonomy, because their managers have authority to make decisions on assortment, pricing, but also the amount and type of investment. However, activities related to obtaining external funding sources, as well as research and development activities remain at the level of top management. An investment center may itself consists of more profit centers. In order to determine the performance of an investment center, the two main indicators are the rate of return on investment (ROI) and the residual income or economic value added EVA (Economic Value Added). ROI has certain shortcomings, but is often used, and as a relative indicator of performance is comparable with different rates. Residual income harmonizes divisional and corporate goals and objectives. In terms of this indicator projects that reject the rate of return above the cost of invested capital are acceptable. The management of a company is responsible to shareholders and other external users of financial statements, while managers of profit and investment centers are responsible to the top management who delegated them the authority.

It is recommended to implement the concept of Balanced Scorecard [2] which has four interconnected perspectives - financial, learning and growth perspective, customers and internal processes, and through them are identified factors that enhance long-term financial performance. By creating a healthy working environment and raising the morale of employees, internal processes are improved, customer satisfaction is increased and finally financial results are improved. Through this short-term financial goals are achieved, strategy is successfully implemented and long-term value of the company is enhanced.

#### 3. Intermediate products and transfer pricing models

In complex companies decentralized organizational units (divisions) exchange intermediate products at prices that are called transfer. The main objective in the determination of transfer pricing is to motivate divisional managers to work in the interest of the whole enterprise. Transfer price determines revenue of selling division and costs of buying division, which is further reflected to the result of divisions and their management. Because of that transfer prices. Whenever it's possible, the advantage in the division supply should be given to the internal supply. But if the transfer prices are too high divisional managers will prefer an external supply, which will increase the benefit of buying division, but not the benefit of the company as a whole. Performance measurement of their responsibility centers through own decisions and activities. Transfer pricing leads to conflict between on one side business decision making and on the other side performance measurement of divisions and their management. Dysfunctional behavior of

managers by negotiation about transfer pricing favors the maximization of short-term performance instead of long-term profitability of the company. Regardless of the benefits that divisional managers can achieve through such behavior, in decentralized companies decisions about internal or external supply, or about transfer pricing, should be made on the divisional level. Managers at the highest level do not have the necessary information about markets of intermediate products, variable costs, employed capacities and therefore should not determine the level of transfer pricing. Otherwise the sense of decentralized decision making is lost. Even if the divisional managers make wrong business decisions in terms of selecting sources of supply, the fall of divisional profit and rates of return will negatively affect the performance of operating segments. This will motivate managers to find ways to improve the performance their responsibility centers and own performance, because the amount and character of their awards depends on it.

		I	0	
Reason	Operating segments	Cost determinition	Control	Other
	profit determinition			
Structure (in %)	47	21	23	9

Table 1	[3]: Reasons	for transfer	pricina	determinition
	[-]		F	

Transfer prices may be market-based, cost-based or negotiated. Transfer pricing level depends on the model of their determination. The market transfer pricing model is recommended as the most objective, because realization of profit and investment centers has the most realistic value. Intermediate products have prices that are applied on the external competitive market. Divisional managers should have a sufficient level of autonomy in making decisions about internal or external supply, depending on what is better for their responsibility center. But we should bear in mind that external markets are not perfect, ie. there is no perfect competition, and managers for the purpose of maximization of short-term interests of their divisions, can harm the short and long-term interests of the company.

Market transfer pricing can be applied when there is a very competitive market of intermediate products, although that happens rarely in the practice. Highly competitive market means that the selling division can sell to external customers as much as possible, and that buying division can be supplied by external suppliers as they wish, without any impact on the price. In this model is also important whether the capacity of selling division are fully employed, because it affects the decision of internal or external supply. If market transfer price does not contribute to long-term corporate profitability, preference should be given to external supplies. Beside the price, in the intermediate products exchange are also important quality, timeliness, specific and sensitive features of the product, and sometimes priority must be given to internal supply. In order to maximize short-term profit of their division, profit center managers take actions that lead to falling long-term corporate profit. The external supplier can offer very low prices with the intention to increase them later, or may insist on a long-term contract to supply at prices that will depend on short-term market. In such situations priority should be given to internal supply, although external purchase will increase profit of operating segments in the short term.

Based on research conducted in 73 German companies is confirmed hypothesis that marketdetermined transfer prices significantly affect the motivation and efficiency of decentralized organizational units, in comparisson to other non-market transfer pricing model. It is assumed that there is a transparent market of substitutes, that the market price is known and that operating segments have similar strategic importance for the company [4].

Cost transfer pricing are applied when there is no external market for intermediate products or external market prices cannot be used. Transfer pricing can be based on variable or total costs. Cost transfer pricing model is the most common in practice, although it has certain disadvantages. If the transfer price is based on total costs, the product price of the sellig divisions may be uncompetitive in comparison with prices of external suppliers. Then the buying division prefers an external supply, which will negatively affect the selling division, especially if there is no alternative use of production

capacity. If the transfer price is based only on costs, the selling division does not generate any markup. Only the division that is the last in the chain and sale to external customers will earn [5]. By using the cost model there is no incentive to control and reduce costs. The costs are transferred from one division to another. The problem can be overcome by establishing the transfer price based on standard costs, in order to prevent uneconomic resource use and transfer of costs of unemployed capacity from the selling division to the buying division through transfer pricing. Transfer price may be equal to the standard cost and standard variable cost and in the literature is mentioned transfer pricing plus markup. Regardless of the these disadvantages easy application of the model make it dominant.

Transfer pricing model	Cost based	Market based	Negotiated	Other
Canada (in %)	57	30	7	6

#### Table 2 [6] : Transfer pricing models in large Canadian companies

In the report of transfer pricing models in large Canadian companies, most of them implemented costbased transfer prices In most U.S. studies is stated, as in the Canadian companies, cost based transfer pricing model dominate with 46%, market based model with 33% and negotiated model with 21% [7].

Negotiated transfer prices are used if the market transfer price could decrease the profits of companies and concrete divisions. Then divisional managers through negotiations determine transfer pricing. Transfer prices should be determined in a fair manner acceptable to both negotiating sides, and thereby contribute to the optimization of divisions and companies objectives. Opportunity cost are criterion of accepting transfer pricing whereby opportunity cost of the selling division should be lower than the opportunity cost of buying division, but the outcome will vary depending on employment of capacities. It is also important that negotiators are in the informational symmetric position and that have autonomy in decision-making about sources of supply - internal or external.

Transfer prices are determined by negotiations when there is no perfectly competitive markets of intermediate products, and cost model has certain limitations. Buying division has the following options [8]:

a) to accept the offer, b) to negotiate for lower prices and better conditions, c) to obtain an offer of external suppliers and negotiate with him or d) to reject the offer and make an external supply or not to supply at all.

For the success of the negotiations it is important that divisional managers have all necessary information, that the price could be equal with the opportunity cost of one or both divisions, as well as there is possibility of external purchases or sales. The outcome of negotiations depends on the lowest acceptable transfer prices of selling division and the highest acceptable transfer price of buying division, as well as whether selling division has alternative use of capacity. The top management is also available to divisional managers, but it should be engaged only if the negotiating process doesn't lead to an optimal outcome for both divisional conflicts are possible, divisional performances depend on the negotiating skills of managers, the engagement of top management can be necessary, suboptimal products quantity can be purchased if the transfer price is above oportunitetnih costs.

Criterium / Model	Market based	Cost based	Negotiated
Achieves Goal Congruence	Yes, if markets competitive	Often, but not always	Yes
Useful for Evaluating Subunit Performance	Yes, if markets competitive	Difficult, unless transfer price exceeds full cost	Yes
Motivates Management Effort	Yes	Yes, if based on budgeted costs; less incentive if based on actual cost	Yes
Preserves Subunit Autonomy	Yes, if markets competitive	No, it is rule based	Yes
Other factors	No market may exist	Useful for determining full-cost; easy to implement	Bargaining takes time and may need to be reviewed

#### Table 3 [10] : Comparison of transfer pricing models

Based on the table it can be concluded that the best model is market transfer price, but often there is no competitive market for intermediate products. Negotiation model also has positive features, but requires time and skill of divisional management, and sometimes top management engagement. Cost model has minimum advantages, but because of the simplicity is the most common in practice.

## 4. Transfer pricing influence on resource allocation in decentralized organizational units

Decentralized decision making has many advantages that are reflected in faster business decision making and responding to requests from the environment, greater motivation and responsibilities of management and other employees at the local level, management training and their progress, etc.. But decentralized management system causes the increase in cost of acquiring information, duplication of some activities, conflicts between divisions that are also competitors for resources of a company, favoring divisional instead of corporate goals, which all reflect to the increase in the total costs and may result in the suboptimal resource allocation.

Transfer price may contribute to the harmonization of divisional and corporate objectives and easier implementation of a strategy. By comparing three models of determining transfer pricing - cost, market and negotiation, we can see how the transfer prices affect divisional revenues, expenditures and results, which further reflects on the motivation of management and its contribution to the achieving goals of their division and whole company.

In this example customized to [11], there are two divisions - Transportation of crude oil and Refinery. In this table are given purchase prices and variable and fixed costs per unit for both divisions.

Cost / Division	Transportation	Refinery
Purchase price	15 \$	27 \$
Variable cost	3 \$	10 \$
Fixed cost	4 \$	5\$
Total	22 \$	42 \$

Table 4: Purchase prices, variable and fixed costs per unit for both divisions

In this example, the market transfer price is \$ 27, by which the Refinery buys crude oil and processes it into gasoline. To determine the transfer price in the cost-model, which is usually used in practice, we can assume that the transfer price represents 110% of the total cost of Transportation, which means that it would amount to \$ 24.2 (\$ 22 \* 110%). According to the negotiated transfer price model would have been in the range of 24.2 to \$ 27.

Table 5: Comparison of transfer prices level according to different models

	Market based	Cost based	Negotiated
Transfer price (in \$)	27	24,2	24,2 - 27

Assuming that Refinery buys 1000 barrels of crude oil and processes it in 500 gallons of gasoline we can determine the operating profit for each of the models, given that transfer pricing may vary. Selling price of Transportation Division is at the same time purchase price of Refining Division. Market selling price of gasoline gallon is \$ 71. Regarding of the negotiating model has price range, in the table is not quantified operating profit to be made using this model.

Table 6: Calculating operating profit for divisions

		alouidanig oporating pron		
	Market based transf	er price	Cost based transfer pr	rice
	Transportation	Refinery	Transportation	Refinery
Revenue	27000	35500	(24,2\$*1000barr.)	35500
	(27\$*1000barr.)	(71\$ * 500 gall.)		(71\$*500 gall.)
Operating	22000	34500	22000	31700

expenditures	15000	27000	15000	24200
-Purchase price	3000	5000(10\$*500 g.)	3000	5000(10\$*500g)
- Variable cost	4000	2500 (5\$ * 500 g.)	4000	2500(5\$*500 g.)
- Fixed cost				
Operating profit	5000	1000	2200	3800
Total profit for both				·
divisions	6000		6000	

From the example in the table we can conclude that the total operating profit for both divisions is the same regardless of the method of transfer pricing, but redistribution of profits between divisions differs depending on the selected model. Divisional managers are very interested in maximizing profits and the realized rate of return on investment, as a criteria for evaluating the success of profit or investment centers, and the basis for rewarding its management. Division participation in companies resources that are generally limited, will depend on their performance.

The goal of any manager is to maximize the difference between revenues and expenditures. Transfer prices of the selling division are a factor of realised revenues and tend to their upper limit. At the same time transfer prices are a factor of expenditures in the buying division and tend to their lower limit. This explains why transfer prices are source of conflict situations. In fact most of the divisions have the option of an external supply, which may increase short-term divisional profit, not corporate profit. Divisional management business decisions and their effectiveness in determining appropriate transfer prices depend on the degree of division capacity employment. If the production capacities of the selling division are not enough employed, management can attract customers by selling price that doesn't include fixed costs. In this situation, buying division has an advantage and possibility to choose sources of supply (internal or external), which through transfer pricing reflects the level of expenses and profit of buying division.

#### 5. Conclusions

Decentralized decision making has many advantages, but causes the increase of costs of acquiring information, conflicts between divisions that are at the same time competitors for companies resources, as well as favoring divisional instead of corporate goals, which all reflect the increase of total costs and may result in suboptimal allocation of companies resources. Each capital has its price and own capital too, because there is always the possibility of its alternative use. In particular, management should be cautious with investing borrowed capital, because the rate of return of particular project should be higher than the cost of borrowed capital in order to make investment sense. Transfer prices affect divisional revenues, expenditures and results, which further reflects on the motivation of management and its contribution to achieving goals of their division and whole company. More successfull divisions have greater participation in the resource allocation and thus divisional managers are interested in transfer pricing model that will be applied – market based, cost based or negotiated model. Regardless of its disadvantages, cost based transfer pricing model is the most common in pracitice.

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# Using Multicriteria Optimization in Process Planning

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Estimation of production time, delivery term, production costs etc., are some of the key problems of unit production. In the previous research strong correlation was discovered between the features of the product drawing and production time, which has resulted with 8 regression equations. They were realized using stepwise multiple linear regression. Since the optimization of these regression equations did not fully define the most frequent requirements, multicriteria optimization was applied. The applied criteria included: minimum production time, maximum work costs/total costs ratio for a group of workpieces. The group was created using specific classifiers that defined similar workpieces. A STEP model with seven decision variables within a group was applied, and the groups with a high index of determination were selected. Independent values that maximize the work costs/total costs ratio and minimize production times were determined. The obtained regression equations of time production parts and work costs/total costs ratio are included in the objective functions to reduce production time and increasing, work costs/total costs at the same time. The values of decision variables that minimize production time and maximize work costs/total costs ratio were determined. As the solution of the described problem, multicriteria interactive STEP method was applied.

#### Keywords

multicriteria optimization, STEP method, process planning

#### 1. Introduction

In times of crisis, recession, and in the 'normal' business conditions as well, managements are constantly confronted with the same questions: how to reduce production times, delivery, production cycle; how to 'cut' all expenses including the costs of product manufacturing, and how to increase own share of the market pie; how to increase productivity; how to balance the productivity of all jobs during the process, especially when cycle production is concerned; how to increase the ratio of productive/unproductive time or cost; how to increase utilization of capacities, how to increase company profits...Such questions are a constant nightmare of all managements of manufacturing companies. Our numerous experiences and experience of others as well, and following of economic trends in Croatia and wider have motivated us to start research in this area. Since a considerable number of research works and papers are dealing with optimization of technological parameters, we have decided to focus our attention on the relationship between product features (geometry, complexity, quantity,...) and production times and costs [1,2,3,4, 5]. It has been proved that it is possible to make estimation of production time applying classification, group technology, stepwise multiple linear regression as the basis for accepting or rejecting of orders, based on 2D [1] drawings,

and the set basis for automatic retrieval of features from the background of 3D objects (CAD: Pro/E, CATIA) and their transfer to regression models [4, 5]. Of course, certain constraints have been set: application of standardized production times from technical documentation or estimations made using CAM software (CATIA, PRO/E, CamWorks), type of production equipment/technological documentation determines whether it will be single- or low-batch production. Initial steps have been taken regarding medium-batch, large-batch or mass production. It has been assumed (relying on experience) that small companies (SMEs) in Croatia make decision about acceptance of production (based on customer's design solution of the product, delivery deadlines and manufacturing costs imposed by the customer - PICOS concept: automotive industry VW, GM) on the basis of free intuitive assessment due to the lack of time and experts. This often results in wrong estimates.

#### 2. Results of regression analysis

One of the authors was for some time the technical director of INAS company, a successful producer of machine tools in Croatia. Thus, the used technological documentation for conventional machining tools (420 positions) is from that source. By classification of workpieces, determined by BTP form, 8 regression equations for 8 groups of products were obtained. The main grouping criteria were the features (geometrical, tolerance, hardness) from technical drawings and for each workpiece production time was used (technological and auxiliary time).

It was found that the optimization of regression equations, in order to obtain minimum or maximum production times was insufficient with respect to the needs in real production. Thus, the aim was to obtain, by considering a series of regression equations, the optimum for multiobjective optimization (minimal production time, labor cost/material cost ratio or labor cost/total cost ratio for the selected group of products. As multiobjective optimization requires the same variables  $(x_1,...x_7)$ , it was necessary to make new grouping of the basic set (302 workpieces) using new classifiers. New classifiers were defined W (1-5), based on 5 basic features:

W1-material: 1(polymers)-5(alloy steel), W2-shape: 1(rotational)-5(complex), W3- max. workpiece dimension: 1(mini V<120mm)-5(V>2000 mm), W4- complexity, BA – number of dimension lines: 1(very simple BA $\leq$ 5)-5(5 –very complex BA>75), W5- treatment complexity: 1(very rough)-5) very fine). The conditions were defined based on the range of data about the number of dimension lines on the considered sample of 415 elements. A classifier that is being developed is based on 5 basic workpiece features. For the purpose of the research, a group of workpieces (W1-W5) 41113 was selected for further analysis. The code 41113 means: steel – rotational – small – very simple – commonly complex - workpieces. From the available database, the minimum and maximum values for independent variables, and dependent variable ( $Z_1$ -production time), and derived variable  $Z_2$  was taken.

			PR	ODUCTIN	(PE - 4111	3			
min	2.90	0.100	1.00	11.21	0.22	0.0132	0.001	6.00	0.92
max	100.00	0.400	5.00	19.63	12.50	0.3972	0.820	33.00	1.00
variable	<b>X</b> 1	<b>X</b> <sub>2</sub>	<b>X</b> 3	<b>X</b> 4	<b>X</b> 5	<b>X</b> 6	<b>X</b> <sub>7</sub>	Z <sub>1</sub>	Z <sub>2</sub>
Variable description	Workpiece outer diameter	Narrowest tolerance of measures	Scale of the drawing	Material mass/stren gth ratio	Wall thickness/le n-gth ratio	Product surface area	Material mass	Production time	Ratio of Work costs/total costs
unit of measure	mm	mm	number	number	number	$10^4$ mm <sup>2</sup>	kg	h/100	number

 Table 1 Minimum and maximum values of selected variables

Two regression equations,  $Z_1$  (production time) and  $Z_2$  (labor cost/total cost ratio), were selected. For them multiobjective optimization was also performed. In order to use the same types of variables, new grouping was made using specifically adjusted classifiers. *Workpiece classification according to the criterion of complexity* was done semi-automatically by setting conditions on certain features of drawings (basic roughness, the finest roughness requirement, the narrowest tolerance of measures, the narrowest tolerance of shape or position (geometry), number of all roughness and geometry requirements in the drawing. Each of these 6 criteria based on its specific conditions is assigned a value ranging from 1 to 5. The obtained result is rounded to integer (e.g. 3.49 is W=3, and 3.51 is W=4), and this integer (in the range from 1 to 5) becomes complexity criterion coefficient (the fifth digit in the code).

Regression Statistics	Dependent variable -production time Z <sub>1</sub>	Regression Statistics	Dependent variable- work costs/ultimate costs ratio Z <sub>2</sub>
Multiple R	0.92212166	Multiple R	0.99207
R Square	0.85030835	R Square	0.984202
Adjusted R Square	0.78481826	Adjusted R Square	0.977291
Standard Error	4.09742037	Standard Error	0.002725
Observations	24.0	Observations	24.0
Z <sub>1</sub>	Coefficients	Z <sub>2</sub>	Coefficients
Intercept	-13.490042	Intercept	0.990439
X Variable 1	0.86652065	X Variable 1	0.000238
X Variable 2	-0.1993556	X Variable 2	-0.0039
X Variable 3	0.75343156	X Variable 3	0.00046
X Variable 4	1.41593567	X Variable 4	0.000794
X Variable 5	-1.8669075	X Variable 5	-0.00107
X Variable 6	4.83640676	X Variable 6	-0.04466
	54.074004		0.00554

**Table 2** Results of stepwise multiple linear regression

#### 3. Description of the model

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The general multiciteria optimization problem with n decision variables, m constraints and p objectives is [6]:

max imize 
$$Z(x_1, x_2, ..., x_n) = \begin{bmatrix} Z_1(x_1, x_2, ..., x_n), Z_2(x_1, x_2, ..., x_n), ..., Z_p(x_1, x_2, ..., x_n) \end{bmatrix}$$
 (1)

s.t. 
$$g_i(x_1, x_2, ..., x_n) \le 0, \ i = 1, 2, ..., m$$
  
 $x_i \ge 0, \ j = 1, 2, ..., n$  (2)

where  $Z(x_l, x_2, ..., x_n)$  is the multiciteria objective function and  $Z_l(\ ), Z_2(\ ), Z_p(\ )$  are the *p* individual objective functions. Benayoun (1971) developed the step method as an iterative technique that should converge to the best-compromise solution in no more than *p* iterations, where *p* is the number of objectives. The method is based on a geometric notion of best, i.e., the minimum distance from an ideal solution, with modifications of this criterion derived from a decision maker's (DM) reactions to a generated solution. The method begins with the construction of a payoff table. The table is found by optimizing each of the *p* objectives individually, where the solution to the  $k^{th}$  such individual optimization, called  $x^k$ , gives by definition the maximum value for the k<sup>th</sup> objective, which is called  $M_k$  (i.e.,  $Z_k(x^k) = M_k$ ). The values of the other *p* -1 objectives implied by  $x^k$  are shown in the  $k^{th}$  row of the payoff table. The payoff table is used to develop weights on the distance of a solution from the ideal solution. The step Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development

(**^**)

method employs the ideal solution, which has components  $M_k$  for k = 1, 2, ..., p. The ideal solution is generally infeasible. The  $\lambda$ , metric is used to measure distance from the ideal solution. The distance is scaled by a weight based on the range of objective  $Z_k$  and the feasible region is allowed to change at each iteration of the algorithm. The basic problem in the step method is:

$$Min\,\lambda \tag{3}$$

$$\Pi_{k}\left[M_{k}-Z_{k}\left(x\right)\right]-\lambda\leq0,\quad k=1,2...,p$$
(4)

$$\mathbf{x} \in F_d^i \quad \lambda \ge 0 \tag{5}$$

where  $F_d^i$  is the feasible region at the i<sup>th</sup> iteration and  $\lambda$  is used to indicate that the original metric has been modified. Initially,  $F_d^o = F_d$ ; i.e., at the start of the algorithm the original feasible region is used in (5) The weights  $\pi_k$  in (4) are defined as:

$$\Pi_{k} = \frac{\alpha_{k}}{\sum_{k=1}^{k} \alpha_{k}}$$
(6)

where

$$\alpha_{k} = \frac{M_{k} - n_{k}}{M_{k}} \left[ \sum_{j=1}^{n} (c_{j}^{k})^{2} \right]^{-\frac{1}{2}}$$
(7)

where  $n_k$  is the minimum value for the  $k^{th}$  objective; i.e. it is the smallest number in the  $k^{th}$  column of the payoff table. The  $c_j^k$  are objective function coefficients, where it is assumed that each objective is linear.

$$Z_{k}(x) = c_{1}^{k} x_{1} + c_{2}^{k} x_{2} + \dots + c_{n}^{k} x_{n}, \quad k = 1, 2, \dots, p$$
(8)

The solution of (3) to (5) with  $F_d$  in (5) yields a non-inferior solution x(0), which is closest, given the modified metric in (6), to the ideal solution. The decision maker (DM) is asked to evaluate this solution. If it is satisfactory, the method terminates; if it is unsatisfactory, then the decision maker specifies an amount  $\Delta Z^*_k$  by which objective k may be decreased in order to improve the level of unsatisfactory objectives, where objective  $k^*$  is at a more than satisfactory level. A problem with a new feasible region in decision space is then solved. A solution is feasible to the new problem,  $x \in F_d^{i+1}$ , if and only if the following three conditions are satisfied:

$$x \in F_d^i \tag{9}$$

$$Z_k(x) \ge Z_k(x^i) \quad \forall k \neq k^*$$
(10)

$$Z_{\nu^*}(x) \ge Z_{\nu^*}(x^i) - \Delta Z_{\nu^*}$$
(11)

For the new problem  $\alpha_{k^*} = 0$ ,  $\pi_{k^*} = 0$ , and the other  $\pi_k$  are recomputed from (6) for  $k \neq k^*$ . The problem in (3) to (5) is then resolved with i = i + 1, and since  $\pi_{k^*} = 0$ , (7-78) includes constraints for  $k \neq k^*$  only. The solution to the new problem yields a new non-inferior solution, which the decision maker evaluates. The method continues until the decision maker is satisfied, which the authors claim occurs in fewer than p iterations.

#### 4. Results of the analysis

On the basis of considerations of regression functions in previous sections, the problem of multiciteria optimization with minimization of the objective functions  $Z_1$  and  $Z_2$  with related constraints (equations (12) to (14)) is defined.

- $\text{Min } Z_1 = -13.49004192 + 0.866520652^* \mathbf{x_1} 0.199355601^* \mathbf{x_2} + 0.753431562^* \mathbf{x_3} + 1.415935668^* \mathbf{x_4} 1.866907529^* \mathbf{x_5} + 4.836406757^* \mathbf{x_6} 51.27403107^* \mathbf{x_7}$ (12)
- $\text{Min } Z_2 = -0.990438731 0.000238475^* \mathbf{x_1} + 0.003897645^* \mathbf{x_2} 0.00045981^* \mathbf{x_3} 0.000794225^* \mathbf{x_4} + 0.0010738^* \mathbf{x_5} + 0.044664232^* \mathbf{x_6} + 0.085514412^* \mathbf{x_7}$ (13)
- $\mathbf{x_1} \le 100; \ \mathbf{x_2} \le 0.4; \ \mathbf{x_3} \le 5.0; \ \mathbf{x_4} \le 19.63; \ \mathbf{x_5} \le 12.50; \ \mathbf{x_6} \le 0.3972; \ \mathbf{x_7} \le 0.820$ (14)  $\mathbf{x_1}, \mathbf{x_2}, \mathbf{x_3}, \mathbf{x_4}, \mathbf{x_5}, \mathbf{x_6}, \mathbf{x_7} \ge 0$

In equations (12) and (13)  $Z_1$  represents variable *T*, and  $Z_2$  variable *TU/TR*. It should be mentioned that for the needs of consistency of the objective functions  $Z_1$  and  $Z_2$ , for the objective function  $Z_2$  (equation (13)) the signs of the coefficients of variables and of the free member have been changed. The values of objective functions  $Z_1$  and  $Z_2$  in the extreme points of the set of possible solutions (feasible region) are given in Table 3. It is visible from the table that there is no common set of points ( $x_1, ..., x_7$ ) where both functions  $Z_1$  and  $Z_2$  have extreme (maximum) values, and thus the need for optimization of the given problem is justified.

Extreme		Decision variables					Objective functions		
point	$x_1$ $x_2$ $x_3$ $x_4$ $x_5$ $x_6$ $x_7$ $Z_1(x_1$					$Z_1(x_1x_7)$	$Z_2(x_1x_7)$		
A	100	0	0	0	0	0	0	73.1620	-1.0143
В	0	0.4	0	0	0	0	0	-13.5698	-0.9889
С	0	0	5	0	0	0	0	-9.7229	-0.9927
D	0	0	0	19.63	0	0	0	14.3048	-1.0060
E	0	0	0	0	12.50	0	0	-36.8264	-0.9770
F	0	0	0	0	0	0.3972	0	-11.5690	-0.9727
G	0	0	0	0	0	0	0.820	-55.5347	-0.9203

<b>Table 3</b> Values of the decision variables and the objective function
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On the basis of the data given in Table 3. the data for the first payoff table (Table 4.) have been selected, which is necessary for the calculation of the first compromise solution,

Point of optimal	Ideal values (M <sub>k</sub> ) of objective		
solution	functions ( $Z_k$ ) for $X^k$		
X <sup>k</sup>	$M_1 = Z_1(X^k)$	$M_2 = Z_2(X^{k})$	
$X^{1} = (100, 0, 0, 0, 0, 0, 0)$	73.1620	-1.0143	
X <sup>2</sup> =(0,0,0,0,0,0,0.820)	-55.5347	-0.9203	

#### Table 4 First payoff table

where k=1...2. In accordance with equations (6) and (7) coefficients of equation (4) are calculated as follow:  $\alpha_1=0.0197$ ,  $\alpha_2=10.1974$ ,  $\Pi_1=0.0019$  and  $\Pi_2=0.9981$ .

Arranging the obtained equations, the problem of multiciteria optimization has been practically reduced to the problem of single-objective optimization where the variable  $\lambda$  is minimized according to equation (3). The set of equations for the calculation of the first compromise solution of the given problem is shown in Table 5., and the results of decision variables ( $x_1,...x_7$ ) and objective functions  $Z_1$  and  $Z_2$  are given in Table 6.

Table 5 Set of equations of the first compromise solution

#### $Min \lambda$

```
- \lambda - 0.016463892*x<sub>1</sub>+0.003787756*x<sub>2</sub>-0.014315200*x<sub>3</sub>-0.026902778*x<sub>4</sub>+0.035471243*x<sub>5</sub>-
 0.091891728*x<sub>6</sub>+
         0.974206590*x<sub>7</sub> ≤ -1.6465
  -\lambda + 0.000238022^{*}x_{1} - 0.003890239^{*}x_{2} + 0.000458936^{*}x_{3} + 0.000792716^{*}x_{4} - 0.001071760^{*}x_{5} - 0.00107070^{*}x_{5} - 0.00107070^{*}x_{5} - 0.00107070^{*}x_{5} - 0.00107070^{*}x_{5} - 0.00107070^{*}x_{5} - 0.00107070^{*}x_{5} - 0.001070^{*}x_{5} - 0.0010^{*}x_{5} - 0.0010^{*}x
0.044579370*x<sub>6</sub>-
         0.085351935^*x<sub>7</sub> \leq -0.070005466
\mathbf{x}_1 \le 100; \mathbf{x}_2 \le 0.4; \mathbf{x}_3 \le 5.0; \mathbf{x}_4 \le 19.63; \mathbf{x}_5 \le 12.50; \mathbf{x}_6 \le 0.3972; \mathbf{x}_7 \le 0.820;
```

**Table 6** Results of the first compromise solution

 $x_1=100; x_2=0.4; x_3=1.0; x_4=12.0428; x_5=12.5; x_6=0.3962; x_7=9999998E-4; \lambda=7.128304E-2;$ Min  $Z_1(x_1,...,x_7) = 69.4161$ Min  $Z_2(x_1,...,x_7) = -0.9915$ Max  $Z_2(x_1,...,x_7) = 0.9915$ 

Since in the given problem there are two objective functions, it is necessary to make calculation of the second compromise solution, and thus the previous equations for  $Z_1$  and  $Z_2$  become new constraints shown in equations (15) and (16)

 $0.866520652^{*}x_{1} - 0.199355601^{*}x_{2} + 0.753431562^{*}x_{3} + 1.415935668^{*}x_{4} - 0.199355601^{*}x_{2} + 0.753431562^{*}x_{3} + 0.199355668^{*}x_{4} - 0.19935668^{*}x_{4} - 0.19935668^{*$  $1.866907529^{*}x_{5} + 4.836406757^{*}x_{6} - 51.27403107^{*}x_{7} \le 82.90614192$ (15) $-0.000238475^{*}x_{1}+0.003897645^{*}x_{2}-0.00045981^{*}x_{3}-0.000794225^{*}x_{4}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.0010738^{*}x_{5}+0.001078^{*}x_{5$  $0.044664232^{*}x_{6} + 0.085514412^{*}x_{7} \leq -0.001061269$ (16)Since the value Min  $Z_1(x_1...x_7) = 69.4161$ , it has been decided that the previous value for  $M_1$ =73.1620 is to be reduced for the value of 33.1620, and thus the new value for  $M_1$ =40. The second payoff table is given below.

Table 7 Second payoff table
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Point of optimal	Ideal values ( $M_k$ ) of objective functions ( $Z_k$ )			
solution	for X <sup>k</sup>			
X <sup>k</sup>	$M_1 = Z_1(X^k)$	$M_2=Z_2(X^k)$		
$X^{1}$ =(100,0,0,0,0,0,0)	73.1620-33.1620= <b>40</b>	-1.0143		
$X^2 = (0,0,0,0,0,0,0.820)$	-55.5347	-0.9203		

where k=1...2. In accordance with equations (6) and (7), coefficients of equation (4) are calculated as follow:  $\alpha_1=0.0199$ ,  $\alpha_2=10.1974$ ,  $\Pi_1=0.0019$  and  $\Pi_2=0.9981$ . Since only the value of variable  $M_1$  has been changed, the values of  $\alpha_2$  and  $\Pi_2$  remain the same as in the case of calculation of the first compromise solution. As in the case of the first compromise solution, by arranging the obtained equations, the problem of multiciteria optimization has been reduced to the problem of single-objective optimization where the variable  $\lambda$  is minimized according to equation (3). The set of equations for the calculation of the second

compromise solution of the given problem is shown in Table 8., and the results of decision variables  $(x_1,...x_7)$  and objective functions  $Z_1$  and  $Z_2$  are given in Table 9.



 $\begin{array}{l} \operatorname{Min}\lambda \\ \\ -\lambda - 0.001646389^* x_1 + 0.000378776^* x_2 - 0.001431520^* x_3 - 0.002690278^* x_4 + 0.003547124^* x_5 - 0.009189173^* x_6 + 0.009189173^* x_6 + 0.0097420659^* x_7 \leq -0.101631080 \\ \\ -\lambda + 0.000238022^* x_1 - 0.003890239^* x_2 + 0.000458936^* x_3 + 0.000792716^* x_4 - 0.001071760^* x_5 - 0.044579370^* x_6 - 0.085351935^* x_7 \leq -0.070005466 \\ x_1 \leq 100; \ x_2 \leq 0.4; \ x_3 \leq 5.0; \ x_4 \leq 19.63; \ x_5 \leq 12.50; \ x_6 \leq 0.3972; \ x_7 \leq 0.820; \\ 0.866520652^* x_1 - 0.199355601^* x_2 + 0.753431562^* x_3 + 1.415935668^* x_4 - 1.866907529^* x_5 + 4.836406757^* x_6 - 51.27403107^* x_7 \leq 82.90614192 \\ -0.000238475^* x_1 + 0.003897645^* x_2 - 0.00045981^* x_3 - 0.000794225^* x_4 + 0.0010738^* x_5 + 0.044664232^* x_6 + 0.085514412^* x_7 \leq -0.001061269 \\ \end{array}$ 

Table 9 Results of the second compromise solution

 $\textbf{x_{1}=}~3.37147;\,\textbf{x_{2}=}~0.3711865;\,\textbf{x_{3}=}~4.553035;\,\textbf{x_{4}=}~18.92068;\,\textbf{x_{5}=}~0.2269908;\,\textbf{x_{6}=}~0.2826709;$  $\textbf{x_{7}=}~2.965111E-2;\,\lambda=~7.682257E-2;$  $\textbf{Min~Z_{1}(x_{1},...x_{7})=~19.0013}$  $\textbf{Min~Z_{2}(x_{1},...x_{7})=~0.9915}$  $\textbf{Max~Z_{2}(x_{1},...x_{7})=~0.9915}$ 

#### 4. Conclusion

The paper presents research on the development of a model for the estimation of production time for unit production or medium size batch production. As a result, eight regression equations were obtained. They show estimation of the production time as a function of geometrical and technological characteristics of a homogeneous group of products that were grouped using logical operators. Using specifically developed 5 classifiers at 5 levels, on the sample taken from the real production a homogeneous group was formed which resulted in a regression equation showing dependence between production time ( $Z_1$ ) and 7 independent variables ( $x_1,...x_7$ ). After that, the dependence between the work costs/total costs ratio ( $Z_2$ ) and independent variables ( $x_1,...x_7$ ) is shown in another regression equation. The optimization part of the work considers the possibility of application of standard STEP method as multiciteria optimization approach in optimization of production problems, where the objective functions are obtained by regression model. The results obtained by application of STEP method indicate that its application is possible in the optimization of decision variables of the given objective functions. It is evident that the results of both objective

functions are within the statistical range, i.e. Min  $Z_1(x_1,...x_7) = 19.0013$  and Max  $Z_2(x_1,...x_7) = 0.9915$ , and thus it is not necessary to introduce a new payoff table to find a new compromise (feasible) solution. The following can be concluded: it is cost-effective to manufacture products with minimum outside diameter (x<sub>1</sub>), maximum (wider range) tolerance (x<sub>2</sub>), maximum scale (x<sub>3</sub>), maximum strength/mass ratio (x<sub>4</sub>), minimum of wall thickness/length ratio (x<sub>5</sub>), maximum product surface area (x<sub>6</sub>) and minimum mass of material (x<sub>7</sub>).

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### Fostering Entrepreneurship and SMEs Development through Innovative Microfinance Models

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There are impressive data showing that 99% of all Enterprises in the European Union officially belong to the small and medium enterprises and that vast majority, 92% are micro enterprises, having less than 10 occupied persons. They employ two-thirds of the workforce in the European Union. Having in mind the foregoing, a large number of authors rightfully consider the entrepreneurship to be a backbone or life blood of EU economy, and a key engine of its economic development. One of the major problem micro enterprises are facing with nowadays refers to financial aspects of their businesses, given the fact that businesses in principle start up with insufficient source of own capital while expecting that the remaining part will be provided from other sources, which usually presents a major problem, especially in developing countries. Access to the adequate sources of funds is "conditio sine qua non" (mandatory requirement) of SMEs survival or and future growth. Taking into account the above mentioned microcredits constitute irreplaceable instruments developed by contemporary market economy for the purpose of supporting entrepreneurship. Microcredits as innovative model of SMEs financing, have existed for more than 30 years, but only recently started to draw more intensive attention of general public, first and foremost because of their visibly positive effects on entrepreneurship and overall economic development in global context. Firstly, the objective of this paper is to demystify this innovative business phenomenon, both from theoretical and practical secondly, to demonstrate its current and potential impact to aspects. entrepreneurship and SMEs development in South East Europe, and last but not least to provide some recommendations for future enhancement in this field.

#### Keywords

Entrepreneurship, Innovation, Microfinance, SME

#### 1. Introduction

Entrepreneurship is the driver of a permanent initiative that enables creation of new business ventures, employments and revitalization of national economies. Entrepreneurship as a business philosophy implies a way of thinking, reasoning and implementation of the activities initiated by ideas and circumstances through applicative approach and balanced conduction. Entrepreneurship results in creativity, value increase, effectuation of the value renewal process, not only for the owners in the entrepreneurship process, but for all the entrepreneurship process' stakeholders, as well as for all interested groups within a national economy. [1] The result of this value-added creation process has influence on faster growth of total national economy and entrepreneurship as such becomes "conditio sine qua non" (mandatory condition) without which, there is no development in modern economies.

There are impressive data showing that 99% of all 20,5 million enterprises in the European Union officially belong to the small and medium enterprises. They employ two-thirds or 75 million of the workforce in the European Union. As it can be seen from Table 1. and Figure 1., the vast majority of 92% are micro enterprises, having less than 10 occupied persons. Micro enterprises represent the most typical examples of entrepreneurship activity in European Union and not a large industrial system as it is very often wrongly anticipated by general public. Besides European Union, entrepreneurship represents a corner stone of economic development in all other developed countries in the world.

Category	Number of enterprises		
Micro (0-9)	18.788.000		
Small (10-49)	1.402.000		
Medium (50-249)	220.000		
Large (250+)	43.000		
Total	20.452.000		

Table 1 Number of enterprises by size in EU-27,2007 [2]



Figure 1 Number of enterprises by size in EU-27, 2007

#### 2. Entrepreneurship in South East Europe

There are three major indexes measuring entrepreneurship according to Global Entrepreneurship Monitor (GEM) methodology better known as 3A of entrepreneurship: attitudes, activities and aspirations in national economies. Table 2. shows differences in entrepreneurial attitudes and perceptions in the region according to the adult population survey.

**Table 2:** Entrepreneurial Attitudes and Perceptions in Bosnia-Herzegovina compared to its neighbour countries [3]

	Bosnia and Herzegovina	Croatia	Slovenia	Serbia
	% a	greeing wi	th statement	
Sees good opportunities for starting a business in the next 6 months	50	53	55	56
Fear of failure would prevent starting a business	26	36	33	28
Personally knows someone who started a business in the past 2 years	39	51	50	52
Has the required knowledge and skills to start a business	62	56	44	60
Expects to start a business in the next three years	25	10	7	31

One of the most important results of Global Entrepreneurship Monitor global research is around so called TEA index (Total entrepreneurial activity). This index represents the proportion of people aged 18-64 who are involved in entrepreneurial activity as a nascent entrepreneur or as an owner-manager of a new business.



Figure 2 Early stage Entrepreneurial Activity Rates and per Capita GDP, 2008. [4]

Figure 2 illustrates relationship between per-capita GDP levels and TEA rates. The U-shape pattern can be explained as follows: in countries with low levels of per-capita GDP, many very small businesses are dominantly present in the national economy. As it is higher TEA index, higher presence of smaller business in national economies in particular in those with lower level of per-capita GDP is not for itself good sign. The presence of political and macroeconomic stability is also very important factor in achieving growth, which is reflected by the development of strong institutions.

#### 2.1 Motivations for Entrepreneurial Activities

There is an overall opinion that most of individuals are getting involved in entrepreneurial activities due to opportunity recognition. However, this is not always the case, given the fact that in particular in developing countries people are involved in entrepreneurial activities because they do not have other ways of making living or because they are afraid of becoming unemployed in a future. Such individuals are pushed into entrepreneurial activities by necessity.

Ratio between TEA index of an "opportunity entrepreneurs"(TEA OPP) and "necessity entrepreneurs"(TEA NEC) is the lowest in Bosnia and Herzegovina. Though the total TEA index in Bosnia and Herzegovina is relatively high, it does not considerably contribute to GDP per capita increase as it is the case in other countries. Besides the fact that in the index itself, "necessity entrepreneurs" are obviously dominant, one of the additional reasons for this peculiar paradox lies in the fact that quality of entrepreneurial activity is not determined by this index. Another possible reason for higher value of TEA index is accessibility of the financing sources, that is the largest in Bosnia and Herzegovina, since it significantly contributes to the frequency of the entrepreneurial activity in terms of its quantity. The most present way of financing - through banks - is not always willing or and capable to recognize potential of a microenterprise, particularly in its embryonic phase. The similar can be implied for other, traditionally known organized forms of financing. Due to the foregoing reasons, in the past period, predominantly for micro entrepreneurs, some innovative models have been developed under the name-micro credits.



Figure 3 Necessity-driven and opportunity-driven entrepreneurial activities [5]

Microcredit organizations in Bosnia and Herzegovina have been present for already 14 years and they are considered among the most successful in the whole world. Therefore one can understand the data presented in the Figure 4, indicating that Bosnia and Herzegovina, in comparison to other South East Europe countries, has the lowest number of respondents answering that it is impossible to get a loan, whereas the largest number of respondents believe that it is fairly easy to have an access to loans.



Figure 4 Respondents' perception of access to short-term loans [6]

### 3. Microfinance - innovative and efficient models for entrepreneurship development

Microcredits, as an instrument for financing of entrepreneurship and small businesses have existed for more than 30 years, but only recently started to draw more intensive attention of general and business public, first and foremost because of their visibly positive effects on entrepreneurship and overall economic development in global context. Microcredit distinguishes a small amount, shorter repayment term, and smaller formal guarantees in comparison to the traditional bank credits.

The key objective of micro credits is financing of small sustainable businesses and reduction of poverty level. Through achieving those goals, they indirectly create a positive impact in terms of new jobs creation and reduction of unemployment; decrease in requests for social benefits paid by state, increase of the population purchasing power, and increase of stability of the national economics.

According to its generally accepted definition microcredit represents smaller amount of loan contracted between a microcredit organization and the interested parties for either starting up own business due to unemployment, earning additional income in own household, or/and expanding the existing business. In above mentioned cases, such businesses are commonly small volume entrepreneurial activities organized as micro enterprises, predominantly owned by one person. Most frequently, later microenterprises have up to five employees and may function either at formal or informal bases. Self-employment of entrepreneurs has been

recognized as a universal characteristic of micro enterprises, while additional employees are most often the members of entrepreneur's household.

According to the data available at Mix Market Beta network platform [7] which is not just a global system of comparison, but also presents consolidation of data of a great number of microcredit institutions throughout the world, at the end of 2008, 75,1 million clients used the loans totaling USD 39,1 billion. The average active loan per a client amounts to USD 564,2. Recorded annual growth of microfinance institutions' clients is around 20%. According to the data presented in the Report of Microcredit campaign [8], over 530 millions of individuals have experienced the indirect impact achieved through micro credits.

	Africa (Sub Saharan)	East Asia and Pacific	Eastern Europe and Central Asia	Latin America	Middle East and North Africa	South Asia	All Regions
Outreach							
# of MFIs	275	194	292	384	60	190	1.395
# of Borrowers (millions)	7,5	14,6	3,0	14,1	2,5	44,4	86,2
# of Voluntary Savers (millions)	18,0	25,7	5,2	14,4	0,1	32,4	95,8
Depth of Outreach							
Avg. Loan Balance per Borrower (\$)	626	684	4.008	1.341	746	912	1.588
Avg. Loan Balance per Borrower (% of GNI per Capita)	138	48	155	47	44	115	97
Balance Sheet							
Gross Loan Portfolio (million \$)	3.335	8.185	10.065	16.739	1.178	4.697	44.199
Voluntary Savings (million \$)	1.890	6.457	899	6.674	0	203	16.124
Assets (million \$)	5.512	12.030	13.366	21.100	1.557	7.000	60.565
Equity (million \$)	1.173	1.340	2.106	3.441	527	1.348	9.936
Efficiency							
Operating Expense (% Avg. Gross Loan Portfolio)	44	24	19	39	25	18	30
Cost per Borrower (\$)	187	102	610	294	121	283	301
Cost per Borrower (% GNI per Capita)	41	8	24	9	8	32	21
Profitability % Profitability % ROA -avg.	-3,0	1,5	3,1	0,7	1,1	-1,4	0,4
ROA -median	1,1	2,8	2,9	2,3	2,9	1,0	2,1
ROE -avg.	-9,0	4,1	16,9	-0,5	-6,9	-4,5	1,4
ROE -median	3,6	13,9	11,3	8,8	4,1	8,7	8,9

Table 3	Global	comparison	of micro	finance	sector by	regions	[9]
Table J	Olobal	companson		mance		regiona	191

In accordance with European Microfinance Network (EMN) data, in 2007 microcredit organizations from European Union disbursed a total of 42,750 microloans worth 394 million euros. In the Eastern countries, the total number of 15.793 loans disbursed was equivalent to 94 million euros, whereas in the Western countries, the total number of 26.957 loans disbursed was equivalent to 300 million euros. This means that in the Western countries the average loan size is higher than in Eastern European Union countries. Table 3 shows that number of organizations providing microcredit services as well as the way they are organized significantly varies within European Union countries – from non-government organizations and foundations, credit and saving unions to banks but also government institutions.



Figure 6 Number of Microlenders by Institutional Type by EU Countries [10]

The official data of the Association of Microcredit Institutions in Bosnia and Herzegovina (AMFI) [11] show that in this country at the end of 2008, 392.700 clients benefited from the microcredits, in the total amount of KM 1.044 millions. An average active loan per a client was 2.658 KM.

Micro credits are powerful, successful and strong instrument for financing of entrepreneurship since they have been identified as accessory tools for creation of productive micro businesses and for increasement of self-employment level. Analysis of its impact in Bosnia and Herzegovina shows that employment progress has been made considering the fact that micro business in Bosnia and Herzegovina at average, employs 2,15 workers [12]. Concerning long term impact not only in Bosnia and Herzegovina but also in other countries in the world, micro credits help clients in improving their financial standing, starting up and developing their own business ventures, creating a surplus value, which strongly contributes to the economic progress at the national level.



Figure 7 MFIs in Bosnia and Herzegovina

It is the fact that the existing forms of microcredit providers in the European Union are neither satisfactory nor they play their role to the sufficient extent. For the sake of illustration, it is enough to state that overall amount of loan disbursed through such institutions is only 10% of those that were disbursed through microcredit organizations in Bosnia and Herzegovina. Taking this into consideration, in the past period, throughout European Union, large number of various initiatives and measures has been undertaken, having the goal to promote

microcredits and create an adequate legal framework for stronger and more efficient implementation of microcredits through microfinance organizations. The following projects of the European Commission are considered particularly interesting: Jasmine (European Commission Initiative to reinforce development of micro-credit in Europe), Jeremie (Improved access to finance for micro business and SMEs in the regions of the EU), Jessica (Sustainable development for urban areas) etc., as well as existence of European Microfinance Network (EMN) but also strengthen promotion and integration of the term microcredit in educational institutions.

The proof that this is the movement that includes all countries of the European Union is the fact that European microfinance network (EMN) is located in Paris, Microfinance network (MFN) is located in Warsaw, European Commission projects in Brussels, microcredit postgraduate studies in Madrid and Turin, organizations – members of European microfinance network (EMN) are also from England, Germany, Romania, Ireland and that, recently, a lot of conferences, round table discussions and symposiums were held in almost all countries of the European Union. They were attended not only by practitioners and experts but also by high officials and the most senior political representatives from the member countries of the European Union.

The above mentioned measures and many others too that are undertaken in the whole world are fully in compliance with the Blue Book of the United Nations the primary goal of which is strong promotion of microcredit institutions while the secondary one is preparation of guidelines for organized granting microcredits through microcredit organizations in an consistent or, at least, similar way in the whole world. The ultimate goal is transformation of microcredit organizations in microfinance institutions and their integration in the inclusive financial system in all countries in the world.

#### 4. Conclusion

The all above stated undoubtedly points out that entrepreneurship is a backbone, and micro, small and medium-scale businesses are the blood stream of all developed national economies. Although microcredit enterprises are the most frequent example of entrepreneurship activity, it can be concluded that the term of micro enterprises is totally neglected, taking into account that, from the terminological aspect, the term SME is predominantly used as an abbreviation or mantra for this phenomenon. Therefore, it is necessary to promote, more strongly, the term of micro entrepreneurship itself, paying much larger attention to it, in both theoretical and applicative sense. It is also necessary to work systematically, particularly in the countries of the South East Europe, on stronger implementation of measures that would encourage further growth and development of entrepreneurship as key determinants of economic development of these countries.

Large number of studies proved that the *one of the major problem* micro, small and medium enterprises *are facing with nowadays refers to financial aspects of their businesses*. It is evident that the current, traditional systems of financing on commercial basis do not support enterprises substantially in an adequate and sufficient extent. This particularly applies to micro entrepreneurs. Therefore, in a past period of time, following that need, a new model of financing for this particular segment of market has been developed. Microcredits are innovative model of micro, small and medium enterprises financing, whose visibly positive effects on entrepreneurship and overall economic development in global context started to draw more intensive attention of general public all over the world.

Given that, they in a very powerful, and as proved in practice very successful way, participate as an instrument of financing, in creation and maintaining of productive micro businesses, while at the same time considerably contributing to the increasement of self-employment

level and improvement of the total rate of employment in national economies, it is certain that fostering entrepreneurship can be achieved more strongly through microfinance models.

Accenting the significance of existence of microcredit organizations as one of the most efficient market-oriented models of entrepreneurship and small enterprises financing, it is of essential importance to continuously encourage innovative development of microfinance models in terms of introduction of new services, such as micro insurance, micro savings, micro leasing etc., besides already existing microcredits. Ultimate recommendation might be that integration of microfinance institutions into inclusive financial systems within national economies will support much stronger and on long term basis, development of micro, small and medium enterprises, as key determinant of self-sustainable economic development in the countries of South East Europe.

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### Human Resources and Globalization -Opportunities for Serbia

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Pressure imposed by global competition and changes in the current business environment, taking into account the global economic crisis, affecting the business of the company, as well as employment. Global competitiveness requires from organizations to be flexible in many ways. Successful business would not be possible without the skilled people, whose skills and motivation are complied with the requirements of modern organizations. Organizations need people committed to their work, with adequate knowledge and experience. Large differences between developed and developing countries are both in quality and in quantity of human capital. The decision about whether and where to invest, investors make on the basis of opportunities offered by the host country, where an important role belongs to the labour market. Qualified and cheap labour certainly will attract foreign capital, while lack of adequate manpower can be a problem, which could cause abandonment of desired investments. It is interesting that by the statements of many representatives of foreign companies and investors, Serbia is interesting to foreign investors, because of the quality of workforce. It opens routes for using sophisticated technology, and knowledge of foreign languages reduces barriers and facilitates communication with foreign investors. These are just some of the characteristics of human resources in Serbia.

#### 1. Introduction

The rapid development of technology, transportation and communication enabled the process of globalization. The main feature of globalization is that national borders are not important in economic terms, because free trade and mobility of labor and other resources led to the destruction of borders and the creation of global markets. In such environment, the fastest and the most adaptable to the changes ones survive.

Viewed as an open system, organization is in constant interaction with the environment. Customer requirements, state labor market regulations, a growing number of competitors, greatly affect the organization. Modern organizations are investing in the foreign countries, in striving to minimize costs and maximize profits. The benefits of foreign direct investments have investors as well as the country in which they invest. Positive effects of these investments are reflected in raising the standards of the host country, jobs, the introduction of new technologies, etc. Effects on the side of foreign investors are reflected in the growth of profits. However, the decision about whether and where to invest, investors make on the basis of opportunities offered by the host country, and the ability to reach high quality and cheap labor, is certainly one of the important factors that influence the ultimate decision of

investors. Globalization creates a higher degree of competitiveness between companies, and to be successful, company must have the right people in the right place

Attracting FDI in Serbia is seen as the salvation for the country's economic recovery. This is especially noticeable today, having in mind the situation in economy and the global economic crisis. Many point out that the potential of Serbia in the field of FDI is huge but untapped, and people are certainly a significant segment of it [1].

#### 2. The concept and characteristics of globalization

Globalization is a process that can be viewed from several angles, such as for example economic, cultural or political. It is featured by creation of a single global market, meeting of different cultures and customs, more and more important role of international institutions. Globalization also refers to the tendency of companies to expand its sales, property or the production on new foreign markets. The development of globalization means a higher level of competition, what implies more pressure to reduce costs, improve employee productivity, etc. All modern companies should be aware of the international context in which they operate, because even if they are not directly involved in international trade they will be influenced by international forces that are largely beyond their control. This is one of the reasons why the financial crisis from the 2008th affected the whole World [2].

Globalization has led to a situation in which number of companies competes for the same customers. At the same time customers have become more sophisticated and informed. Information technology has enabled them to explore and study the competitive products, to make the right choice. Customers are aware that they can choose, they seek alternatives and compare bids. Also, rapid technological change shortens the life cycle of products. As a result there are lots of similar offers, which makes difficult for organizations differentiation compared to competitors, and it further strengthens customers. Due to this transformation in the economy which was dominated by suppliers in the economy in which rulers are buyers occurs. They know what they want, and in order to have the right offer organizations must have competent and valuable employees. They need people committed to their work, with adequate knowledge and experience. Because of that people i.e. employees are the priority of every successful company.

#### 3. Reasons for and against globalization (pro and con globalization)

In recent years, a strong debate between those for and those who are against globalization is led. Arguments that go in favor of globalization would be the following:

- Growth of globalization leads to more specialization, so that all countries involved in this process make benefit from the increasing international trade.
- Countries that have opened for international trade had far faster development than the countries that have not already done so.
- The global production and marketing are included small and medium-sized companies as well.
- But the arguments against globalization are equally strong:
- Globalization undermines the power of nation states many multinational companies are financially stronger than the national states.
- Globalization is creating millionaires who are difficult to control because of its investment capital they want more, they search/buy/sell more.
- The benefits of globalization are not equaly distributed in the world.
- Globalization leads to economic instability of the World.

• Globalization has confused the problem of destroying the environment even further so that today there is a global air pollution, destroying the natural beauty and the like.

However, no matter we are for or against this process, the fact is that globalization is happening and that it affects all of us, regardless of where and in what part of the world we are.

#### 4. Globalization and human resource management

Globalization affects the work force in the world two fold:

- On the one hand, greater mobility of capital affects the growth or reducing unemployment rates in some countries. Where capital is moved, usually reduces the number of unemployed, but the fact that in these areas earnings are generally relatively low.
- On the other hand, globalization affects the increased mobility of labor. The OECD estimated that the percentage of people living outside the country in which they were born between 1985 and 2005, doubled [2]. Half of this migration was between developed countries and the other half from developing countries to developed countries. International labor mobility is related mainly with jobs which on the one hand require low skill, are highly risky and poorly paid or with highly paid positions, those which require large skills and knowledge.

From the aspect of the company, there are two basic problems:

- In today's business environment, companies around the world must develop a mechanism for training future leaders who will be able to respond to current challenges, implement changes in business and laid the foundation of future growth.
- Although it is important to successfully lead the company through turbulent business conditions, it is also important to develop mechanisms for attracting and retaining talented employees, which will be increasingly difficult to find in the future.

For the company it is crucial to identify the skills that will be required in the future, and then quickly develop a critical mass of employees with those skills. In the future, greater attention will be paid to building a good corporate image, which will allow companies to attract and retain capable employees that they will need in the future. Companies will need to ensure timely development of new skills of employees, or if they can not do this, they have to be able to attract qualified workers. Branding of the organization as a good employer will be equally important as the branding of products.

Changes that will affect the business of the company will change the role of human resources department too. From the human resources department will be required competence in finding and retaining talents and managing the various aspects of the employment by contract [3]. Employees in this department will assist the organization to understand trends on the labor market in order to make the right decisions. Taking into account strategic importance of searching for talents, managers of human resource departments will be located at the head of global leading corporations.

Some of the changes that are expected to occur in the labor market would be:

- Although today we are talking about moving the capital to benefits from cheap labor, in the future companies will search for the best, regardless of where in the world they are located. Lack of skilled workers will become a global phenomenon.
- Given that the war for talent will move to the global scene, employees in human resources will have to deal with work visas and work legislation around the world.

- Organizations will enter into individual contracts with Talents and will invest a lot of energy with them to develop long-term relationships, while other needs for workers will be solved by hiring the necessary workforce.
- In order to satisfy the requirements of individual employees, there will be a rise in creative benefits, such as care for the elderly, pets and the like.
- Business in the global economy will increase demand for leaders with global experience. Also, the development of leaders will be critical. Global leaders must develop the ability to manage people and business in different cultures [4].

In one study conducted in the U.S., at the end of the nineties, it was found that 65% of the 129 companies in the United States sought to attract and retain quality staff by special benefits offered to employees [5]:

- 82% offered "sports" clothing at work,
- 60% offered flexible working hours,
- 49% offered programs for training and development of employees,
- 40% offered discount on products,
- 36% offered free food and drink.

Already, the boundaries of retirement become a major problem in the West. Given the low birth rates and longer life expectancy, it will have to be redefined. Organizations in the future will have more to worry about the social and environmental responsibility, while the salaries will equalize globally.

Globalization affects the flows of capital, changing the organizational structure of the company, encourages networking and the creation of various partnerships. Organizations have done all this in order to be competitive, but besides the above-mentioned competitiveness means development of capabilities as well, which further means that organizations need to be more direct to their human capital.

#### 5. Human Resources of Serbia

In Serbia today there is around 9.5 million people. Belgrade itself has about 1.6 million inhabitants [6]. Population structure by sex is balanced. Structure of active population is given in Figure 1.





As it could be seen, the percentage of the unemployed in October 2009 was 16.6 percent. Worldwide, the world economic crisis had a great impact on the unemployed rate as well as

in Serbia. Besides the data concerning percentage of the unemployed what dictates the FDI, the educational structure is much more important.

However, educational structure of the unemployed in Serbia, is not perfect because a large percentage of the unemployed has only elementary school or are unqualified. But, also on the supply side, 3.6 percent of unemployed had a university degree in 2007 and with 2-year college graduates, altogether that was 8.4 percent of total unemployment.

Structure of unemployed population in %					
University	3.6				
2-year college	4.8				
High school	26.4				
Elementary school	27.1				
Unqualified	38.1				

Source: National Employment Service

#### Figure 2 Structure of unemployed population [8]

However, since 2002, universities in Serbia every year produces increasing number of graduates, masters of Science, PhDs.

Graduates, Masters of Science, and PhDs							
Year	2002	2003	2004	2005	2006		
PhDs	303	359	394	468	401		
Masters of Science	835	1,101	978	1,154	1,038		
Graduates	12,099	13,224	14,968	19,678	20,872		

Source: Statistical Office of the Republic of Serbia

#### Figure 3 Graduates, masters and PhDs in Serbia [9]

The analysis that has been done in the field of using information and communication technologies (ICT) in Serbia is encouraging. Namely, the analysis shows that about 85% of Serbia's population between 16 and 24 years, and around 50% of the population between 25 and 54 years are PC literal. This is significant considering that the modern business can not be imagined without the use of computers and the Internet.



Figure 4 Usage of Information and Communication Technologies in the Republic of Serbia (in %) [10]

If we look closer computer users, we can see that the biggest computer users are students, and by educational level people with secondary education.


Figure 5 Share of computer users by employment situation [11]



Figure 6 Educational level of computer users [11]

Large part, especially the younger population actively uses the Internet. The fact that even 60.5% of the population with secondary education use computers and about 94.8% of the students is encouraging.

Result which came from Gallup International research, shows that Serbia has the highest English speaking proficiency in Eastern Europe. Based on the Gallup poll, 42% of total literate population has basic knowledge of English followed by German and French language.





As part of the employment support strategy is concerned, the National Employment Service provides different forms of financial assistance for potential employers. Also, head-hunting agencies cover all major cities in Serbia offering a full range of consulting services including executive search, staff training, and salary surveys.

#### 6. The labour market in Serbia as a factor in attracting FDI

Although since 2000 we can talk about foreign direct investments in Serbia, one should have in mind that the first investments were mainly related to privatization, so there were negative effects rather than positive effects on employment, because domestic companies in which there is generally a surplus of employees were privatized. However, today a significant part of the state enterprises are privatized, the new FDI mainly goes towards Greenfield and similar investments. Building of production capacities implies employment of workers with necessary qualification structure, so that today in these types of investments there is a problem of deficit of labor force. This is the way for the domestic labor market, to reduce the number of unemployed [1].

To successfully fulfill the task of attracting foreign direct investment to increase employment rates, it is necessary to simplify various administrative procedures, provide various types of assistance to investors and relevant links to important institutions and promote the available human capital of Serbia.

However, despite not so good educational structure of unemployed in Serbia today, but promising in future, the foreign investors mention ready and skilled workforce as significant reason for investing in Serbia. Indeed, having in mind the high rate of unemployment, the labor market in Serbia still has a considerable number high qualified without a proper job.

High unemployment rate is one of the greatest economic and social problems in Serbia. However, labor costs in Serbia are twice lower than in countries like the Czech Republic, Hungary and Poland [13].

Average salaries in Serbia are low enough to ensure cost-effective production. Total costs for employers stand at merely one half of the level in Eastern European EU countries. Currently, salary tax and social insurance contributions are already among the lowest in Central and Eastern Europe [9].

With a unique combination of high quality and low costs, Serbia's labor force is one of the key factors in reaching a strong business performance. The quality of the local labor force is best reflected in robust industrial productivity, rising at an 11% rate over the past five years. The population of university graduates grows by more than 15% annually, averaging over 16,500 each year. Technical education is particularly strong: high school students are among the best performers at world contests in natural sciences, while Serbian engineers are well-known for their expertise. In addition, Serbia boasts the highest English speaking proficiency in Eastern Europe. Management education has also been improved by the introduction of joint graduate and post-graduate courses organized by local universities and renowned Western business schools. Essentially, Serbia offers a wide availability of highly qualified staff. The number of engineers and managers is sufficient to meet the growing demand of international companies [14].

Serbia should invest in education to ensure a high quality workforce in the future. Especially if we take into account the fact that Serbia has young people who were in the most adverse conditions managed and are still managing to succeed and be the best in the world in various scientific and professional competitions.

#### 7. Conclusion

The main reason for foreign direct investment is the profit realized by those who have global manufacturing and distribution network. In this way, companies will be able to provide themselves flexibility, today more than necessary. On the other hand, the advantages are on the side of the country in which it invests. It develops its economy, includes the world trends, providing the technology and knowledge [1]. Any investment requires, among other things,

the planning and recruiting workforce. Therefore, the strategy of each company is closely associated with planning and recruitment of human resources [15]. Jobs can not be realized without people. Quality and cheap labor is what every investor has in mind.

The experience of foreign investors with the Serbians as collaborators was positive. Serbians as workers have certain disadvantages and a lot of positive traits. For now, this reputation is largely positive, and the possibility of foreign investors to come to good, valuable and loyal associates is large.

Given the economic crisis, new foreign direct investment is something that Serbia will needed to be further developed, and the relationship between foreign investment and the situation on the labor market will be all the stronger.

Technical culture that exists in Serbia opens various possibilities for using smart (sophisticated) technology. Knowledge of foreign languages, reduces barriers and facilitates communication with foreign investors, the educated and unemployed personnel in the field of construction, metal, transport, textile industry provides high quality performance and high expected profits. There are some of the reasons why foreign companies should invest and why they are investing in Serbia.

Highly educated people, familiar with IT, and well versed in foreign languages, represent Serbia's true capital.

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# Business Incubators in Serbia – From Start-up to Added Value

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The process of developing business incubators in Serbia is relatively late compared to other countries in the region: the first business incubator was opened in 2005 in Knjazevac. Due to the lack of systemic state support and inability of local governments to seriously invest in the development of incubators in their communities, the majority of incubators in Serbia are overcoming the start-up phase thanks to the huge efforts invested by incubator managers. Since the development of incubators is a process that requires time, at this moment it is not yet possible to analyze the performance of companies that were incubated and left the incubators. At the same time, the analysis of rapid development of Business and Technology Incubator of Technical Faculties in Belgrade, which in just two and a half years of work and in limited spatial capacity, has recorded very good results and became a real core of knowledge-based economy, shows the following main elements:

- Use of best practices from developed countries and the EU
- Rational model putting the old space to use
- Partnership with the university and support to young people and innovation
- Developing a set of required services that follow the growing needs of businesses

So far, the development of business incubators in Serbia, even at this initial and most difficult phase shows that is possible to create high added value. This is the main reason why the state should help and more seriously invest in operation of business incubators.

#### Keywords

Business incubators, Start up support, Innovation, Young entrepreneurs, Added value

#### 1. Introduction

After the democratic changes in October 2000, Serbia opted for accelerated development of small and medium enterprises (SMEs), as an engine of social and economic development:

- In 2001, the Government of the Republic of Serbia established the Republic Agency for Small and Medium-sized Enterprises and Entrepreneurship Development, with the aim to support the development and interests of the SME sector. At the end of the same year, the first regional agencies and centres for supporting the SME sector began to be established with the support of donors.
- In 2003, the RS Government adopted the Strategy for Development of Small and Medium Enterprises in the Republic of Serbia for the period 2003-2008. The same year, Serbia signed the European Charter for Small Enterprises, and bound itself to act in accordance with the principles of the European Union.

- In 2005, the first business incubator was opened in Serbia. The development of clusters began, and the Law on Innovation was adopted the same year.
- In 2008, the RS Government adopted the Strategy for Development of Competitive and Innovative Small and Medium Enterprises for the period 2008-2013.

#### 2. The development of business incubators

The development of business incubators in Serbia was relatively late compared to other countries in the region: the first incubator was opened in 2005 in Knjazevac, and at the end of the same year in Nis. Both business incubators were opened with the support of donors. The expansion of setting up business incubators in Serbia came in 2006 and 2007, when the state started to encourage the development of infrastructure for incubators and invest in renovation or construction of business facilities. Now, there are 11 functional incubators in Serbia, with 100 enterprises and 800 employees (Figure 1). Five more incubators were registered in the period 2006-2008, but still are not functional, i.e. have no tenants. During 2009, business incubators in Serbia organized themselves and formed a network of business incubators [1], in order to foster the development of incubators and strengthen their position.



Figure 1 Business incubators in Serbia

Introduction of new and complex support structures, such as business incubators, is not simple and painless process [2]. Setting up and beginning of work in our environment is accompanied by many difficulties and problems [3]. The Law on Innovation recognizes only business technology incubators. The implementation of the Law on Innovation is the responsibility of the Ministry of Science and Technology Development. Other types of business incubators are the responsibility of the Ministry of Economy.

The development of business incubators is a process for which it takes time to be able to see the first effects [4]. Therefore, at this moment is not yet possible to analyze the performance of Serbian companies, which were incubated and left incubators (the first cycle of incubation was completed only in incubators in Knjazevac and Nis). Since there are not enough data and any official surveys on business incubators in Serbia has not been performed yet, for the purposes of this study we used the data from the first study that was conducted in 2009, at the state level of the former Yugoslavia within the project "**Business Incubators** -**Successful model for creating favourable environment for local and regional development**" [5], in which the author of this paper was hired as a coordinator for Serbia.

Data were collected on the basis of questionnaires taken from the EU. Whereas this was the first survey, we can show part of the data for 2008, in which the highest number of business incubators was operating.





Almost all business incubators in Serbia were registered as companies. Most of the incubators in Serbia were established by local governments:

- Half of the incubators in Serbia have only one founder (municipality or city),
- Several of them were established in partnership with NGOs,
- One incubator was established in partnership with the university,
- The size of incubators varies from 500 to 2800 m<sup>2</sup>
- Most of them are production incubators (Diagram 1)
- Over 80% of businesses in incubators are start-ups (newly opened and university spin off firms), (Diagram 2)





Since the investments in physical capacities (often big investments) are not followed by the state support to raise the initial capacity of incubators. The expansion of setting up business incubators in Serbia is not equally followed by the intensity of their development. With the exception of incubators in the Autonomous Province of Vojvodina, where the provincial government approach to establishment and development of incubators is systematic, the image in the rest of Serbia is much worse. Income analysis of individual incubators shows the following:

- Disparity in the size of revenues; one third of all incubators has annual revenues of less than € 30,000,
- Disparity in the income structure: from incubators that do not use any subsidies and have no direct investment from institutions, to incubators that are fully covered from the municipal budget,

• On average, the share of rent is less than 10% in the structure of incubator revenue in Serbia (Diagram 3).



Diagram 3 Structure of incubators income

Due to uncertainty of revenues and lack of long-term approach of the State, managers are faced with the problem of appointment and development of the incubator management team. Consequently, the services that most incubators are providing are minimal (administrative and accounting services). Only half of the incubators managed to organize training and seminars for their tenants and less than 1/3 of incubators provide services in the field of innovation. Virtually all services together do not exceed 20% of total annual cost of incubators in Serbia (Diagram 4).



Diagram 4 Structure of incubators costs

#### 2.1 Preliminary bencmark

**Regional Development** 

**ICEIRD 2010** 

Practically, the first preliminary comparison of Serbia, based on the EU benchmark data [4] hat have been provided by the colleagues from Slovenia [6] is presented in Table 1.

Setting Up and Operating	Average	Range	Benchmark	Slovenia	Serbia
Average capital investment cost	3,7 mio	1,5 – 22 mio		3,17 mio	0,47 mio
Average operating costs	480.000	50.000–1,8 mio		327.000	40.858
% of revenue from public subsidies	37%	0% - 100%	25%	18%	
Incubator space	3.000m <sup>2</sup>	90m <sup>2</sup> - 41.000m <sup>2</sup>	2.000-4.000m <sup>2</sup>	3.730m <sup>2</sup>	1.327m <sup>2</sup>
Number of incubator tenants	27	1 – 120	20 – 30	17	13
roceedings of ternational Conference ntrepreneurship, Innova	for ation and				

Table 1 Setting up and operating - preliminary comparison of Serbia with EU

The costs of investing in incubators on average in Serbia are significantly lower than in Slovenia and the EU. It is important to point out that in cases where new buildings were built for business incubators; the investments worth one million euro were viewed as extremely high and not feasible in terms of cost effectiveness. The average operating costs in incubators in Serbia are obviously below acceptable minimum (Table 2).

Incubator Functions	Average	Range	Benchmark	Slovenia	Serbia
Incubator occupancy rates	85%	9% - 100%	85%	88%	82%
Length of tenancy			3 years		4years
Number of management staff	2,3	1-9	2 minimum	3,6	2,6
Ratio of incubator staff : tenants	1:14	1:2 – 1:64	1:10 – 1:20	1:5	1:25
% of managers time advising clients	39%	5% - 80%	50%	25% (estimate)	20% (estimate)

Table 2 Incubator functions - preliminary comparison of Serbia with EU

For business incubator functions, (Table 2) it is important to emphasize that the ratio between the number of employees in the incubator and tenant companies is not on satisfactory level, and thus the development of services and support provided to tenant businesses in general is not at satisfactory level.

#### 2.2 Case Study

A particularly successful example in our country, based on partnership relations and results achieved in the short term, is the Business Technology Incubator of Technical Faculties, Belgrade Ltd. (BITF) [7]. BITF has been established by four technical faculties of the University of Belgrade (Civil, Mechanical, Electrical and Technology and Metallurgy), the municipality of Palilula and Democratic Transition Initiative, with support from the Organization for Security and Cooperation in Europe, based on the experiences from developed countries and best practices. The objectives of establishing BITF were:

- To create an instrument of supporting young, technically educated people to start and develop their own business, and so achieve their economic livelihood and stay in the country
- To create conditions for the direct commercialization of the results of scientific research work by professors and associates of the faculties, through establishment of own businesses
- Creation of new SMEs in the field of high technologies

These goals are the essence of aims pursued by business incubator and its founders/faculties [8]. Since nobody in the educational process works with young students of technical faculties on entrepreneurship, while the innovation development and commercialization are insufficiently supported in our country, we have profiled incubator activities in two phases:

Preparation of young people, final year students and graduates of Pre-incubation phase technical faculties, for starting own business, through education and training programs, as well as through permanent consulting and mentoring program Development of innovation through the final stages of research processes of development and commercialization of new products, services, technologies and prototypes in the process of transfer of knowledge and technology from the faculties Supporting small innovative businesses/tenants of BITF to Incubation phase overcome difficulties in the early stages of their development, and develop their business successfully with incubator services (economy, legal, accounting ...) and continuous education, consulting and mentoring Proceedings of International Conference for

BITF does not have any subsidies, and because of the relatively small business area at its disposal (600m<sup>2</sup>), rent from tenants makes less than 10% in the structure of revenues. All other revenues come from projects and commercial contracts. In particular, we received significant support through projects from the City of Belgrade and the Ministry of Science, which enabled to incubator members some grants for the development of innovation. In order to meet our goals, most of our revenue is directed towards the development of services as follows:

- Training in entrepreneurship
- Administrative, accounting and legal services
- Permanent consulting in the areas of business planning, intellectual property protection and development of innovation



Diagram 5 Structure of incubator costs

Within only 2.5 years of work, BITF achieved the following results:

- 600 m2 of renovated business space
- 410 hours of training conducted
- 350 students trained in entrepreneurship
- 38 young people engaged in the business incubator and in tenant companies
- 12 small tenants/companies in the business incubator
- 6 new technologies / services developed through innovative projects
- 2 submitted patents
- 1 service centre developed (set of administrative and accounting services, and services for supporting innovation in line with the growing needs of companies)



Figure 2 Business Technology Incubator of Technical Faculties Belgrade - premises

Business space of BITF was renovated in two phases: the first group of start-up companies moved in the incubator in December 2007, and other in early 2009. Although the first cycle of business incubation of 3 years has not expired yet, the financial data of companies/tenants indicate growth of these companies in 2009, despite the global economic crisis. Practically, only one company in 2009 operated worse than in the first year, (Companies from A to E), while in the second group of companies, only 1 had not a good start (Companies from F to E), Diagram 6.



Diagram 6 Income of BITF tenants

Three of twelve companies in BITF are fully export oriented from the first day of operation. The employment growth is another important indicator - 38 young people are employed and over 30 people more engaged occasionally. Immeasurable effect is the fact that among these young people there are 8 who returned from abroad, out of whom four opened their own small business.

#### 3. Conclusions

Support to entrepreneurship and development of complex structures, such as business incubators means first of all change in the way of thinking in our communities. Managers of business incubators in Serbia have gone through start-up phase of setting up a business incubator with great effort of their own. This is particularly evident in Zrenjanin, Prokuplje and Palilula. At the same time, analyzing rapid development of BITF, which only in two years of operating in limited spatial capacity, recorded very good results and became a core of the knowledge-based economy, we can sum up the following basic characteristics:

- Use of best practices from developed countries and the EU
- Rational model putting old buildings to use
- Partnerships with faculties and support to young people and innovation
- Developing a set of required services that accompany the growing needs of businesses

So far development of business incubators in Serbia, even in this initial and most difficult stage shows that it is possible to create high added value. This is the main reason why the state should support and seriously invest in functioning of business incubators.

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# Hidden Socks from the Economic Crisis in Macedonia During 2010

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Macedonian managers are scared that the crisis will continue in 2010, giving new and much stronger economic socks. Most of them will be price oriented, coming from outside. People from the government are scared too, but they do not like to admit it. From one side this is good because they are the last which should show pessimism. They should be optimists because only then they will canalize and direct the economics ahead, which means that they will do all the necessary steps to help the real sector. But if this optimism is not real, than is not serious and detrimental. It is not allowing them to accept the fact that the economic crisis in Macedonia is not finished yet. Some numbers are predicting more complex period with higher budget deficit, lower consumption, bigger unemployment rate and significantly higher trade deficit. The beginning of 2010 is showing that company's profitability will be significantly low. It is obvious that the government anti-crisis actions do not gave the necessary results and there is an immediate need for completely new steps. There are some steps that immediately should be taken for better business climate in Macedonia. They should be oriented toward improvement of the company's liquidity and promoting investment activities with the same conditions for the domestic and international entities.

#### Keywords:

anti-crisis actions, business climate, company's liquidity, economic trends, investment activity

#### 1 Introduction

With very pessimistic thoughts the managers in Macedonia finished 2009. Very sincerely they admit that are scared from the situation and that the crisis will continue and will be even stronger in 2010. In the Government are scared also, but they do not like to acknowledge. From one side this is good because they are the last one that should show pessimism. The prime minister and the other ministers should be optimists because only that way they will lead the economy, which means that they will do the necessary actions to help the real sector. But, if the optimism is not real, than it is not serious and realistic. It is not allowing them to open their eyes and see the real situation, which means publicly to admit something that is more than realistic, that the economic crisis in Macedonia is not finished yet.

The budget is the top priority of this Government. This budget must finance more than 100 000 public administration, social classes, retired people and even the Government campaigns. The main question here is-From where the money will come? Does the increased public spending can be financed by the lower income for the households and companies? Is it possible all the time to take, and never to give, and to help the private

sector, as it is done in all the countries under this crisis? According to the ministry of finance, most probably during the second quarter of this year new Eurobond will be emitted, not to finance some infrastructure project, but mainly because of the lack of money in the budget.

It is sure that the electric energy will be expensive for more than 10%. The price of the crude oil will have upward trend mainly because of the globally stronger economy. Both of them are included for about 50% in the overall expenses for the bigger industries in Macedonia, which in the same time are the biggest exporters and are making the biggest foreign exchange earnings.

Even though the necessary steps till now are not made, and the numbers form the first three months are showing bad condition of the Macedonian economy, we should expect that during 2010 the economic situation will be better than in 2009, but that the economic recovery will be slow and will take longer time than expected. This means that the economy officially is out of recession, but according to the best case scenario, the GDP increase will be not more than 2%. We can say that it will depend on the world economic recovery. We imported the recession. Now we should import the recovery also. But, as we were late with the import of the recession, it is obvious that the import of the recovery will be late also. Some pessimist scenarios are arguing that we haven't still seen the worst situation from the recession.

We still believe the Macedonian economy will recover from the crisis slowly, but surely. There are two main risks for the economic recovery. The first one is that the world economic recovery will fail to reach the expected increase between 1 and 2%. The second one is connected with the country's balance of payment, which should improve enough and to ensure lower interest rates, which is the main point in the economic growth.

Other types of risks in Macedonian economy are located in the labor market and financing sources, especially foreign investments. Although bigger usage of exported capacities is expected, the imported dependence and increased price of fixed costs will provoke bigger deficit in the current account. This will make bigger pressure on the foreign exchange market and denar's rate of exchange. This is guaranteeing stronger monetary policy, which main goal is stronger denar. Mainly the same situation as 2009.

#### 2 South East Europe

The crisis in the countries from Central and East Europe mainly entered via the channels of demand for their exporting products, decreasing the capital gains and significantly negative expectations from their companies initiated from the crisis in the developed countries. Opposing to the good economic results in 2008, in 2009 this group of countries had decrease in the economic activity. The domestic demand was under the influence of the negative expectations: slowing the credit growth in the situation when the risk increase and the places for financing decrease, uncertainty about the future economic trends and absence of bigger investment decisions. Depending on the variation of the economies and the stability of their fundaments, there is difference in the intensity and speed of entrance of the crisis, which will also make difference in the recovery from the crisis in those countries. Except Bulgaria and Croatia, the external debt of the other countries from this region has regular margins, which is one of the positive reasons why they should smoothly pass the crisis. Speaking separately, the biggest decrease in the economic activity is perceptible in Turkey, about 15% in the first quarter in 2009, but in the second the decrease was half in comparison to the first quarter. In this group of countries, Turkish economy has bigger chances for faster recovery, mainly because of the stabile banking system (in comparison to

other regional countries), small external debt and diversified base for economic growth. On the other hand, the economic slowdown in Romania, which was 6% in the first and about 9% in the second quarter of 2009, does not give any signal for faster recovery, but longer anemic economic revitalization. This is coming mainly from the long period of low domestic demand, but also from the fact that the financial stability was not very bright point of Romanian economy even before the crisis. The inflation slowdown is noticeable in all the countries from South East Europe, mainly because of the lower pressure from the prices of imported products and the demand. But, in some countries like Turkey and Serbia, the inflation is gravitating around 7-8%, which is comparable to the nominal depreciation of their currencies.

#### 3 Macedonian economy during 2009

#### 3.1 Aggregate demand

A characteristic of the second quarter of 2009 is the faster decline of the domestic economy, but also the change in the direction of the domestic and net-export demand. Unlike the first quarter, when the decline was a result of the lower exports as a consequence of the lower foreign demand, the main factor of decline in the second quarter was the reduced domestic demand, i.e. the lower private and investment consumption. Such structural changes indicate a process of adjustment of the behavior of the domestic entities, and they indicate that regaining of the confidence will be one of the factors for recovery from the crisis. On the other hand, the larger contraction of the domestic demand relative to that of the foreign demand spilled over in the imports, whose intensive decline is the reason behind the positive contribution of the net-export demand. This can be seen from the graph 1 presented below.

40 30 20 10 0 2008 OB 2007 O1 -1004 -20 Gross Investments Final Consumption -30 Net-exports Domestic Demand

Graph 1: Domestic Demand and Net-exports

Source: State Statistical Office

#### 3.2 Budget and Public Consumption

In circumstances of higher nominal growth in expenditures (10.7%), relative to the growth in the revenues (0.3%), in the second quarter of the year, the consolidated budget deficit went up to 0.9% of the projected GDP for 2009 (from 0.5% of the projected annual GDP in the first quarter).



Graph 2: Budget revenues and expenditures

The growth in budget revenues was entirely a result of the paid dividend of one company. On the contrary, the deteriorated economic condition continued to reflect also on the tax revenues, so that the VAT revenues registered a decline of 14.5%, as a consequence of the inhibited economic activity, while the revenues from the profit tax dropped by 70.4%, partially due to the deteriorated profitability of the companies, but partially also due to the tax relieves which came as part of the anti-crisis measures. On the other hand, the increase in budget expenditures is to a large extent a result of the higher current expenditures (11.2%), primarily of the growth in wages (16.3%) and pensions (10.8%), given the high rise both in the transfers to local authorities (22.3%) and other transfers (27%). Increase was registered also in the capital expenditures (6.5%), which stimulated the construction and investment activity in the economy.

#### 3.3 Employment and wages

Despite the annual contraction of the economic activity in the first two quarters of 2009, no changes in the trends were evident on the labor market in the following quarter. Thus, in the second quarter, the upward trend in the employment continued in this market segment, with simultaneous drop in the unemployment rate being registered. The lack of reaction on the labor market can be partially explained with several factors. First, the change in the phase of the economic cycle transferred on the labor market with certain delay. In most of the other economies, where the recession touched the bottom, the adjustment of the labor market already happened, whereas our economy expects the deepest drop to happen in 2010. Simultaneously, these economies characterized with more intensive fall in the economic

Source: Ministry of Finance

activity relative to the drop in the Macedonian economy. Second, with most of the companies, the decrease in the level of facility utilization was followed with temporary termination of the engagement of the employees, as a consequence of the uncertainty about the character and the sustainability of the effects from the crisis. Simultaneously, the uncertainty on the crisis duration discouraged part of the employers to reduce the number of employees in this phase. These factors were still not enough to explain the improvement of the trends on the labor market, manifested through the growth in the employment, which still can be explained mainly by the growth in the employees in the public administration. However, the fall in the domestic economy till the end of the year indicated to potential worsening in the conditions on the labor market in the area of the unemployment in the following period.

#### 3.4 Balance of payments

In the first half of 2009 positive developments were registered on the current account. The effect from the drop in the export transferred on the import demand with more intensive dynamics, and it was intensified with the smaller pressures through the domestic demand as well, which resulted in annual narrowing in the trade deficit. Simultaneously, with the stabilization of the expectations of the domestic entities, the pressures on the domestic currency dropped as well, so since April the net inflows from private transfers registered upward trend. Opposite to this, the global financial crisis still restricts the foreign investors and creditors to make more considerable financial investments, so the annual fall in the net inflows continued in the capital and financial account. In July 2009, the trend of more intensive downward adjustment in the domestic demand relative to the foreign continued, thus narrowing the trade gap. Despite the positive trends, the risks about the recovery dynamics of the global economy and the re-stabilization of the global financial flows were still high. This created uncertainty about the possibility for the domestic economy to withdraw additional capital inflows, necessary for funding the gap in the current transactions.

#### 3.5 Inflation

The annual average inflation rate in the third quarter is negative of 1.4%, compared to the 0.6% price cut in the second quarter of 2009. Consequently, the cumulative price change shifted to the negative zone, and in the first three quarters of 2009, the average inflation rate equaled -0.4%. The price cut primarily reflects the high-base effects of the energy and food price component, and the decrease pressures of the import prices and the fall in the aggregate demand. The labor unit costs went up in the second quarter of 2009, as well, given the lower productivity and higher paid wages, but as the demand dropped, no larger inflationary pressures are expected through this channel. The annual inflation rate projections indicate further decrease in the next period, due to the broadening of the negative output gap and the expectations for relatively stable prices of the global products.

#### 3.6 Government anti-crisis action

The governments of most of the countries came with anti-crisis actions to smoothly overtake the global financial and economic recession. The same was done in Macedonia from the state government. First group of these actions was brought in November 2008 with the fiscal stimulus of 330 million Euros for the domestic economy. The actions, according to the

government, were mainly pointed to the companies who have problems with liquidity, but also to help the companies that were in a good condition during the recession. The second anti-crisis actions were brought as eight year program for infrastructure projects with total amount of 8 billion Euros. The idea on the short run was helping the building and construction sector which is directly influencing the economic development, and on the long run to improve the competitiveness of the domestic economy. April 2009 there are another, third, anti-crisis actions which cover 70 steps which can be grouped in 3 segments. The first one is rebalancing the budget, which include change of the asset and liability sides in accordance to the macroeconomic projections and situation on the market. The second one is direct help for the companies with credit lines. This should be especially pointed to the small and medium companies which are either working for the domestic market or are exporting to other foreign markets. And, the third segment is consisted of 54 other steps for support of the companies in the specific fields like faster customs procedures, lower transportation costs for companies and transporters etc.

#### 4 Economic situation in 2010

It is obvious from the beginning of 2010 that company's profitability will be significantly low. All the steps that will be taken from them for the exit from the crisis will be unsuccessful if there aren't specific actions that will give them the opportunity to work normally. Here, the priority is given to the public sector, which should be of support for the private companies, not just for their rigorous control. It is normal to work according to the obligations given from the laws, but not to produce norms in order to oblige companies to pay penalties. This process must come to an end. There are two steps that are against the interest of the companies and are showing why the government should stop with this process. First, the Custom officials do not accept the custom guarantees from the import companies, which are issued from the banks. This means that the companies that already had guarantees from the banks will have to additionally deliver funds from their cash flow in order to pay the current customs. This will have significant financial impact on the companies which have to wait from the Custom to return back that funds. Second, on every fifteenth of the month, when the return of VAT should happen, in fact nothing is happening. This means lack of funds for the production companies that should be invested in the current production. It is a big question for the production companies when the return of VAT will be, while in the meantime the state liquidity is contemporary improved.

It is obvious that the budget has a lack of funds to finance the basic obligations. The revenues from the penalties from private entities and companies will cover the shortage to some extent, after which there will be no sources for funds to cover the rest of the government spending. After this, we will be all victims of the forced obligations and penalties for the private companies, coming together with the late return of VAT. With the forced obligations and penalties for the private companies the government should collect 50 million Euros in 2010. Even this is not the biggest problem if the government spends the money for some capital investment, building new factories or highways. All that money are planned for paying the interest rate for the domestic bonds, but also for the Eurobond issued from the government. In fact, the government will finance the banks, domestic and international, with the money collected from the private companies and the real sector in Macedonia.

#### **5** Actions for better business climate in 2010

There are some steps that immediately should be taken for better business climate in Macedonia. Here are some of them as proposals:

## 5.1 Promoting investment activities with the same conditions for the domestic and international entities.

With the intention to assemble as more as possible international investments, the Government brought new measures with the changing of the Law for Technological and Industrial Development Zones, with which there is a possibility for the Government to give support for the potential international investors. As one of the news in this law is 100% relief for the personal tax obligations for 10 years for the international companies that will invest in Macedonia, which previously was 50% relief for five years. This is surprising for the business community. One of the basic issues from the economic crisis was the importance of the domestic production in the real sector and the influence it has on the domestic supply. This reason is enough for the government to equalize the conditions for investing for the domestic and international investors.

It is fact that the international investments are key factor for intensified production without increase of the aggregate spending in the country, which on the short-run will decrease the trade deficit. It is also fact that production increase is in direct proportion with the technical and technological modernization and know-how, which faster will come with international direct investments. That is why there should be a big priority for the Government to intensify the international investments in Macedonia. But, the increase of the international investments should not decrease the importance of domestic investments. After all, all business subjects are equal in front of the law and should be equally important for the country.

#### 5.2 Actions for improvement of the company's liquidity in Macedonia

As mentioned previously, the liquidity is among the biggest problems for the companies in Macedonia. Very big percentage from the companies has problems with the payment of receivables. This is resulting with everyday problems, accounts blocked, inability to compete for better credit lines etc. Some of the proposed actions are

### -Insuring the short-term inquiries from the domestic buyers on the basis of sold products and services

There is a possibility for the domestic companies to insure the short-term inquiries from the international buyers after the export is done, but the business sector is trying to have the same condition regardless of the origin of the buyer. With this, the Bank for Support and Development (MBSD) will indicate new service and scan the domestic company which is the buyer for the products of services (same as the international company), after which will guarantee or not that the payment will be done after the specific period.

## -Realization of the compensation for the debt obligations between the private and the public sector

On the long run this will regulate the obligation between the private and the public sector that are lasting for years. For this, a new law that will regulate this type of obligations is needed.

This law will regulate the subjects which will enter in this type of compensation, type of obligations, their level, way and time of realizations etc.

#### -Coordinative actions of different inspection officials

Initiation of new Coordinative Body for inspection officials, which main activity will be collecting the data for the companies from different officials and making a data base for the companies, which will shorten the time that inspection officials are spending in the companies.

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# Healthy in Transition - Health System in Serbia – Management Approach

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In the center of the health care system is a man, throughout his life, from conception to death, with his natural ability to take care of themselves - and is healthy, and when they fall ill and when he needs an organized and specialized help. Because the disease affects almost all men, it is one of the required priority to think ahead. He paid under certain circumstances, when health is sound, and uses its organized system when he was ill. Health care for citizens of Serbia, as well as coordinated and organized health systems, with primary, secondary and tertiary health care should be accessible to everyone under equal conditions, the principles of scientific medicine on the one hand and business performance of health institutions on the other. Human right to the use of organized and efficient health care system takes freedom from disease, and thus a free society

#### **Keywords**

Management, Health management, Transition, Privatization of the Health system, Local Health policy.

#### **1.Introduction**

#### 1st Defining research problems

Starting from the general trends of globalization and the level of the transition process initiated in our country, once again found itself the focus of the state. Institutional Strengthening of the same which means the establishment of new functions of the state of the market economy would lead to the development of market health care institutions, labor markets, liberalization and deregulation, and privatization and inflow of capital from international capital markets [1]. This would be applied as a result of the construction and functioning of economic systems with the aim of recognition of market economy, market institutions and mechanisms that are functional to the liberalization of markets and encourage competition [2]. Attracting and retaining foreign direct investment is a major goal of many countries, since it is quite clear that they have an important role in the creation of new permanent jobs, increasing exports, transfer technology and knowledge of business, increasing competitiveness, improving the total production and, finally, reducing poverty through general economic growth and development. Creating favorable conditions for domestic and foreign investment, represents a major challenge for all countries, given that increasing globalization and the pressure to be competitive in the business framework and create the need for constant improvement of the general business environment and performance of companies (hereinafter referred to as enterprises). At the macro level, in

ensuring stability and improving the general business environment the main role of state governments, and market pressures to be competitive requires constant improvement of efficiency and greater flexibility and effectiveness of those who run businesses. Strategy and business development, investment management, ownership restructuring, equity valuation, stock exchange business, credit capacity, implementation of accounting and market standards in the health business to the criteria of the European Union [3]. Policy of economic reforms at the global and local level contains the following topics of analytical reviews. General: What are the investments in the health system? The difference between foreign and health investment environment[3].Necessary domestic direct investment. Building improvements in all segments of the market operations (which emphasize the necessity of amendments to legislation). Macroeconomic and business environment is constantly over the last five years of development, the Government adopted a number of new laws, to stabilize the annual budget, achieved through formal agreements with the international community on issues of debt and budget support and make significant progress privatization program [4]. The basic types of direct foreign investment, with the exception of traditional forms of selling (merger, acquisitioning privatization), are classified as follows:

• Greenfield - a company with foreign investment starts a business to a whole new area ("the wasteland") or building.

• Brownfield - a company with foreign investment began operations in the building or the area that was formerly used for production or other activities where there is already a certain infrastructure assets from the bankruptcy proceedings that may be purchased for new investments.

• joint ventures - a foreign company takes a significant stake in the newly established local company.

Cooperation between public and private sector (Public Private Partnership) is a modification of the above definition of joint ventures, with state authorities, local self-government or public enterprises enter into a cooperation agreement with the company from the private sector to be formally planned, conducted and managed by a particular activity or good [2][4]. The development of financial markets in health and health care organizations as well as comparative analysis of Serbia in relation to joining the association in the EU. Prospects of development of health management and the introduction of stock markets in health care and pharmacy. Performance Evaluation of the conduct of health policy at the local level. Synthesis of formal and material properties of the state of liquidity, which includes general economic and political stability, solvency, good reputation in the business world, a high position in the market, the ability of accommodation and rapid adjustments to modern trends in health care [5]. The broader concept of health system reform, including evaluation and review levels of organization management functions of health workers, as well as the level of integration of health policy [6]. Around the concept of the health reforms of the state assessments, could be positioned in the Serbian branch of activity, both for its internal needs for growth in the level of health care and the health service delivery in our country and the immediate environment. Transparent communication among all stakeholders in the health management within the European Union. Implementation of international economic standards and full implementation of international auditing reforms in health care, we will bring a relatively more open position, through financial statements, from which it can be use information on the condition, quality and operations of our health. Preparation of methodological guidelines and expert content about business assessment of health policy reforms at the local level would be brought together experienced financial experts and analysts in the field of management health [6] [7].

#### 2.Operating review

Operational audit is a comprehensive category, which is designed to analyze the organizational structure, systems, internal controls, the flow of work processes, broader assessment of financial standing and performance management [8]. Operational audit is an instrument of business, management tools, and its correction. It measures the achievement of a health organization compared to its purpose and set goals. Operational deals with the overall achievement of objectives, effectiveness of operating procedures and internal controls, the results of individual managers and other non-financial aspects of the business. Incorporating an orientation to the operational review, what follows is an effective management approach, which has a mission to accomplish goals [8][9]. The aim of this paper is to develop a system that would enable the achievement of the broader concept of evaluation analysis of the investment environment in the health sector both at the global and local level [10]. The way for this assessment the policy of economic reform at the local level include audited financial statements required the health institutions on the one hand and using operational audit of economic policy in the health institutions at the national Provincial and local levels [11]. Operational audit reviewed the organizational structure of health policy and comparative analysis of the state of health of Member States Economic Union with the countries that aspire to become. The course of the work process through monitoring of local economic policy, internal control objectives and effectiveness of business practices of health care organizations, makes the basic structure of health care [12]. The research would use as a starting point for business transactions and how to obtain work experience in gaining knowledge about how to implement organizational activities and capacity management in health care organizations to become members as soon as the EU [13]. Score economic and organizational reforms in our health, is set as the goal of the research and includes the local and the national synthesis of state to the health system [14]. Corporate governance and internal audit of the health care system is filled with the management approach in solving the tasks of risk reduction in 3E -economy, efficiency and effectiveness of the system [11]. Economy is a principle that involves minimal costs for standard quality. Efficiency follows the relationship of income and expenses. Effectiveness is a principle that compares planned with actual activities. There are modern instruments for controlling the strategic management of the organization. Specificity of approaches to these instruments in our country reduced to the setting diagnosis of a specific methodology of the operational audit based on a wider assessment of creditworthiness, and controlling instruments specially adapted for organizations in the process of reengineering the activities [15]. Approach Balanced Scored Card in, confirms his extraordinary applicability in our environment to implement the strategic goals of the organization to every employee in the health sector, as well as achieving the required elements necessary incentives on a personal level. Insisting on the implementation of internal controls, operational auditing and controlling as an instrument of modern health management is the starting point for creating a global assessment of the solvency of a health institution as well as analysis of the level of organization of business functions, since the activity of health institutions, reflected in the areas of business functions. It is necessary to adapt the system to our specific business conditions in the health sector so that this "revision evaluation of economic policy" allow faster implementation of modern management concepts in the model of the EU in our health institutions, for routing the concept of permanent monitoring of the future operations of the same. Audit assessment of local investment in health care policy would be the basis for the introduction of operational and strategic approach of the new concept of the Partnership for European Integration. The definition and assessment of quality was the task before technology professionals and economists. Today, the health systems of EU countries, the definition and evaluation are increasingly the domain of patients, well-informed public and users of services and competitive market that compares performance with other countries [15]. The development of technology and information, the requirements to ensure transparency and accountability, and limited financial and human

resources of each member country bound by the WHO to describe and reform its health system in accordance with international, recognized structures, processes, execution and results [9][10]. The first part of this work is aimed at health policy makers in member countries of the World Health Organization (WHO)provide basic information on common definitions and issues that monitor the quality of health systems and health care [16].

#### 3.Health management - exhibition

#### - theoretical and practical solutions [2].

The second part of this paper provides basic information on national programs to improve quality, based on research evidence and experience from other countries Europe. The main motto of this paper is "better systems, better protection" [17].By using the existing concept of operations and evaluation of economic policy, with adjustments to our specificity and level of development of health care possible to build so-called "audit assessment of the health situation in our country." It will in addition to considering the current position to be the basis for timely planning of future health management [10]. Research based on the settings in the opening remarks and the previous analysis, it is possible to achieve by applying relevant research methods, and proven, the following main hypotheses:

H1 - Health Management, as the main form of manifestation of entrepreneurship in the health system, are a necessary part of the dynamic adjustment of economic structure. The establishment, operation, joining the country's economy, development and expansion, modern health facilities include: the existence of a clear, market-valorized entrepreneurial ideas, provided financial and other support in the community, adequate organizational infrastructure for encouraging entrepreneurial ideas, technical knowledge, and law and available institutional infrastructure, and stimulating economic policies of the government [2][15][16].

H2 - Managing the development of health facilities include: knowledge of modern concepts of diagnosis and prognosis, the readiness to cope with the changes and risks, and continuously measure the borders to achieve economies of scale and breadth, and in accordance with this, the commitment of relevant strategic options development behavior. Health management is not only a mirror of claims, business philosophy and skills, but also the main instrument to manage the development of health policy [2] [16].

H3 - It is possible to develop an adequate strategy for overcoming the current problems of transition and inherited structural inconsistency in the current economic circumstances, on the basis of practices and experiences of developed countries and the EU and the available resources and current developments in science and society [13] [16].

H4 - It is possible to establish a model of endogenous economic development, with clustering methods - based on the similarity of cases, the objective foundation for software reengineering and restructuring of large health systems, structures and building health facilities suitable for the promotion of entrepreneurship and entrepreneurial behavior enable stakeholders in the process of privatization of the same future [16] . Management generally involves a form of hierarchical organization in business administration and management in which specialized experts and holders of the driving forces of the process: research, planning, organizing the work process and finally marketing and distribution of results of this work - the goods and services. Management approach that involves teamwork in t he execution of projects managed by the operational group of educated, professional and cooperative moving . Management approach to team work is carried out through: knowledge, expertise, skill, creativity, cooperation, harmony, agility, respect for hierarchy and all. And includes the area of ideas, research, drafting, planning, implementation, management and analysis. A team is defined as a group of individuals with similar goals work together and

individually. Managerial activity includes a modern and creative approach to redistribution of duties and obligations in all forms of organization and management .U basis of the team, compatible, cooperative, harmonious and operational approach, ready for rapid change and adapting quickly to new situations and solve problems may be caused During the implementation of the project. In theory and practice of the concept of management is defined and treated differently. Meaning management which is usually translated as: governance, management, and skill, craftsmanship - is a comprehensive and too general [8]. Within this general it is necessary to point out everything you need, and articulate all that is important in that complex idea. For keeping a job or solve a specific task, the organization is important both in preparation and in performance, this has come in work activities. Analyzing and making its findings actions [16]. Access in seeking the most favorable conditions and an optimal solution, to not be conformist and model, but rational and creative management is the process of governance or management of a venture, which makes it an integral part of overall development strategies, long-term planning, regulation, coordination and control such activities. Key to successful management is appropriate flow of information between and within the strategic, functional and operational levels in order to facilitate timely and proper decision making. (Author Kripendorff definitions). Management exists in all types of organizations. It is a practical discipline, but has its theory. There are several definitions of management, but is the most common is: Management is a set of features aimed at efficient, effective use of resources to achieve objectives of the organization . The use of resources means the use of human resources, materials, equipment, technology, information and more, with minimum cost and designed method. Effectiveness means a good decision and successfully execute the decision. Since managers receive targets employers because the owners manage the company, not managers - managers realize the goals. Employees of the company to carry out all activities in order to realize goals. Buyers of services are important because they need to sell the goods / services. Suppliers are also one of the important environmental and constraints for the company [17]. The public is that in which the organization creates its image. These are the main limiting factors for the core components of managerial jobs

#### 4. Management in health care

Health management means successfully managing the health care organization in the most general sense, including selection of control measures (decision) under whose influence achieved better results than those achieved when the organization of these measures would not be [2]. These measures were successful as much as you are well adapted to the goals that they want to achieve in the given conditions. If goals are not well formulated (or deviate from them) or are not taken into all restrictions and obstacles that come from working conditions, then the most expensive measures may miss its purpose, and the results may be contrary to the expected. Health as a specific form of service activities in their organization that includes more specific and narrower form of professional, and thereby mutually conditioned and compatible activities (medical, technical, administrative, educational..), expresses personality in the organization, administration and management [17]. As a complex mechanism in which mutually penetrate various activities, health care must have a clearly defined organizational structure. Under the structure of the inner structure involves a whole set of factors, associated with certain relationships, in which each element has its role [16]. Change any one of the given factors or any of their important characteristics, changes and structures. In relation to the organization, the term structure is used to indicate a uniform, standardized parts and the properties of the elements that make up the composition of the WHO. Even a superficial analysis, and without much effort can be ascertained that the position of management, leadership and organization in our health care in a chaotic state. It is not just a superficial observation, it is a solid fact. For many years no essential

prerequisite, and that is the law system and legal norm, is not provided and the existing old regulations are not respected. The adoption and implementation of legal regulations confirmed that trusted in European countries and give positive results, would enable the health policy approach and principles of modern business that has been established for decades and sovereign work in Europe. With us, however, some new laws of business conditions deteriorated health system (Labor Law, Tax Law, etc.) [8]. The situation in health care organizations are based on obsolete administrative regulations - relations, which is largely obsolete.

This organization was rigid, inflexible, and therefore irrational. Health sector has a form of organization, which is divided by sectors. In each sector are solid defined organizational units within each job description with clearly defined responsibilities and tasks. This organizing principle was outdated and belongs to the so-called. the type - the administrative forms of organization. This form of organization is hardly mobile, inflexible and difficult to accept the papers and change. Management control current forms of health organization is reduced to rigid hierarchy, where manager responsible for strict discipline and implement only what he was ordered job description and superior account manager, which is reduced to bureaucratic and executives institutions become officials - implementers, no opportunities for creative action. This principle is received in all organizational pores, and we especially during the period of self-government, so that the health system in our country has become a dormant body. Inevitably, this form of organization because of inflexibility and slow adaptation to modern forms of business, become inert and , and thus theoretically obsolete in modern trends. The current administration of our health institutions is based on the board of directors. The Steering Committee is made up mostly of politicians and he practically has a function more so. Political Council Board of Directors, following the example of the administrative committees of the European institutions must have the function of creating the basic preconditions for the functioning of health care organizations - financial and educational . He should have a primary business function [9]. The Steering Committee has two primary responsibilities:

• obligations to the institution: to provide sufficient financial resources to institutions to perform its core business without the financial burdens, can not be conditioned treatment financial difficulties and

• according to the society to control health care organization that respects the basic concept set to be received funds used rationally [10].

Modern health care system needs a concept that includes:

• a flexible organization that is without consequence willing to rapid changes,

- management team work which aims to produce entrepreneurial projects
- open access to new ideas in the field of health management and

• interactive relationship with clients - the patients.

The goal of health management to the principles of management and operational management of water and creative managers, experts in specific areas and specialties. Health care management includes a modern and creative approach to redistribution of duties and obligations under the professional teams, and all forms of organization and management of health institutions [16]. Leadership in this form of organization dealing with agile and professional management, in which the holders of specialized experts and the driving force of the process: planning, organization, implementation and analysis. In conclusion, the managerial form of organization can stand conclusion that the pillar of the organization manager, who must be found in all structures of the medical-educational, scientific and reasonable, technical, marketing, to financial, administrative and course management. Last year in our country is becoming clear that health care is fully monitor economic and market conditions: offers - health care workers and their knowledge (services) and demand - the need "customer service" - the patients. Therefore, the definition of management can be understood as a process of performing tasks through other people, or with them in order to

achieve organizational goals in a dynamic environment, using limited resources. Each process must start from the needs of "customer service" and finish their complete satisfaction [4]. The said principle is applicable in the narrow sense - a health professional relationship the patient or in a broad sense - health care - health care administrator. Of health managers is expected that with the basic knowledge of medicine and education have for the conduct and management, ability to apply new knowledge in medicine and accept the benefits of new technological achievements. Before analysis, we should recall the three basic characteristics of the reform of health systems in all countries in transition, from the Baltic to the Balkans [17]. The first feature is public health through the privatization of large parts of the system. This resulted in the fact that 80% - 95% of the capacity of primary health care (Health) in the transition countries based on the private sector with a tendency of further ownership transformation. The second is the decentralization and diversification of funding sources by forming public-private mix of health care funds and private insurance companies. The introduction of pluralism at the level of service providers and financing are essential features of the third foundation of reform and this is a free choice of doctors by the citizens. With free choice of doctors, the state or the private sector and the insurance money to accompany him, the citizen finally gets the opportunity to exercise their health rights by the standards of modern countries. Do any of these general trends foreseen in the draft laws of the health system? Unfortunately, not only that proposals do not contain any of the required, but the apparent step back compared to the solutions in the countries around us. The law is observed more systemic contradictions and ambiguities are present and a number of solutions with high corruption potential. Basic principles of modern health "patient free to choose a doctor" and "money follows the patient" in the law are not provided. Monopoly providers of public sector is stronger against all intentions and successful reforms in transition countries. Also, the law is based on a monopoly of the state compulsory health fund, although a number of post-communist countries spend less proportion of gross domestic product for the health of the Serbian health system is financed from several public and private health insurance. The patient still can not freely choose a doctor in private or public sector, which is contrary to EU standards [17]. This significantly reduces the productivity, efficiency and quality of health care but provides a powerful incentive to corruption. In economics it is known that legislation that protects the monopoly generator system corruption. Unclear is the definition of "basic package of services" which the Government and the Ministry of Health always have the right to change the scope and content so that a citizen can never know what you get for the contribution to the compulsory health insurance. This is contrary to the elementary rights arising from contract relations between the insured and insurance. In addition to undermining the economic system reduces the uncertainty and fiscal performing duties of citizens towards contribution for health insurance [15]. But of these legal and economic paradoxes show that the proposed concept of insurance far below the standards of modern health care system and to experiment with a pure propaganda purposes [11][16][17].

#### **5.Conclusion**

FREEDOM FROM DISEASE - It is necessary to come out of the socialist clichés "free health care and health care system to achieve real cost, in order to achieve" clean bills of health, where, except for material costs of treatment and the work of doctors and other health professionals and has a realistic market price, which is the most effective eliminate corruption in health care [16][17].Health insurance, primary, and possibly additional, paid individual citizen on the basis of freely concluded contracts with the health fund of Serbia, or other financial organization that is authorized to health insurance, which are clearly guaranteed his rights and possible health services to the level of health insurance coverage. Financial and legal responsibility for the continued implementation of health care bear a one-citizen, local government, the Autonomous Province of Vojvodina and the Serbian state, based on the Proceedings of International Conference for Entrepreneurship, Innovation and

Regional Development ICEIRD 2010 responsibility to protect the lives and health of man as follows: one through the payment of health insurance, the local government through service facilities and technology in that health care done on the basis of their own plans and needs, as well as possible health and business concepts, AP Vojvodina through the decisions of major institutions (tertiary health care) and financing of health programs and plans for the special needs of the citizens of Vojvodina in order to solve the most of health problems in Vojvodina, a Serbian state through a unique system of health care, supervision and legislation. The state of Serbia and its Ministry of Health, as well as the AP of Vojvodina can not have any commercial impact in the field of health care, except for protection of legality, although it may be the owner of certain Local Health policy in health institutions [17].Health Insurance Fund is organized as a public and independent financial entity insured free of health associated with its assembly and other bodies whose main activity is the cost primary, secondary and tertiary health care. Fund for Health on behalf of their insured free contract, or pay the cost of the health care facilities to provide the best market conditions for certain types of health care, where they are fully equal health care facilities in private hands, owned by local governments and state-owned. Business efficiency and quality of health care institutions services are the leading criteria for the Health Insurance Fund pays for treatment. Health care facilities that have quality service, or operate inefficiently, extinguished in accordance with the termination of funding of the Fund, or in accordance with the law, as well as all other companies. At the leading place in health institutions come up with a plan and program operations, and goes after the agreed term, due to deviations or business plan, failure to comply with the criteria of modern science and medicine, and crime."Not political" health institution is the foundation for the introduction of markets in health care operations and rationalization of resources used in healthcare[17].

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### Empirical Study of Shop Floor Control in Bulgarian Small and Medium Enterprises

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In the current work are discussed the shop floor control problems in the Bulgarian small and average enterprises in the context of the Supply Chain Management. The researched small and average enterprises are units in the European Supply Chains which implement strategies for mass customization. The empirical research aims to evaluate the degree of effectiveness of the shop floor control systems in terms of parameters like: operational planning, dispatching, operational quality control, production system status monitoring etc. Objects of research are the small and average enterprises of lighting and furniture industries.

#### Keywords

Mass customization, Shop Floor Control, Supply Chain Management

#### 1. Introduction

Currently, the most significant changes in the industrial management are caused by the fact that the different industrial enterprises do not operate like autonomous entities, but they are units in various logistic chains. The logistics and the supply chain management (SCM) are becoming ever more powerful instruments for achievement of sustainable competitive advantage for the business organizations.

Over the last ten years more and more Bulgarian industrial enterprises are integrated as units in different international supply chains (SC). The business organizations are facing many problems caused by the emergence of new cooperation methods within the supply chains (SC).

In order to cooperate for successful competition under the new circumstances, the industrial enterprises should have significant capability of adaptation, mostly through various dynamic interactions. These interactions should be implemented with the participation of all the units in the supply chain (SC).

That kind of adaptation is achieved not only on physical (hardware) level. By increasing the degree of the various systems for management (integration of systems for resource management - ERP and manufacturing execution systems - MES, any change in the physical infrastructure of the enterprise leads to significant changes in the system for Shop Floor Control. The situation can be coped with through considerable efforts of the managers responsible for the operations management in the organization.

When the industrial enterprises take part in various collaborative networks (like virtual enterprises for example) they should exceed the limits of the ordinary production management (Shop Floor Control) so that they can ensure the management of different joint processes.

The dynamics of the systems for Shop Floor Control is evaluated according to the capability of the manufacturing systems of adapting to different type of changes.[1] Under these circumstances, by using relevant characteristics of the Shop Floor Control systems, the production systems should manufacture the products for a very short time even without intervention of highly-qualified managing personnel.

The purpose of the present work is to evaluate the degree of effectiveness of the shop floor control systems with respect to parameters like: operational planning, dispatching, operational quality control, production system status monitoring etc. The objects of research are Bulgarian small and average enterprises of the lightening and furniture industries, which are integrated as units in different international supply chains.

The degree of effectiveness of the shop floor control systems in the explored enterprises is assessed in four aspects:

- Operative planning of the manufacturing
- Dispatching of the manufacturing
- Operative quality management
- Monitoring of the manufacturing system

The exploration of the Shop Floor Control condition in these four directions will allow improving the adaptation of the industrial enterprises to the requirements of the contemporary supply chains.

Basing on literature research, the author has developed a system of 26 measures for evaluation of the effectiveness degree in these four directions.

#### 2. Requirements for the contemporary manufacturing systems

Under the pressure of the contemporary business environment, considerable changes are taking place in the business organizations. These changes create new requirements for the manufacturing systems of the organizations. A significant part of the requirements is connected with the shop floor control.

The final purpose of the industrial enterprises integration is to achieve business integration within the supply chain. Finally, inter enterprise operations should be fulfilled.

For the achievement of business integration, first, it should be achieved physical integrity as well as easy and fast adaptation of the different units in the supply chain. At the present moment the problem of the physical integration is to a large extent resolved.

The main characteristics which a contemporary manufacturing system should possess are as follows: [2]

Integration of all the systems in the enterprise

- Integration of the manufacturing system with the systems of the organization's contractors (suppliers, customers, partners, etc.)
- Distributing architecture of the manufacturing system. There should be possibility for territorial distribution of the organization's production activity (operations, processes, functions, etc.)
- Heterogeneity of the elements of the production system. The contemporary manufacturing systems are composed of heterogeneous hardware and software components, incompatible with each other. Therefore, there should be suitable system for Shop Floor Control, which allows integration.
- Integration of human resources to the production system. There should be a possibility many employees with different qualification and knowledge to interact easily with the hardware and software components of the production system
- Cooperation in real time of the production system with the systems of the organization contractors (suppliers, customers, partners, etc.);
- Open and dynamic structure of the system. The production system should be open and should integrate with different new systems (or resources) in the organization. It should also be capable of removing existing systems at any time, without interrupting its own activity.

- Adaptability to dynamic organization structure of the enterprise. The production system should be able to adapt to different changes, which always occur in the organization structure as reactions to the changing environment;
- Resistance to disturbances. The production system should react adequately and timely to different disturbances and to recover fast and easy from them.

In order to come up with these requirements, there should be implemented significant improvements of the production systems of the industrial enterprises and more specifically, of the existing Shop Floor Control systems.

# 3. Factors for increasing the effectiveness of the shop floor control systems

For achieving effectiveness of a Shop Floor Control system, improvements should be made simultaneously in the already mentioned four directions: operative planning of the manufacturing; dispatching of the manufacturing; operative quality management; monitoring of the manufacturing system.

For improvement of the operation planning, the products created by the industrial enterprises must be grouped in product families, according to similarity of the manufacturing routes.

Pull manufacturing systems must be applied in order to minimize the delays of the manufacturing systems and the quantity of work in progress. The effect of this kind of systems depends on the capability of the managers' team to control the manufacturing through cards of "Kanban" type.

The preservation of the manufacturing systems capacity as well as the minimization of the delays in case of disturbances in the resource supply and problems with different customers and partners can be achieved through transposition of customers' orders. Other options are to reach agreements with logistic contractors inside the organization in order to overcome bottle necks in the manufacturing process and to vary the size of the production lots.

The capacity of the manufacturing system in critical situations can be increased significantly by applying outsourcing.

Another meaningful factor for meeting the orders deadline is the ability of using alternative manufacturing routes for manufacturing the products.

The main factor for the dispatching improvement is the availability of detailed description of all operations implemented by the manufacturing system. Secondly, assessments should be made whether the described operations are really implemented in the required manner and whether the operation's description is expedient in practice.

In order to cope with different disturbances in real time, the important thing is how much can be shortened the lead time at the expense of speeding up of the different operations, scheduling of the operations consequence, compromise increase of the work in progress. Minimizing the setup time for transition from manufacturing of one product to other (lots, customer's order), is of immense importance.

The ability of managing the loading level of the production equipment is essential for increasing the effectiveness of the manufacturing system. In this respect, meaningful factor is the ability of the manufacturing system operators to work on more than one working centers.

The perfection of the operative quality management allows to the industrial enterprises to plan the results of the production activity much more precisely so that the ordered products can be manufactured in the required quantities and agreed deadlines. The ability to apply statistic methods for quality management is essential for the achievement of high effectiveness of the operative quality management system. On the basis of these methods, there must be implemented different measurements, trials and tests in the production

process. The results of these measurements, trials and tests must be generalized relevantly in different reports with statistic data for the quality.

The main factor for evaluation of the effectiveness of the operative quality management is the level of product reworks in the process of their manufacturing.

The maintenance of high effectiveness of the Shop Floor Control system is based also on the effectiveness of the production system monitoring.

The potential of the monitoring system depends on factors as: availability of norms and limits for resource consumption and production system loading; monitoring the ratio between consumed resources and manufactured products; monitoring the labor costs; monitoring the deviations for launch of the production lots in the manufacturing schedule; monitoring of the levels of inventories in warehouse of different resources and completed products; monitoring levels of work in progress; application of the principles of the Total productive maintenance (TPM); application of the principles for continuous improvement (KAIZEN).

Significant advantages for increasing of the monitoring effectiveness can be achieved through the application of the principles of the Total Productive Maintenance – TPM and continuous improvement (KAIZEN).

#### 4. Methods of the research

As it was already mentioned, based on literature research, a 26-measure system was developed. On this system it can be evaluated the effectiveness degree of Shop Floor Control systems in four directions.

The state of the operative planning of manufacturing will be assessed trough the measures:

- degree of using of pull manufacturing system
- level of skills for using the "Kanban" system
- capability of rescheduling customer orders in case of disturbances
- degree of interaction with logistic contractors (suppliers) inside and outside the organization
- capability of changing the size of the production lots
- capability of applying outsourcing
- availability of alternative manufacturing routes

The state of the production dispatching will be evaluated through the measures:

- description fullness of manufacturing operations
- capability of deviation control throughout the production cycle
- capability for rescheduling operations in case of disturbances
- capability for minimization of the setup times
- capability for control of the loading level of the equipment
- capability for rotation of the working places of the operators

The state of the operative quality management will be evaluated through the measures:

- degree of applicability of the statistic methods for quality management
- implementations of measuring, trials and tests throughout the manufacturing process
- preparation of reports based on statistic processing of production data
- application of report analyses and problem identification
- remanufacturing of the production throughout the manufacturing process

The monitoring of the production system capabilities will be evaluated through the measures:

 availability of standards or limits about resource consumption and equipment load in the production system

- monitoring of the ratio between consumed resources and manufactured products quantity
- monitoring of the labor costs
- monitoring the deviations of launching production lots in the calendar schedule
- monitoring of the level of warehouse inventories (resources and products)
- monitoring of the work in progress share
- application of the principles of Total productive maintenance TPM
- application of the principles of continuous improvement (KAIZEN).

The condition of the systems for operative management of the manufacturing in the selected enterprises will be assessed on the basis of benchmarking with leading European practices.

The benchmarking will be accomplished by experts in the sphere of industrial management selected by the author. These are managers from the average and large industrial enterprises who manage the logistics, manufacturing, procurement etc. The selected experts have more than 15 years of experience in the area where they work and observations of the best practices of European enterprises with which they cooperate.

A group of four experts was elected. They will be given the results of the author's research of the selected Bulgarian industrial enterprises. Each of the experts will be given a copy of the author's report of the explored enterprises.

Before making the benchmarking, the author has held profound observations of the Shop Floor Control systems in 10 average Bulgarian enterprises which are units in European supply chains. Four of the enterprises are from the sphere of the lightening technology and six from the furniture industry. The results of the observations are documented in a report where the author has classified his findings and conclusions enterprise by enterprise. Photo material of different objects has been attached, concerning various findings and conclusions.

On the basis of this report have been identified six enterprises which, in the author's opinion have shown the best results. The data for these enterprises is put in separate report for the experts. The experts are expected to assess the condition of the Shop Floor Control according to the European practices they are familiar with.

In this special report the data is grouped in separate chapters, corresponding to the enterprises. Each chapter includes sections with findings and conclusions in the following directions:

- condition of the operative planning of the manufacturing
- condition of the manufacturing dispatching
- condition of the operative quality management
- condition of the monitoring of the production system

The author has distributed copies of the special report among the experts in order to make them familiar with the data. Afterwards, the author held detailed discussions during which he clarified various questions concerning his findings and conclusions.

It is required that each expert gets acquainted with the author's report and afterwards gives assessment on five-grade scale. The measures on this scale characterize the condition of the Shop Floor Control in every explored enterprise.

The grades from 1 to 5 are formed as follows:

- 5 condition which is significantly better than the average European level
- 4 condition better than the average European level
- 3 condition at the average European level
- 2 condition worse than the average European level
- 1 condition much worse than the average European level

The grades are filled in special questionnaires. They are filled in table where in the rows are arranged measures for assessment of the Shop Floor Control in four directions: condition of the operative planning of the manufacturing, condition of the manufacturing dispatching, Proceedings of

condition of the operative quality management, and condition of the monitoring of the production system. In the columns the experts fill in the values of the measures for each of the six enterprises.

After collecting the filled questionnaires the author has processed the data. For each enterprise and for each of the 26 measures are formed average values of estimates of the four experts.

#### 5. Results of the research

The condition of the operative planning of the manufacturing is evaluated through 7 indicators: degree of using of pull manufacturing system, level of skills for using the "Kanban" system, capability of rescheduling customer orders in case of disturbances, degree of interaction with logistic contractors (suppliers) inside and outside the organization, capability of changing the size of the production lots, capability of applying outsourcing of activities, availability of alternative manufacturing routes for the products.

The research results show that generally, the condition of the operative planning of the manufacturing in the six enterprises is almost on the average European level. However, it is a little bit lower (2,81). Higher than the average level are the results of the capability of rescheduling customer orders in case of disturbances (3,7) and the capability of changing the size of the production lots (3,2). Very low is the level of capability of applying outsourcing (1,85) and the level of skills for using the "Kanban" system (2,55).

**The condition of the production dispatching** is evaluated through six measures: description fullness of manufacturing operations; capability of deviation control throughout the production cycle; capability for rescheduling operations in case of disturbances; capability for minimization of the setup times; capability for control of the loading level of the equipment; capability for rotation of the working places of the operators.

The research results show that, in terms of production dispatching, the Bulgarian industrial enterprises are almost on the average European level (2, 92). Better than the European results are the capability for rotation of the working places of the operators (3, 65) and the capabilities for rescheduling operations in case of disturbances (3, 25). Considerably lower than the European are the capabilities for minimization of the setup times (1, 75). The rest of the indicators are almost on the average European level.

**The condition of the operative quality management** is evaluated through five measures: degree of applicability of the statistic methods for quality management, implementations of measuring, trials and tests throughout the manufacturing process, preparation of reports based on statistic processing of production data, application of report analyses and problem identification, reworking of the production throughout the manufacturing process.

In this direction the results lag significantly behind the European practices (2, 26). Most significant is the lag in relation to the application of report analyses and problem identification (1, 5). Almost on the European level are the capabilities for implementation of measuring, trials and tests throughout the manufacturing process (2,75) and the level of reworking of the production throughout the manufacturing process (2,6).

The possibilities of monitoring of the production system are evaluated through eight measures: availability of standards or limits about resource consumption and equipment load in the production system; monitoring of the ratio between consumed resources and manufactured products quantity; monitoring of the labor costs; monitoring the deviations of launching production lots in the calendar schedule; monitoring of the level of warehouse inventories (resources and products); monitoring of the work in progress share; application of the principles of Total productive maintenance – TPM; Application of the principles of continuous improvement (KAIZEN).

The research results are at the lowest level here. The lag behind the European practices is the biggest (2, 13). Drastically lower levels are achieved for: monitoring of the labor costs (1, 5), monitoring of the work in progress share (1, 65), Application of the principles of continuous improvement (1, 8). In this direction the only measure which is almost on the average European

level is the monitoring the deviations of launching production lots in the calendar schedule (2, 85). Almost on the European level is also monitoring of the ratio between consumed resources and manufactured products quantity (2,7) and the availability of standards or limits about resource consumption and equipment load in the production system (2,6).

#### 6. Conclusion

The research results of the effectiveness level of the Shop Floor Control systems in the Bulgarian industrial enterprises which are units in European supply chains, can be generalized with the following conclusions:

- As a whole, the condition of the Shop Floor Control systems in the Bulgarian industrial enterprises is almost on the average European level (2, 53). The existing lag can be overcome and the Bulgarian industrial enterprises can operate successfully as units in different European supply chains
- The results for the operative planning and the dispatching of the manufacturing (respectively 2, 81 and 2, 92) are much better than the results of the operative quality management and the monitoring of the production system (respectively 2, 26 and 2, 13). This can be explained with the higher competence of the production managers and dispatchers in the Bulgarian industrial enterprises, in comparison to the competence of the quality and maintenance managers. Therefore, in order to reach the average European level, efforts should be made for improvement of the qualification of these managers and introducing contemporary European practices in the area of operative quality management and monitoring of the production systems.
- An important factor for the lag in the directions operative quality management and monitoring of the production system is the low level of application of contemporary technical devices for automatic data acquire like: Barcode systems, Radio Frequency Identification – RFID, computer terminals at the working places, etc. Insufficient attention is still paid to the feedback in the operative quality management and the maintenance of the production system;
- Rather unsatisfactory are the results, related to application of modern strategies for maintenance of the production system. Only at an initial stage is the application of the systems Total Productive Maintenance TPM and continuous improvement (KAIZEN).
- It deserves to be noted that there are measures of the Shop Floor Control systems, on which the condition of the Bulgarian industrial enterprises is better than the average European level. These are the capability of rescheduling customer orders in case of disturbances (3, 7) and the capability for rotation of the working places of the operators (3, 65). These are crucial factors which affect the adaptability of the Bulgarian industrial enterprises to the requirements of the European supply chains and they should be the main source of competitive advantages.

The present work is part of the author's research of the adaptability of the Bulgarian industrial enterprises, which are units in the European supply chains. It concerns only one of the adaptability aspects. The approach of collective expert estimates of the Shop Floor Control is intentionally chosen. The purpose is to eliminate the impact of the author's subjective opinion.

The conclusions of the present work can not be considered representative for the Bulgarian industry. The purpose of the present research is mainly to probate the methods for assessment of the Shop Floor Control. In future the author plans a major research of the Shop Floor Control systems on national and supranational level. It will be carried out through participation in European projects.

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### Overview of Characteristics of Bottom-Up Marketing as an Innovative Marketing Paradigm in Small and Medium Enterprises

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In various perceptions of transition, in countries which have found themselves in this process, whether to authors who examine this process with liking or authors who have opposite attitudes there are certainly a few among them who would deny the need that entrepreneurship and entrepreneurial spirit has to take a special place in that process. Entrepreneurship does not have to be necessarily considered the same as small and medium enterprises, although the setting up and development of small and medium businesses can be considered as one of the most significant elements in the change of transitional economies structure, but can also be related to building entrepreneurial business within the existing corporation, that is, "intrapreneuring" (internal entrepreneurship). Expressing itself through the readiness and will to introduce novelty by experimenting and creative processes directed toward the development of new products and services, as well as new processes, innovativeness imposes itself as infallible element of the enterprise behavior.

When the application of marketing concept in small and medium enterprises is in question, certain authors placed in the center of their interest the question of possibility whether the full spectrum of what conventional marketing involved can be included in these enterprises. This had implications on understanding the innovativeness of marketing in these companies. However, in light of the fact that the modern tendencies in the development of marketing have brought a number of new marketing paradigms, some of which are particularly suitable for the application in small and medium enterprises, the emphasis can be placed precisely on the display of such new opportunities. One of them, called bottom-up marketing, based on the appreciation of corporate strategy from the aspects of their tactical feasibility and ability to prevent competition in threatening company's tactic, is the central theme of this paper.

#### Keywords

Bottom-Up Marketing, Innovation, Marketing, Small and Medium Enterprises, Transition

#### 1. Introduction

The last decade of the 20<sup>th</sup> century was marked, among else, by the process of transition in a number of countries in which central planning was the main characteristic of their economies before this process started. Causing changes not only in economies of these countries, but also in foundations of other parts of their existence, such as law, culture, life habits of their

people and many others, this process was at the beginning widely welcomed and embraced by many authors as positive and vital for these countries. After two decades of experience in performing this process and some poorly planned and examined steps undertook within it, the general level of enthusiasm has decreased and authors are nowadays very often divided from strong supporters to categorical opponents of transition [1].

However, in various perceptions of transition, in countries which have found themselves in this process, whether to authors who examine this process with liking or authors who have opposite attitudes, there are certainly a few among them who would deny the need that entrepreneurship and entrepreneurial spirit has to take a special place in that process. It could freely be said that the quality of a new formed ambient significantly depends on the level in which the total economic reality is being characterized by the development of entrepreneurship. Entrepreneurship does not have to be necessarily considered the same as small and medium enterprises, although the setting up and development of small and medium businesses can be considered as one of the most significant elements in the change of transitional economies structure, especially in the light of the fact [2] that 91% of firms in European Union have less than 20 employees and that even 99,8% of firms have less than 250 employees.

Entrepreneurship can also be related to building entrepreneurial business within the existing corporation [3], that is known as "intrapreneuring" (internal entrepreneurship). Regardless which of these two possible views of entrepreneurship one can have in mind, there are common characteristics for both of them [3], such as: having autonomy, being innovative and proactive, showing competitive aggressiveness and taking on a risk. Expressing itself through the readiness and will to introduce novelty by experimenting and creative processes directed toward the development of new products and services, as well as new processes, innovativeness imposes itself as infallible element of the enterprise behavior. However, the innovativeness of marketing in small and medium business was brought in question by many authors, as well as the need to practice marketing in such firms. Displaying "bottom-up marketing" as the modern, *innovative* paradigm in the development of marketing, particularly suitable for the application in small and medium enterprises, is the central theme of this paper.

#### 2. Marketing in Small and Medium Enterprises

The question of marketing in small and medium enterprises can be understood in several ways. Although it is generally accepted that the basic principles of marketing are universally applicable to large and small businesses [4], in some studies it is questionable whether small businesses need to practice marketing at all to survive and grow [5]. The study that had questioned the need to practice marketing in small businesses [5] concluded, after all, with accepting that marketing contributed positively to small business success and the ability to think strategically in despite of the fact that small business owner-managers were often generalists, not marketing specialists and the fact that complex marketing theories may not be appropriate for small businesses and probably would not aid in the understanding of their markets. In most cases, it was said in this study, competitive advantage was based on quality and service, while those competing on price were in the highly competitive markets with little or no product differentiation and low entry barriers. Product differentiation was a source of competitive advantage in some businesses while others were looking for niche markets.

It is also shown that the role of marketing shouldn't come only to contribution of thinking strategically in small and medium enterprises. Denison and McDonald [6] point out that studies have consistently shown that firms which were marketing orientated, or competent practitioners of marketing, performed better in terms of return-on-investment (ROI) and market share.

Although it plays an important role, in small and medium enterprises marketing is likely to be [7] haphazard, informal, loose, unstructured, spontaneous, reactive and conform to industry norms. The study that has presented this conclusion was focused on the fact that marketing in practice in small firms seemed to rely on personal contact networks and was often driven by the particular way an owner-manager did business. Personal contact networks were understood as communication between the small and medium enterprise's owner-manager and his/her competitors, so the competing firms might be quite supportive of each other, as well as it could be understood as networking with customers where building relationships were vital to a company's success, so companies invested considerable time and effort in maintaining good relations with regular clients. Such an approach was concerned with maximizing marketing opportunities and ensuring the enterprise's survival and development.

Although presented studies, as well as others that are not mentioned at this place, deal with marketing in small and medium enterprises, there is a conclusion of certain authors that academic research appears unable to resolve a number of questions about small businesses and their relationship with the use of marketing and that insufficient knowledge about marketing in small business remains. In that sense should be understood what Siu and Kirby [4] were pointing out when they were saying that empirical evidence has been generated in an ad hoc manner as a consequence of a general absence of a systematic approach to the subject.

# 3. Bottom-Up Marketing as an Innovative Marketing Paradigm in Small and Medium Enterprises

When the application of marketing concept in small and medium enterprises is in question, from the previous text could be driven implications on understanding the innovativeness of marketing in these companies. However, in light of the fact that the modern tendencies in the development of marketing have brought a number of new marketing paradigms, some of which are particularly suitable for the application in small and medium enterprises, the emphasis can be placed precisely on the display of such new opportunities.

One of them, bottom-up marketing, is presented in the book named *Bottom-Up Marketing* by Al Ries and Jack Trout [8], at the time when they wrote it, the first Chairman and the second President of Trout & Ries Inc. This was the third book of those two authors that came after *Positioning: The battle for your mind*, in which they described the process of putting company's brand into the mind of the prospect, and also after *Marketing Warfare*, showing marketing as war where the competitors are enemies and the customer is ground to be won. The first book was mostly devoted to communications, that they presented as the tactic of a business, while in the second marketing, as the strategy of business, was in the center of authors' focus. The third book by those two authors dealing with the practical issues of the usage of marketing in companies' activities was in some way integrating two previous books. This book published in 1989. was integrating business' strategy and tactic in revolutionary new manner, that was the essence of this approach, nowadays incorporated in activities undertook by companies in the developed countries.

Bottom-up approach understood not only as possible radically new marketing approach is also a way of thinking that is "challenging the obvious" when saying that tactics dictate strategies. The authors point out that the relation between tactics and strategy can be shown when saying that a tactic dictates strategy and then the strategy drives the tactic. The tactic is the angle that produces the results while the strategy is the organization of the company to produce the maximum tactical pressure. However, since the ancient times, say the authors, the wisest people like Seneca thought in top-down manner and were saying that their plans miscarried because they had no aim and even those people who understood that the best strategic plan was useless if it couldn't be executed tactically like Field Marshal Erwin Rommel worked for top-down thinkers. It was not only the common way of thinking that was
causing domination of the top-down approach. Some characteristics of human nature that are seen at behavior of the top managers who like to be "free" of tactical details of business, but to participate in the "fun side of marketing, the development of the grand strategy" could also be the reason to prefer top-down approach. That situation in which top-down approach dominates prevents marketing to be what it actually should be-"the art of the possible, like politics."

Bottom-up approach presented in this book differes from bottom-up style of Japanese management, which considers incremental steps, consensus building and decision making from the bottom up. In such an approach it takes time to reach consensus, the concept is getting unanimous approval inside the company, so the marketing becomes more a question who "does" the marketing, than it is "what" is being done. In bottom-up approach by Trout and Ries, marketing is a question "what" tactic to use, how to build a tactic into a coherent marketing direction and then, at the end, to determine "who" should execute the strategy.

This innovative approach is vital in solving two main problems or "sins" of top-down thinking, as authors call them. Those two "sins" are that it is the refusal to accept failure and that it is the reluctance to exploit success, often combined together and determining each-other. The principle of bottom-up marketing is to work from the specific to general, from the short term to the long term. The implication of this principle is that first what should be done is to find adequate tactic, which means one tactic, not more, and to build it into a strategy.

# 4. The Process of Implementing Bottom-Up Approach in a Company

The process of implementing bottom-up approach in a company considers at the beginning "going down to the front", where the front line is understood to be in the mind of the prospect. It considers a process where one puts himself in a position to explore what customers and prospects might be thinking and the best way to collect information is to do it firsthand, without judging, but by observing with open mind, escaping looking for the facts that will confirm previously formed opinion what should be done. At the front should be found an angle, which means a fact, an idea, a concept, an opinion on the part of the prospect that conflicts with the position held by competitors.

It is also very important to monitor the trends. However, it includes the need to understand the differences between a trend and a fad because very often short term changes can block someone's ability to notice long-term trend. If something is to be recognized as a trend it needs to be observed for a decade or more, it usually involves slow change, it's essential to understand its causes and its effects and it is usually not in the center of the press' interest. In order to monitor the trends, by the authors, it is needed to find out "what people have actually done" and not "what people will do" because their respond to questions is in most cases formed in socially acceptable manner and because basic habits change very slowly while the press often magnifies small changes. That is why authors claim that a company can not predict the future, as well as it can not predict the enemy, but can create the future by introducing product or service whose very success "creates" a trend.

Next very important step in bottom-up marketing approach in the company is narrowing its focus. The opposite process that is widely accepted in the practice of many firms is line extension which is often caused by ideas of management that on the basic of already known brand could be gained financial benefits while introducing new products. However, authors offer several arguments that support focus instead of line extension. The first is that by focusing and becoming specialist the firm can send strong message to their customers and prospects instead of confusing them. The second is that specialists are often perceived by customers as experts or the best. 'When a product tries to appeal to everybody, it winds up appealing to nobody." It is very important for understanding this approach to know that authors point out that the perception is reality and that marketing is not to change minds, but

to take advantage of the perceptions that are already there. The third advantage of focus is that the specialist can become "generic" for the category. "In an overcommunicated, overbranded, overbeered society, you are lucky if your brand can mean one thing." Authors conclude that although line extension of company's brands is widely embraced in many companies and often performed in situation of flat and declining markets or consumer's concern about ingredients, the effect of such an approach is not only the long-term erosion of a brand's identity, but also spreading the forces of the firm and becoming "vulnerable" to competitive attack, that can cause serious problems.

After narrowing company's focus comes finding its tactic. The principles that authors recommend to be respected while finding tactic are that the tactic should not be companyoriented, that it should not be customer-oriented, but that it should be competitor-oriented. A good competitor-oriented tactic considers that it can not be copied quickly nor can it be copied economically. When finding tactic it's important to have in mind that clearly superior product happens very often in which case it would be better to avoid attacking competitors on the positions where the competitor is strong. However, since such a situation happens very rarely, it could be said that marketing today is a battle of concepts, not products. The authors add some recommendable to launch products to attack firm's product that dominates, but to do that under its own brand name. They also add that simple ideas are easier to implement and prospects find them easier to understand, that for the reason of credibility it is as important to promote negative as positive and that when forming the price, although it can implicate the quality of a product the firm should balance it with demand.

When the company finds its tactic the next step is building its strategy. In a bottom-up approach essential part of this process is making changes in the company, especially when admitting that there have been mistakes, or in the product. It is not recomended trying to change the environment, while facing the challenge to maintain "single-mined clarity over an extended period of time". The whole process results in a coherent marketing direction.

Making the changes is also very important. It is needed to understand authors' presumption that marketing efforts can't make much of the change in market's structure or buying patterns, nor can it substantially change the mind of the prospect. However, it is task of marketing to find a competitive mental angle that already exists in the mind of the prospect. In order to achieve that, a company can change name if it doesn't support the tactic that company is building into a strategy and can also change the product or service.

The authors recommend to the company that if it is not "winning the battle", it should "shift the battle field". It is not easy sometimes to accept the fact that company "can not win the battle." Management is also reluctant to "shift the battlefield" because the change is required and "people are rarely comfortable with change". When speaking of shifting a battlefield, a company can shift its audience, respecting the fact that it's better not to target the total market, but to benefit from the emotional opportunities created by narrowing of the target audience. A company can shift the product, the focus and the distribution, as well.

A company should also test its strategy. The key tactical weapon of a company is advertising. But when trying to test the advertising the paradox happens that the more novel and more unique the program is, the more likely it will succeed and the less likely it will test well. However, in condition where the volume of advertising increases and its relative effectiveness decreases, companies do test their advertising. In order to avoid mistakes, one should have in mind that when looking at the numbers in the research report, those numbers are a consequence of artificial responses to artificial questions. In a bottom-up approach a company doesn't try to make its strategy interesting since its tactic is chosen to be interesting at first place. The testing of a strategy can be performed with a help of observing sales force and the level in which the tactic is "sold" to them, and of checking out the press through a potential news value of a company concept. The competition should also be checked and a way to do that is to reverse a company's statement and to see if the reversal is appropriate

for its major competitor. The product line should be checked as well having in mind that when two brands have the same name, they are "locked together in mind" and that a company has to test both.

It is needed for the strategy to be accepted inside the firm. Suggestions how to achieve that goal authors present in a chapter named "selling your strategy". When presenting strategy inside the firm it is recommended that it is simple, that alternatives are not shown and that it should not be presented to the top management before it's presented to their subordinates in order to gain their support. A strategy's accepting can be disturbed with the lack of support from senior or junior executives who from their own interests are not prepared to make significant changes. In order to eliminate such a behavior it is possible publicly to identify the person who will benefit from the success of a new product or venture. The name plays an important role for the strategy, it is even said that it is the strategy, so it is better to accept an internal defeat on the name issue than to accept an inferior name and "lose everything on the marketing battleground".

Getting the resources is also part of authors' interest. They claim that it is better not to launch a program at all than to launch one without the sufficient resources. The problem of small entrepreneurs is that although they are "long on ideas", they are "short on money". Quite opposite is inside a large company. Small firms can use the regional approach or franchising to overcome their problems while in large companies top management should be included in the process that will lead to centralization which concentrates company's resources.

There is also a need to test the objectivity by "calling in the outsider". The outsider can be the advertising agency and in bottom-up marketing approach the agency is focused on the tactic while the company is focused on the strategy. Although agencies can play an important role especially when seeing "obvious tactical idea" that is not noticed in the company, in some occasions agencies can lose their objectivity.

When presenting launching company's program, the authors reveal that although they support bottom-up approach in planning, when it comes to execution they prefer top-down approach. If a company founds its strategy on a tactic that works, it becomes strategy driven. There are two possible choices of launching a program. The first, so called "big bang" approach has its advantages when it comes to making the first impression and "striking quickly". One should have in mind that "no good idea stays lonely for very long", but also that it is not necessary to have everything perfectly prepared before launching. On the other hand, the "roll-out" approach is more suitable for smaller companies that face larger competitors and launch their program in a single city or a state or a region. Smaller company can not afford the "big bang" not just because of funds but because of infrastructure needed to support a growing business, as well. "Roll-out" approach also provides small companies the possibility to avoid attracting too much attention from their big competitors. However, regardless which approach a company chooses, authors recommend aggressive behavior.

Maintaining strategy to be successful is very important, but very difficult as well. In order to do that a company must have lines of communication to the front and to reinforce success, understanding that, on the other side, early losses are usually followed by even greater losses when reinforcing such project. Authors point out the significance of centralized company because although a decentralized company is closer to the front, it is usually not able to turn an effective tactic into a strategy.

When considering possible success of the project it is good to remember that it's not the size of the success that matters, it's the direction that counts. The strongest protection from competitive inroads is a massive investment in resources. However, if the program doesn't become successful, a company should abandon it. There are three reasons for such a condition: wrong strategy, attempting things beyond resources or happening of something totally unexpected.

# 5. Conclusions

The differences between top-down and bottom-up approaches are presented by Trout and Ries mostly by describing examples of large companies where exists clear differentiation between top managers who create strategies and those employees who implement them using various tactics (in top-down approach). On the other hand, in small and medium enterprises functions of owner, entrepreneur and manager are very often integrated that implicates that strategy creator would also be its executor in potential top-down approach in such companies or at least would be in a better position than strategy creator inside large company to see if strategy couldn't be executed. The authors say that small companies have an advantage because they "are mentally closer to the front than big companies." "Entrepreneurs are down at the front. Their ideas and concepts tend to spring from their own personal experiences. They have the power to make decisions since they don't have to seek the approval of others. As a result, a vast majority of the big marketing successes have sprung from the entrepreneurial ranks. Money, however, is a major barrier to success".

This analysis of the advantages of small and medium enterprises doesn't mean that the need for bottom-up approach is less expressed in such companies. This, especially considering the lack of experience in the market environment, that is characteristic of entrepreneurs in countries in transition, and the percentage of the small companies that don't survive for long at the market, that is not only characteristic of countries in transition. Even if owner/entrepreneur/manager discovers easier that the strategy can't be executed tactically, it still doesn't mean that top-down approach is abandoned. Bottom-up approach is not about how strategies are created and how tactics are executed. It is about finding one, adequate, competitive tactic and building it into a strategy that would make it hard to be copied by competitors. It is also about a way of thinking and acting in one company that allows escaping from the mistakes of the refusal to accept failure and the reluctance to exploiting success. It is, at last, new marketing paradigm suitable for the application in small and medium enterprises, making their marketing innovative and creating new opportunities for their progress.

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# Towards an Entrepreneurial University: Necessity of Organizational Transformation of the University in Tuzla

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Fiscal and monetary stimulation and large corporations have been in the focus of public policies to ensure economic growth and job creation for a long period of time. But, following the decade of Europe's worst economic performance in years, a new approach has emerged focusing on promoting the spill over of knowledge through university entrepreneurship. Integrating a universities' missions for economic and social development urges universities towards transformation of traditional teaching and research universities towards entrepreneurial universities. In the midst of crisis it is important to support all contributors to an entrepreneurial economy. Universities as centres for knowledge creation and diffusion can be leveraged to generate future economic growth. It is important for small transition countries like Bosnia and Herzegovina that universities operate under policies that encourage entrepreneurship and innovation. University in Tuzla is still a teaching university, but creating an entrepreneurial university is vital to achieve sustainable economic growth in this region. Considering basic characteristics of an entrepreneurial university it can easily be concluded that University in Tuzla has a long way ahead towards an entrepreneurial university. The overall goal of this article is creation of a methodological frame for transformation of the University in Tuzla to an entrepreneurial one - analysis of current characteristics of the University in Tuzla, identification of what is necessary to become an entrepreneurial university, determination of how to implement transformations towards becoming an entrepreneurial university and to identify possibilities and obstacles during this transformation. This paper will present the results of a case study on University in Tuzla, the first integrated University consistent to Bologna postulates. Analysis will be conducted based on interviews with representatives of university and faculty management, and a survey based on a guestionnaire.

#### Keywords:

entrepreneurship, entrepreneurial university, innovation, methodological framework, University of Tuzla

### 1. A new approach - The entrepreneurial university

Universities have been struggling with different issues over the past ten years, such as: Bologna process, globalization and internationalization of higher education, rising number of student population, financial restrictions and recent financial and economic crisis. The main question for universities today is how to adapt to the dynamic and ever-changing environment. The past decade is marked as the period of Europe's worst economic performance, and growth of interest in entrepreneurship. Such development has its ground in economic recession, growth of unemployment in most countries etc. Policy makers throughout Europe have become aware of the key role that entrepreneurship plays in achievement of economic growth, development and growth of employment rate. Higher education institutions, especially universities, play an important role in providing the necessary education for future entrepreneurs.

As a result, a new approach has emerged focusing on promoting the spillover of knowledge through *entrepreneurial university*. Integrating a universities' mission for economic and social development urges universities towards transformation of traditional teaching and research universities towards entrepreneurial universities. In the midst of crisis it is important to support all contributors to an entrepreneurial economy. Universities as centers for knowledge creation and diffusion can be leveraged to generate future economic growth. The main question is *how to create an entrepreneurial university*? - university which will contribute to society's development, a university which will educate students with practical knowledge they need in the ever-changing business environment. It is necessary to transform the university towards an entrepreneurial one, in order to initiate changes and contribute to economic, technological, social and cultural development of a country. Over a decade ago Röpke (1998) stated that "Universities must turn into evolutionary entrepreneurial organization to fulfill their mission in an economy which must increase wealth and create employment by incorporating new knowledge in innovative products and technologies".

But what makes a university *entrepreneurial*? Entrepreneurship has to be embedded in every part of the university, from its leadership through to its teaching and student impact. It needs to demonstrate excellence in all of these areas: strong leadership at all levels, stronger engagement with students in a diversity of learning opportunities, innovative faculties and a clear, tangible impact on staff, business and the local community. The university needs to demonstrate a long term commitment of higher education institutions to engaging in enterprise and entrepreneurship, which will consequently help to develop an economy.

An entrepreneurial university is defined by a number of characteristics:

- Strong leadership that develops entrepreneurial capacities for all students and staff across its campus;
- Strong ties with its external stakeholders that deliver added value;
- The delivery of entrepreneurial outcomes that make an impact to people and organizations;
- Innovative learning techniques that inspire entrepreneurial action;
- Open boundaries that encourage effective flows of knowledge between organizations;
- Multidisciplinary approaches to education that mimic real-world experience and focus on solving complex world challenges;
- The drive to promote the application of entrepreneurial thinking and leadership.

Henson [1] expressed his vision of the entrepreneurial future as follows:

- The Entrepreneurial University
- The Entrepreneurial Graduate Career
- The Entrepreneurial Educator

- The Entrepreneurial Stakeholder Partner
- Delivering the Entrepreneurial Outcomes (Framework)

For the need of this article, we will only focus on the entrepreneurial university. Hennon defines the entrepreneurial university as an institution with the following characteristics:

- A great environment for encouraging entrepreneurial behaviors, thinking and opportunity;
- Cross-campus approach creating access to all students;
- Multi-disciplinary working across academic faculties and departments;
- Engages external stakeholders in the design and delivery of entrepreneurship provision;
- Has strong institutional leadership and support;
- Staff/student rewards and incentives
- Takes a broad approach to entrepreneurship to be more than starting a business;
- Teaching focuses on 'for' rather than 'about'entrepreneurship.

University's need to transform and change is a result of various factors: governmental and funding pressures, changes in the society, massification of higher education, globalization, rising number of private higher education institutions etc. Creation of entrepreneurial university is a result of mentioned influences and internal development of the university itself. A university becomes entrepreneurial in order to respond to the changes in its environment and to ensure socio-economic development, and improve its own financial situation: " … governments in virtually all parts of the world are focusing on the potential of the university as a resource to enhance innovation environments and create a regime of science-based economic development."

### 2. University in Tuzla: An entrepreneurial university?

In order to achieve development goals government structures at all levels in Bosnia and Herzegovina need to stimulate entrepreneurial mindsets of young people and foster establishment of culture that is friendlier to entrepreneurship. Education institutions play a key role in achievement of these goals. As already mentioned, universities in Bosnia and Herzegovina have been facing the need for reforming the higher education sector, as well as all other segments of the society and economy, after signing the Dayton peace agreement. After signing the Bologna declaration by the government in Bosnia and Herzegovina, higher education institutions were facing the necessity of implementing numerous organizational changes. Universities in Bosnia and Herzegovina are traditionally teaching and research universities with traditional organizational structure and culture. The process of transformation to entrepreneurial universities is necessary and inevitable in order to ensure development of university and society as whole. Considering the specific constitutional and political conditions in Bosnia and Herzegovina and the ongoing higher education reform, the transformation of universities will be hard and long-term process. In the past ten years small steps forward have been made in the reform of higher education system. A much stronger commitment towards changes is needed within the academic community itself, since the universities have been slowly adapting to new and changing environment.

The transformation of a traditional teaching university, like University in Tuzla, depends on the ability of its management to re-define the university's mission statement, develop strategic development plans, implement the necessary organizational changes, develop and strengthen entrepreneurial organizational culture of the institution and promote the necessity of the transformation process in the academic community and in the public.



Figure 1. Presentation of survey results - Is University in Tuzla an entrepreneurial university?

In order to determine the perception of the University in Tuzla and its current characteristics, a case-study has been conducted in 2010. aiming to determine a framework for transformation towards an entrepreneurial university. The necessity of this transformation is evident when taking in consideration the fact that 69 % of questioned employees finds that University in Tuzla is not entrepreneurial (Figure 1.).

Furthermore, when asked about the influence of the environment on the University 93% of respondents stated that the university is influenced by trends and affected by its environment, among which 63% stressed out the negative environmental influences on the university itself. In order to answer to these challenges and overcome the environmental influences, the University in Tuzla needs to become more entrepreneurial.

One of the fundamental characteristics of an entrepreneurial university is relationship with its stakeholders. In the study 60% of the examined employees stated that the relationship between the University and its stakeholders is very important. Considering the fact that more then 2/3 of the examinees pointed out the negative influence of environment on the university, it becomes clear that the relationship university-stakeholders is disturbed. Therefore, it is important to regain a closer cooperation between the University and its stakeholders, especially with external stakeholders.



Figure 2. Presentation of survey results - institutional autonomy

An entrepreneurial university should deliver attractive, innovative and business-oriented knowledge to its students. The results of the questionnaire show that every fourth employee of the University does not think that the knowledge transferred to students at the University in Tuzla is compatible with the needs of the business environment. Evidently, a modernization of the

curricula is inevitable, based on the practical, innovative knowledge, while preparing the students for the modern business world and practices.

The University in Tuzla needs to implement the necessary changes in order to resolve mentioned problems. According to the results of the study, only 29% of questioned employees think that the academic community is interested in change of the University. In order to successfully implement organizational changes and experience development, management of the university must overcome the resistance of employees towards these changes. Additional requests are that the management of the university needs to encourage changes and accent their benefits for the institution and its employees.

# 3. Conclusion

What kind of a university do we need today? The answer is rather simple, a university which will meet the needs of a dynamic and turbulent working and life environment in a best way. University must become entrepreneurial in order to ensure its development. The need of strengthening relations between the universities, business sector and government is evident. An entrepreneurial university should ensure building of its sustainability, and to become a desirable partner for the business and government sector.

In order to achieve mentioned goals, a university needs to be unique, autonomous, and responsible towards its environment. This is the only way for universities to be able to respond faster and in a better manner to changes in the environment, produce practical, business-oriented knowledge, educate people who will be able to manage their own careers, deal with the reality and complexity of the business world, and contribute to the society's development.

Analysis of the key problems of the University in Tuzla (compatibility of the mission and development goals of the university, inadequate organization and management capacities, difficult financial situation, curricula, low level of university autonomy, lack of interest in the academic community etc.) indicates that the University of Tuzla is far from becoming the entrepreneurial one. There are a number of activities which need to be undertaken. Some of them include activities aimed to stimulation of process of change at the university, change of the financing system of higher education institutions, increase of institutional autonomy, creation of innovative, business-oriented curricula, introduction of up-to-date teaching methods, and activities aimed to strengthening relationship university-stakeholder.

Creation of an entrepreneurial university is a long-term process, which needs to encompass all of the employees of the university, management, students and stakeholders. All of them need to understand what an entrepreneurial university is, and how important it is for the socio-economic development of a society.

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# **Family Enterprise During the Crisis**

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During the period of the world economic crisis, when its end is barely shown through, the question has arisen how to move on. In what way to reconstruct the collapsed economy, devalued currency, disrupted trade channels? How to employ millions of working people? And if we take into account, like the case is with Serbia, a questionable transition which is still undergoing, and as its consequence all the aspects of the world economic crisis are augmented, the question that arises is quite serious. There are many answers, however, unfortunately a very few are correct. It is certain that no solution is applicable to every situation with certainty, and only the combination of several good techniques and models can provide expected results. The evaluation is that the development of private enterprise and within it family enterprise, is one of the ways to find an easier and faster way out of the crisis.

The experience from developed countries shows us that for starting a family enterprise, often the funds needed can be obtained from personal savings, loans from friends, relatives or from partnerships. Which in the conditions of poverty and unfavorable credits represent an advantage in the beginning. Also the complicated application for the credit of various funds is being avoided, for what the recent clerks or common workers are not prepared well enough.

In the environment when new job openings in ex-government companies, now privatised companies are restricted, when different job skills are required than it used to be (knowledge of foreign languages, managing abilities), opening your own company imposes as a logical solution. In which, with a bit of luck, we can start successfully, and in a shorter time period employ a family member or acquaintance. In which we can pursue an activity which used to be a family tradition, that was in the times of a "need to work in a government company" neglected and almost forgotten.

In the conditions of uncertain business, family companies give us the opportunity to adapt to the market conditions without formal procedures, and eventually if need be, to completely change the activity.

This is just a part of the arguments that show us the benefits of running a family company.

#### Keywords

Advantages and Disadvantages of Family Enterprise, Crisis, Family enterprise, Private Entrepreneurs.

#### **1. General Business Conditions**

The world economic crisis is still ongoing, at least in Serbia it is unfortunately in a full swing. Many companies are closed, hundreds of thousands of people are unemployed and on the brink of existence. Transition, privatisation and restructuring of the Serbian economy is going slow and badly. The budget deficit is quite large, funds are empty, foreign investments are not incoming at expected rates, large infrastructural projects do not seem to start at all. The Euro reaches its maximum value related to the dinar, since it was introduced. Most of the populations' personal savings are diminishing or non-existent.

Generally, the overall economic situation is very concerning. Everything points to means of saving, `tightening the belt` and looking for a way to survive. There are a lot of recommendations what to do to get out of the crisis, but the question is what of those recommendations are real and right for the situation. It is certain, that one of the ways to revive and recover the economy is the development of the private enterprises. Throughout the history, in the whole world, in times of great crisis, it has been a way out for many of them. And not just then.

The most common form of private enterprise are family enterprises, and they come as small or medium sized companies. To ensure existence in crisis, when there are no new jobs, and the current job positions are being shut down, when there are no means to invest, and external investors are unavailable or too expensive, the need arises to find some new solutions. That means to be creative, bold, to identify chances, follow your intuition, to have new ideas, to be willing to take risks, to learn and work hard. Those are all characteristics that adorn entrepreneurs.

### 2. Private Entrepreneurs

The first entrepreneurs appeared in the 15<sup>th</sup> century, when they had split their private property form their business property. Not long after that the first attempts to specify the function and basic meaning of enterprising were made. In the 18<sup>th</sup> century, a Scottish economist called Cantilion [1] started seriously, on a scientific basis, to attend to this problem. The entrepreneurs of that time were farmers, who ventured into serious business risks, in spite of the huge influence of higher instances onto their business and other unknown variables that existed. According to Adam Smith and John Stewart Mill [2], the main characteristics that classified someone as an entrepreneur, was the willingness to take risks. In modern theory, the common elements defining enterprises are:

- Creativity and innovation.
- Opportunities to make profit and growth in risky conditions.

Very often, enterprise, besides work, land and capital is listed as the fourth factor of production. Each definition of enterprise can be amended, but one of the most comprehensible ones is the one that says that it is `a process that is made of creating something new, what takes time and great effort, and by doing so, psychological, financial and other risks are taken, and in return, material satisfaction is gained` [1]. According to that, the basic characteristics of an entrepreneur are:

- Highly expressed need for independence.
- Will to prove that they are the masters of their own destiny.
- Readiness and ability to run business in conditions of great uncertainty.

As Charles Muirhead, the founder of Orchastream Sunday Times says: `The greatest pleasure is not the money, it is the feeling that you achieved something, that you made something from nothing` [3].

As far as risks are concerned, the statement that Jonathan Eklvidge the founder of Suday Gadget Shop, gave to The Times magazine in 2002: `you have to be ready to lose everything, and remember that the biggest risk is not to take risks` [4].

The motives that drive people to become entrepreneurs are various, and in our conditions, it is very often the inability of choice, that is the means to provide existence in any other way.

In each society, 8-10% of the general population have keen entrepreneurship abilities. Depending on their abilities and ambitions, all entrepreneurs can be split into three categories [3].

In the first, there are the craftsmen. They are usually continuing a family tradition of a trade, which, in the era of `working in government companies` are a bit forgotten and considered

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less valuable. Now all the possibilities that this kind of business can offer are taken into account. They are the most numerous, and important in every society.

The second category consists of people who have greater ambitions, and more entrepreneurship spirits. They follow the market, evaluate trends and needs of the buyers. They are willing to take risks and invest the last penny of their savings in the business they believe in. They were usually employed in some companies as repairmen, technicians, engineers. They had the opportunity to learn the business, to see what their company makes and to who they sell their goods. They knew what was required of them and what the potential buyer would like to have. And then, they found themselves (in our conditions) unemployed. They gather all the funds they had in reserve, they loan from their friends and relatives, and they start their own business. To prevent their spouse, or children to end up in a similar situation without a job, they usually start up a 'family business'. Most often it is categorised as small or medium enterprise. They venture boldly into the business world. They are ready to work hard, and they have solid resolve to succeed, to fulfill their dream and provide for their families. However, as it usually happens, there is a serious trap waiting for them in the very beginning. There is a very big difference between knowing how to do a job, and running a business that is in the same line of businesses their job was. So it happens that a person who was a great electrical engineer, cannot run and organise his enterprise at all, that is doing electric work. Or that a hairdresser cannot run a hair saloon. And then instead of doing one job that he knows how to, the entrepreneur is forced to do ten other jobs he knows nothing about. And then the classic dilemmas arise: how to proceed, how to keep the enterprise in family circles and still make it function successfully.

And finally the third category of entrepreneurs are the ones with the greatest ambitions. They are based on new products, great innovations or a patent. At most, 1% of the general population are the entrepreneurs in this category. Most of them are in America. A few years ago an English businessman asked their Prime Minister Tony Blair to see the conditions America offers and Britain does not. The Prime Minister went to America and quickly found out this: those are the funds of high risk or in the words of professor Vojin Šenk, bold capital [5]. In order to achieve success in any enterprise, they are of extreme importance. They are used by companies that do not have enough of their own capital, and they cannot obtain funds by regular means. These means are used to fund high risk projects, with potentially high gains. The estimate is that in Europe, in the year of 2004, with that capital, over one million jobs were opened, and over ten million in America. In the EU, over 50% of investments are funded from high risk funds.

#### 2.1 Family Enterprises

From all medium sized enterprises most numerous are family enterprises. According to some sources [6] in the American economy 90-98% are family enterprises and they are hiring over 50% of all the available work force, and they produce over 60% of the BDP. In Europe that percentage is just a bit smaller. In Belgium [7], 70-80% of the small and medium enterprises are owned by families, in Finland 70% of the total number are family enterprises, and in Germany the percentages are in between 60 and 80%. According to estimates, in Croatia from all the enterprises, 70% are family owned. In Italy, 94% of production enterprises with over 10 employees are family controlled, in Holland 83% of all enterprises, and in Great Britain over 80% of all the enterprises and 73% of the 8000 largest enterprises. In Chile 75% of all enterprises and 65% of medium and large enterprises are family controlled. In Australia its 80% and in Latin America even 98% is the share of family run enterprises in the whole economy.

The number and significance of family enterprises, is from different authors viewed differently. In the essence it mostly depends on what exactly they mean as the definition of a family enterprise.

In general, there is a broader definition that considers as a family enterprise every enterprise where one family controls the business, without any regards to if one of the family members are employed in the before mentioned enterprise. And where even a small part of the enterprise is owned by a family. If we apply this definition, we can come to the conclusion, for instance in Sweden that only the Walenbarg family controls about 43% of the whole Swedish economy [8].

The stricter definitions have the condition that at least one member of the family, the founder or his heir is actively employed. It is expected that the family has the deciding role in the making of business decisions.

The strictest definition demands the involvement of more generations in the work process and decisions made, and then the direct involvement of family members in everyday work, and the family members in the positions as key managers.

In any case, the basic elements of defining a family enterprise are:

- The percentage of ownership.
- The ability to control voting.
- The degree of influence on the strategic choices and directions.
- The involvement of more family members.
- Their role in the management.
- The involvement of more generations in the enterprise.

Davis [9] has a definition: It is about the interaction between two organisations: family and enterprise, that defines the basic characteristics of a family enterprise and defines their excellence. Dyer [9] is a bit more specific, he says that the family enterprise is the one where decisions concerning ownership and management are influenced by family relations. One more definition from Nikola Kuvačić says: By family enterprise is meant every form of entrepreneurship in which are involved only members of a family and their relatives [7].

It is obvious that there are a lot of definitions and their wideness is influencing the fact which enterprises can be categorised as family [7]:

- Active family enterprises, characterised by personal control of the business by the family members, and the family members own the company, and are actively involved in the process of the business and are employed.
- *Family enterprises with absent owners*, owned and controlled by families who are not employed in the enterprise and they are not running the business instead it is run by non-family members, in the name of the family.
- Latent family enterprises, where only one member in the family is involved in the business or running the enterprise, usually the owner or manager of the enterprise. Other family members may join the enterprise at some point in the future.

Family enterprises are a very specific form of organisations, because they unite two institutions that have very different goals. The basic function of a family is taking care of its members, and to provide better life conditions to each member disregarding their abilities. On the other side the goal of an enterprise is to produce and distribute goods or services, and reward the employees according to their contribution.

# 3. Advantages and Disadvantages of Family Enterprises

#### 3.1 Advantages of Family Enterprises

Both advantages and disadvantages come from its very essence of existence. Practically, what will be the relationship between business and family, what family values and business principles will be prioritised and how smart will they be combined, these things will influence the family enterprise, making it more or less successful.

In essence, there are many advantages of family enterprises, and the main ones (by many authors) are [10]:

- 1. Devotion to the business in the family enterprise is viewed as devotion to the family. In a healthy and successful family where the members take care and respect each other will have the same relationship towards the business. The division into the two kinds of family enterprises, the ones where business comes first, and the ones where family matters most, is not applicable. Each problem that occurs at work, is a problem to the whole family, and it has to be solved as faster and better possible in a good family. The motto `Business success is family success` is valid here. Such dedication to business is rare in non-family enterprises.
- 2. *Great knowledge* that exists in some families as a part of the tradition, or through generations of safekeeping old recipes, represents an advantage for some family enterprises. They grow up with that knowledge, and considered family treasures, and when they start to work, fitting in is much easier.
- 3. *The motivation of family members* is reflected in their readiness to work longer and harder in case of need, in order to help the enterprise to overcome a crisis or fulfill deadlines in time. Since they consider the enterprise as their own, it is important to keep and advance it, so the question of financial stimulation is rarely raised. On the contrary, the members are ready to give up their personal profits or invest more, all for the success of the family enterprise.
- 4. *Flexibility in time, work and money* devoted to the enterprise is also the consequence of great motivation and feeling of unity between the family and the enterprise. Considering that the success of the enterprise is a common interest, overtime work is easily negotiated and no additional pay is required for prolonged work hours. Such levels of self-sacrifice are not known in other types of organisations, ant that gives family enterprises considerable market advantages. Important decisions are made the quickest possible way without unnecessary procedures and formalities that can waste precious time.
- 5. Long term planning is also a family enterprise characteristics. All of them started their businesses with great enthusiasm, with great sacrifices, and they think of the enterprise as a part of their lives. They care about its success and they want it to last. They expect to work there, and also their children and their children's children. It is not their aim to grab money quickly and close down the business. That is why decisions are made strategically, and with great care how it will reflect on the future generations. In other organisations, it is much more difficult to make a decision about redirecting dividends to development. With family enterprises issues like these are solved much more easier.
- 6. *Stable culture* of family enterprises implies well defined ways of information and money flow, where it is known for years who does what and why. The founder (owner) is the one requiring all the information and makes decisions. Relations and responsibilities are all clear and everyone knows how things work. As much as this is an advantage it can be a disadvantage too. The `it has been done like this for years` can be a problem when it is required to adjust some sudden changes from the regular internal or external flows. In any case a stable culture contributes to a much faster reaction time, which is a great advantage in modern business.

7. *Reliability and pride* are the two important characteristics of family enterprises. Very often they have in their name the name of the founder or the family which speaks of their identification with the business they are running. Because of that they are always prepared to honour the deals they made with business partners, to keep up the enterprise's reputation. As a rule the leading figure in the enterprise will remain in that position for a long time and will not change arranging business deals and go back on his word. For the same reasons, the owners emphasize the quality of their products. Also they want all their employees feel like a member of the family, and they invest a lot in the humanity of work conditions.

#### 3.2 Disadvantages of Family Enterprises

The most common disadvantages of family enterprises are its potentially greatest limitations. There are always here as a possibility, but can be avoided because their occurrence is not imperative, but more of a personal understanding of the owner and the founder.

The fact that the owners are usually the general managers [7] can often lead to nepotism and split the work according to blood line, not expertise. Mixing relatives and business functions can as a result impose work on family members that supersede their abilities or affinities, or taking over jobs that they are not ready for.

The risks of running the business, possibilities of bankruptcy and ending up without means to lead a normal life, can disturb family relations and even break them up.

Generally, according to Professor Jaka Vadnjal [9] there are five potentially great weaknesses of family enterprises:

- 1. *Rigidity* in running the business and approaching problems. Coming from the desire to keep a certain style of work introduced by the founder, or from fear of changes, some procedures are kept stubbornly spite their obvious obsoleteness. That leads to reduction of productiveness, increase in production costs and losing customers.
- 2. Not accepting business challenges makes the family enterprise less concurrent. The earlier mentioned traditionalism when equipment is chosen, technologies applied, unwillingness to change the way things are organised, or to use outside financing, can become brakes in the process of development. There are known situations where some products were not delisted when modern alternatives to it (typewriter, vinyl) appeared.
- 3. *Inheriting*, transferring the family business from generation to generation can often be a stressful act. Very often the next to kin is not the best employee. Hence, the dilemma, to risk family relations or jeopardise business because of the family line. Additional dilemma is when there are more than one successor. Who to pick, or to hand over the business equally to them, and disrupt the unity of ownership or to pick one and disrupt family relations.
- 4. *The influence of emotions* on the business is a problem with family enterprises. To treat coworkers like relatives or to have strictly economic criteria. This dilemma is always existent.
- 5. *Transfer of leadership* is similar to inheritance and places the founder in a similar dilemma. A bad or late decision can affect the whole enterprise severely.

# 4. Conclusions

Small and medium enterprises, where most of them are family enterprises, all over the world, contribute to the economic prosperity and social stability. They are the initiators of development in the countries of market economies. In the European bill about small and medium enterprises it is said:

- They increase GDP.
- Provide more balanced regional development.

- Influence unemployment, by providing new jobs.
- Substitute imports.
- Strengthen the export abilities of a country.

That is why, in the bill, among other things, it is recommended that :

- Provide education and training to run enterprises.
- Enable to open and run enterprises faster and cheaper.
- Elevate the quality of the legislature.
- Adjust the tax system.
- Offer maximal support for the development of small enterprises.

In the package of measures adopted by the government of the Republic of Serbia, to overcome the negative effects of the world economic crisis, there is a significant part about small and medium enterprises. Their importance is acknowledged as is the need to create a more suitable environment for enterprises, through faster administration reactions to the needs of the small enterprises, better use of funds, giving better benefits and help in developing skills and innovations. The law to legalise objects are a part of the activities in that direction.

Obviously, the general thought is that family enterprises are important to stabilise the economy and get out of the crisis faster and easier. As it has been told, family enterprises hire a great part of the general population and they influence the economic markers, contributing to their growth. Stable structure of the capital, usually from personal or family sources, lowers the pressure on the public financing. Researches show that the reproduction of invested capital is better in family enterprises than in the other ones. The expenses for innovations are lower and funded from internal reserves. Business ethics along with social responsibilities, due to long term orientation, is also dominant with family enterprises. The feeling of the founder and the employed family members, that they work in their own company, that their success depends solely on themselves, that the company will be there for their children, raises the motivation and creates a feeling of satisfaction and pride. The most important problems that family enterprise owners face are family related, more than business related. Families that run business successfully, are successful as families too.

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# Investment Into Small and Medium-Sized Enterprises and Their Significance for the Regional Development of Serbia

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Abstract: For the last two decades, Serbia has been facing the process of transformation of transformation of the political, economic and social system. Looking at the past decade, significant changes can be noticed, not only in Serbia, but in the whole region, too. The essential element of the economic and political transformation is the creation of the private sector and the development of the small and medium sized companies. Besides contributing to the direct foreign investments, the sector of the small and medium sized companies should contribute to the reduction of unemployment, opening of new job vacancies, improving the standard of living, an increase in export and the more evenly balanced regional development of Serbia.

The development of the small and medium sized companies is the base of the opening of the market and the cooperation with the foreign companies. That is the reason why a special attention should be devoted to the development of the small and medium sized companies. The fundamental advantage of these companies is the fact that they are flexible and can be easily adjusted depending on the changes and demands of the market. The Serbian government has adopted the strategy of the development of the small and medium sized companies, the aim of which is giving support to these companies and stimulating their development and competitiveness.

#### Keywords:

investments, small and medium sized companies, investment into small and medium sized companies

#### 1. Introduction

In the developed market economies enterprises are defined as legal and business units, established for the specific purpose. In the economies with the developed financial and economic institutions, the crucial role is played by private companies, that is, limited liability companies, as we designated them in Serbia. Enterprises may be classified according to a number of different criteria. The major criteria for the classification of enterprises into small and medium-sized are as follows: *the average number of employees, annual income and total assets, i.e. the funds stated in the balance sheet of the company's assets.* These criteria vary from the country to the country, considering that each country specifies them in its national legislation, and each of the above criteria refers to the current business year.

According to the form of ownership, SMEs belong to the sector of economy under the private ownership, which is particularly relevant for Serbia following 2000. After our country had embarked upon the transition process, privatization became necessary, taking into account the fact that the state ownership has been gradually disappearing and the private one has superseded the public ownership. Development of SMEs is one of the goals that every developing and transition country aspires to since it is the basis for social support to the

reforms and building of management and entrepreneurial skills, know-how and competencies. Following the period of quite a burdensome transition (2001-2003), Serbia is now focused on more accelerated and facilitated development and management in the SME sector. One of advantages of this sector's development is reflected in the increased number of employees, which is of particular importance bearing in mind great unemployment rate in Serbia today. Besides, we are aware that one of major issues with regard to the development and progress is absorption of considerable labour force from enterprises in the process of restructuring and privatization. Additionally, it is also of utmost importance to employ young people and highly-qualified staff, in particular in the field of management. Actually, the development and management of SMEs should contribute to the economy on the whole, through more productive and efficient business operation and consequently, better results. Indirectly, it can have the following effects: decrease the unemployment rate, increase the purchase power and gross domestic product as well as overcome the recession consequences.

# 2. Specific features of the SME sector

Today, SMEs may be defined in several different ways and according to distinctive criteria. Accordingly, there are companies developed as a result of innovations or entrepreneurial spirit of their owners. Generally, SMEs are developed in one of the following ways:

- 1. Start-up it is usually a company at its initial foundation and development stage
- 2. Acquisition of the existing SME
- 3. SME franchise

In the transition countries, as it is the case with Serbia, SMEs are very often emerge from so called grey or even black economy sector. The prospects of those companies are very uncertain in relation to those companies which have been established within the legal zone through the process of innovation and entrepreneurship. Nowadays, a great number of SMEs in transition economies emerge as a result of legalization and formalization of business activities in the grey economy; however, targets set by such SMEs are quite disputable when it comes to their development and sustainability. Consequently, the grey economy accounts for 35% of the gross domestic product of Serbia. According to the SMEs Development Strategy drawn up by the Government of the Republic of Serbia, there are still almost a million workers employed in the grey economy zone. [2] The market share of SMEs is relatively low to enable those companies to have access to the stock exchange so as to attract new capital for their development. Taking into consideration that a small or medium sized enterprise has access only to the commercial credit lines, as sources of finance, and is reliant on the savings of an owner, family and friends, some economists believe that long term increase of the corporate income and property tax inhibits the growth of the SME sector. On the other hand, this sector has a very important role in overall economy development since it contributes to the creation of new jobs to the greatest extent. Therefore, all transition countries are recommended to take into account the manner and level of taxation so as not to threaten the SMEs development. If favourable conditions are created, small and medium

sized enterprises will be able to achieve sufficient growth so that they might even pose a threat to bigger companies thus proving that change and regeneration are basic characteristics of the market economy.

As far as criteria for the classification of enterprises into small and big-sized are concerned, it is generally accepted today that the size of an enterprise is defined on the basis of the number of employees and annual income amount. These criteria vary depending on the country, institution or purpose. Thus, for example, in France and Great Britain small enterprises comprise around 500 employees, in Belgium and Denmark 70 and in Germany 50. In the European Union the limit is set at 500 employees and net capital stock amounts to

under 75 million euros and at least the two-thirds of the capital. However, in the developing countries, the average enterprise is much smaller and the number of employees ranges from one to 49.

SMEs are present and do business in the fields of retail, wholesale, sector of services and production to supply highly specialized demand. From the accounting point of view, SMEs are identified as companies with less than 100 employees in the industry sector, that is, as companies with less than 20 employees in other non-agricultural economy sectors. In developed economies SMEs account for 40% to 60% of the total economy.

In developing countries today we distinguish three types of small-sized enterprises. These include as follows:

- 1. SMEs of lower social standing these are the companies on the verge of existence or marginally profitable companies.
- 2. SMEs of middle social standing these are the companies interested in expansion of financially viable and relatively stable family business. These may include services or furniture manufacture businesses etc.
- 3. SMEs of higher social standing these are profitable and technologically advanced enterprises with the potential to develop the economy of scale.

These may include production and assembly of parts in the household appliances industry, car parts etc. Some authors distinguish the following three types of small-sized enterprises. The first group comprises small-scale economy enterprises in traditional fields of production and services, with the greatest number of SMEs. The second type refers to the enterprises which do work on commission for big companies, whereas the third type are contemporary, innovative enterprises. [1] Establishment of legal entities makes a significant step in the development of small businesses considering that organizations have more options available in relation to an individual. They can attract the capital for development, purchase the missing goods, join together and compete more effectively in the market. Each individual can make a decision to establish a single-owner SME has certain shortcomings. For example, the enterprise has unlimited liability when it comes to repayment of debts. Similarly, these enterprises face difficulties in finding the necessary capital. [3] In order to overcome all these difficulties, the establishment of limited liability companies is nowadays the most common practice in transition countries.

# 3. Problems of SME financing

In the most developing countries, as well as in Serbia, the money and capital market is insufficiently developed, whereas the banks are not in position to provide loans to small and medium-sized enterprises. Banks tend to grant credits and loans to already established enterprises with satisfactory balance sheets and respective credit history. For that reason, all activities and operations of SMEs are restricted to the owners' cash assets and these very owners often lack sufficient accounting records and financial statements to obtain required credits. On the other hand, SMEs try to provide necessary capital in order to finance their further growth and development. Consequently, due to insufficient financial resources, every year a great number of SMEs close down their businesses. In order to survive in the market, SMEs' owners have to envisage one of the three possible scenarios: *the case of the worst scenario, the case of probable scenario and the case of the best scenario.* Each of these scenarios may be managed, however it is necessary to possess appropriate managerial skills and competencies, considering that entrepreneurs are frequently unable to manage their capital, which consequently results in bankruptcy and failure of SMEs.

Every entrepreneur, that is, the owner of the SME, at the very beginning, has to be aware of the fact that business may also fail and should take certain measures accordingly. The contemporary financial management of SMEs requires the entrepreneurs to envisage the problems and to solve them in a due time so as not to threaten the long-term cash flow and the enterprise life cycle, that is, not to jeopardise the survival of their enterprise. Nowadays, in most cases entrepreneurs lack necessary competence and skills in order to be able to perform these tasks. As far as the SME financial management is concerned, the quality of human resources presents a major bottleneck. The actual issue for each SME, both for the one at its start-up phase as well as for the one already existing, is whether the competent financial professional should be engaged and entrusted with the management of the enterprise with all its resulting liabilities and risks. In practice, it proved to be much more effective for SMEs to have such delegated responsibility rather than the owner with all power in his/her hands, without relevant skills and competencies.

#### 3.1. Sources of SME finance

Subject to the financial strategy and stage of development, the SMEs opt for specific sources of finance. There is a standard and generally-known classification into own and borrowed funds. Sometimes, it is more reasonable to completely rely on the borrowed funds, which is quite common in Japan where the interest rates are almost equal to zero.

However, when the available funds are insufficient and expensive, it is best to use the combined structure involving the combination of one's own and borrowed funds, which most entrepreneurs today actually do. This method of finance provides for dispersion of risk and facilitates the business operation. The combined structure is monitored and analysed on the basis of appropriate indicators, that is, ratio between borrowed and own assets, which was mainly unfavourable for the social economy sector. SMEs, that is, the growing economy sector, increasingly use their own assets and optimum capital structure, since this directly affects profitability, solvency, indebtedness, independence and security.

The optimum capital structure of each SME depends on generated income, necessary funds for development and possibility of provision of external sources of finance. It is usually believed that SMEs cannot make profit in their first year of business operation, or even later, and that their available sources of finance are restricted. It is exactly for these reasons that SMEs initially opt for greater share of their own capital in relation to the external sources. For all enterprises, and in particular for SMEs, it is important and recommendable to adhere to the golden banking rule which says that the borrowed capital may not be used contrary to the envisaged timeframe requirements in relation to those under which the borrowing was approved. This means that short-term loans should be used for short-term transactions and not for the long-term ones and vice versa.

# 3.2. Financial, monetary and banking systems in transition as an institutional frame of the SMEs development

According to the terminology of the World Bank, there is a significant difference between the initial state of transition in the real and financial sector. While in the real sector there is a structure that should be transformed, as a result of which the term *transition* is used, in the financial sector there is no complete structure that may be transformed and thus normalised. This is why the World Bank and the IMF use the term "upgrading" of the financial system. [4] It seems that this distinction is important in the analysis of the necessary structure and framework for development of the SME sector. Accordingly, after 1990 the Polish economists envisaged at least five years for the development of the SME sector. They also envisaged 7-8 years for the development of sustainable financial, monetary and banking sector as a support to Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

SMEs, of which 5 years is necessary for preparation and 3 years for liberalization of this economy sector. The basic elements of this process include as follows: *splitting up of the monobanking sector into central and business banking; monetary stability and increasing the capacity of the banking sector.* This strategy as well as accelerated reforms were adopted by the International Monetary Fund.[5] Very soon, following the beginning of transition in the countries of the Eastern Europe, some sort of consensus on major elements of transition strategy was reached. The authors of this study were impressed by the fact that this consensus also encompasses the elements which were ignored in the initial phases, such as legal reforms. Furthermore, they also envisaged that it is necessary to devote 5-7 years to the intensive work on institutional reforms and restructuring of financial, monetary and banking system.

# 4. SMEs development in Serbia and their significance for the regional development

Creation of new jobs, improvement of the standard of living, balanced regional development largely depend on the number and effective performance of small and medium-sized enterprises (SMP) and their balanced distribution across all our regions. SMEs account for 99.8% of all our enterprises, comprise the two-thirds of all our employees, make up 68% of turnover as well as 58% of gross added value, 50% of the export value and finally 51% of all investments. According to the statistics, the SME sector is growing as well as its importance for the Serbian economy.

The Ministry of Economy and Regional Development recognised the SME sector as one of major pillars of economic development, which along with foreign direct investments and process of restructuring and privatisation of big enterprises should lead to both decreased unemployment and increased export, as well as to more balanced regional development. Start-up credits are one of anti-recession measures undertaken by the Government of the Republic of Serbia as a support to the sector of small and medium-sized enterprises. As a result, the Ministry of Economy, with the support of the Development Fund and the Republic Agency for the SMEs Development, the third year in a row, announces the competition for the beginners' mortgage free loans and start-up credits for entrepreneurs and legal entities.

Until now, 1,059 credits amounting to the total of 1.6 billion dinars have been approved. 721 credits have been granted to entrepreneurs and 338 to legal entities. In this way, more than 3,300 of new jobs have been created in Serbia. This year entrepreneurs mainly set up trade businesses, whereas legal entities opt for food production. The rest of them get engaged in the fields of wood processing, tourism, education, manufacture of machines, metals and metal products, electrical and optical devices, chemical, textile products etc. As far as the level of the SMEs development in Serbia is concerned, there is a prominent regional imbalance, since they are mainly concentrated in the area of Belgrade and South Bačka County, which accounts for 40% of the total number of registered small and medium sized enterprises in the country, whereas their share in County of Toplice is under one percent. Consequently, the credit line aimed at development of SMEs in the most undeveloped municipalities has been introduced.

This year Serbia witnesses the growing trend of newly-registered small and medium-sized enterprises as well. Currently, there are around 320,000 registered SMEs, which is by around 4,000 more than toward the end of the previous year. Their number will further grow since the state is going to finance the development of this sector with more than 200 million euros from the budget. Furthermore, it is going to increase a number of support instruments along with the amount of financial funds and by means of legislation, it will facilitate the procedure of setting up small and medium-sized enterprises. The package of Government measures aimed at improving the solvency and investments undertaken in cooperation with commercial banks is of particular importance for the development of SMEs. [6]

# 5. Conclusion

The strengthening of the SME sector in Serbia should be tackled as a process with a clearly defined strategy of the society, which articulates the interests of all actors including both SMEs owners and managers, employees, business partners, creditors and public institutions. The SMEs in Serbia mainly belong to the private sector, usually being the companies that were established in the course of this or previous decades, with the social consensus that these companies should become a major factor of economic growth and development. Small and medium-sized enterprises will create new jobs, generate the income, increase the property value and accept new employees as well as those that lost their jobs in privatized and state-owned enterprises. Financially strong, sound and developed SME sector in Serbia becomes the guarantee for fulfilling the interests of all market actors. SMEs in Serbia should be continuously provided with technical support, financial and other kinds of institutional and non-institutional assistance, through enterprise capital funds, private equity capital as well as various co-funding schemes. It is necessary to point out the significance of SMEs in Serbia, as well as the role of economic policy in stimulating the growth of this sector, application of common experiences and best practices as well as anything else that does and may contribute to its development.

The times we live and work in require us to be responsive, to adapt to constant changes, to be more effective in finding solutions, to hesitate less, to have greater number of clearly defined strategies and genuine leaders who will be able to lead the sector of small and medium-sized enterprises toward the EU and the world. The EU provided significant recommendations with regard to the possibility of more accelerated growth and increased employment by means of development, growth and prosperity of SMEs. These are also the main goals of the Lisbon Treaty - partnership for economic growth and new jobs. In the EU the SME sector constitutes a considerable part of economy with 23 million of enterprises providing employment for around 7 million workers. In order to join the EU, it is necessary for Serbia to comprehend and estimate what kind of economic policy and which measures should be pursued so as to enable its SME sector to become a part of this group.

Today SMEs in Serbia are more inclined to structured management and in practice, to the proved methods of strategic planning as means of paving the way to more profitable future. Nowadays, in times of growing competition and more difficult means of getting a competitive advantage in the market, the achievement of business excellence in all segments of operation and the production of competitive goods and services become inherent and major prerequisites of the successful business. In order to achieve that excellence, it is necessary to leave the leadership to the top management, which has to be able to find the means to prepare and empower an enterprise for production of goods and services that are competitive in local, regional, but also global market. To this effect, there is a great chance for SMEs in Serbia.

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# **Attractiveness of Serbia for Venture Capital**

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Our research in this paper deals with a possibility of entrepreneurial projects financing with venture capital in Serbia. Current, global venture capital levels of risks and returns are evaluated in order to set a framework for further analysis. By introducing Venture Capital attractiveness index, main investor's criteria are explained. These determinants, such as: Economic Activity, Depth of a Capital Market, Taxation, Investor Protection and Corporate Governance, Human and Social Environment and Entrepreneurial Culture, are tested in a case of Serbia. Results suggest that Serbia is not attractive for venture capital, due to significantly lower rating of investor's decision making criteria. In addition, current economic crisis and increased venture financing risk sets an environment where it is hard to fund Serbian entrepreneurial projects with venture capital.

#### **Keywords**

Entrepreneurship, Finance, Venture Capital, Regional Attractiveness

#### 1. Introduction

Virtually every high growth business needs capital. This fact is of crucial importance for every business venture, especially for innovative and creative entrepreneurial projects. Nowadays, governments in emerging markets are stimulating development of entrepreneurs and their projects. On the other hand, investors allocate assets to earn substantial returns. One would imagine that investors' seek for attractive investment destinations and entrepreneurial need for additional capital would bring venture capitalists and entrepreneurs together. But, in fact, a significant gap separates the two groups.

Entrepreneurs are usually keen to take risk in their day-to day business activities. They live in great uncertainty and assume significant risk in pursuing their business, whether a young start up or a restructuring division. Venture capitalists (VC) and private equity (PE) investors seek to help entrepreneurs triumph, but the level of their self-esteem and risk aversion is significantly different.

Venture Capital has become a vital aspect of the source of finance market over the last 10 to 15 years. Venture Capital can be defined as capital contributed at an early stage in the development of a new enterprise, which may have a significant chance of failure but also a significant chance of providing above average returns and especially where the provider of the capital expects to have some influence over the direction of the enterprise. Venture Capital can be a high risk strategy. Venture Capital is a form of "risk capital". In other words, capital that is invested in a project (in this case - a business) where there is a substantial element of risk relating to the future creation of profits and cash flows. Risk capital is invested as shares (equity) rather than as a loan and the investor requires a higher "rate of return" to compensate him for his risk.

# 2. Worldwide VC industry at a glance

While venture capital and private equity has become a well developed industry in the United States and Western Europe, in many other parts of the world, a gap in experience and expectations has slowed the adoption of venture capital and private equity funds, and limited the success of the pioneering funds. According to Figure 1, the ranking of major world regions remains the same within 5 years time span.

Comparison within Peer Group								
	2005/06 Rank	2009 Value	9/10 Rank	Quar 4th	tile 1st			
North America	1	96,9	1		X			
Australasia	2	76,4	2		X			
Western Europe	3	67,5	3		×			
Asia	4	53,5	4		×			
Middle East	5	45,9	5					
Eastern Europe	6	41,9	6					
Latin America	7	34,9	7					
Africa	8	33,2	8					

Table 1 Worldwide VC / PE ranking<sup>1</sup>

Majority of authors in the research field of VC activities worldwide agree upon the fact that investor's criteria for choosing investment destinations are predominantly within the framework of several major determinants:

- Economic Activity,
- Depth of a Capital Market,
- Taxation,
- Investor Protection and Corporate Governance,
- Human and Social Environment, and
- Entrepreneurial Culture.

# 3. Determinants for VC investment choice

#### 3.1 Economic Activity

Intuitively, the state of a country's economy should affect the VC/PE activity. An economy's size is an indicator of the quantity of corporations and deal flow opportunities in general. Economic growth should lead to demand for finance. Gompers and Lerner (1998) focus on the VC segment and point out that more attractive opportunities exist for entrepreneurs if the economy is growing quickly. Wilken (1979) argues that a situation of economic prosperity and development facilitates entrepreneurship, as it provides a greater accumulation of capital for investments. The ease of start-ups is expected to be related to societal wealth, not solely

<sup>1</sup> Source: The Global Venture Capital and Private Equity Country Attractiveness Index - 2009/2010 annual Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 due to the availability of start-up financing, but also to higher income among potential customers in the domestic market. Romain and van Pottelsberghe de la Potterie (2004) find that VC/PE activity is cyclical and significantly related to gross domestic product (GDP) growth.

#### 3.2 Depth of a Capital Market

Black and Gilson (1998) focus on the differences between bank-centered and stock marketcentered capital markets. They argue that a well-developed stock market that permits venture capitalists to exit through an initial public offering (IPO) is crucial for the existence of a vibrant VC market. In general, bank-centered capital markets show less ability to produce an efficient VC infrastructure. They affirm that it is not merely the strong stock market that is missing in bank-centered capital markets; it is also the secondary institutions, including the bankers' conservative approach to lending and investing, and the social and financial incentives that reward entrepreneurs less richly (and penalize failure more severely), that compromise entrepreneurial activity. While their paper focuses on the early stage segment, the findings are equally valid for the later stage.

Jeng and Wells (2000) stress that IPO activity is the main force behind cyclical swings because it reflects the potential return to the VC/PE funds. Kaplan and Schoar (2005) confirm this. Analogous to Black and Gilson (1998), Gompers and Lerner (2000) point out that risk capital flourishes in countries with deep and liquid stock markets. Likewise, Schertler (2003) uses either the capitalization of stock markets or the number of listed companies as a measure for the liquidity of stock markets. She finds that the liquidity of stock markets has a significant positive impact on VC investments in its early stages. Alongside the disadvantages of bank centered capital markets, Greene (1998) emphasizes that low availability of debt financing is an obstacle for start-ups in many countries. Entrepreneurs need to find backers - whether banks or VC/PE funds - who are willing to bear risk. Cetorelli and Gambera (2001) provide evidence that bank concentration promotes the growth of those industrial sectors that have a higher need for external finance by facilitating credit access to younger companies in said industry sectors.

#### 3.3 Taxation

It is assumed that two types of taxes affect VC and PE activity; those directly related to the asset class, such as taxes on dividends and capital gains, and those with an impact on corporations and entrepreneurship, such as corporate tax rates. Gompers and Lerner (1998) stress that the capital gains tax rate influences VC/PE activity. In fact, they confirm Poterba's finding (1989), who builds a decision-model to become entrepreneur. Bruce (2000 and 2002), and Cullen and Gordon (2002) prove that taxes matter for business entry and exit. Djankov et al. (2008) show that corporate tax rates strongly affect entrepreneurship. Bruce and Gurley (2005) explain that increases in the The Global Venture Capital and Private Equity Country Attractiveness Index - 2009/2010 annual personal income tax raise the probability of becoming an entrepreneur. Hence, the difference between personal income tax rates and corporate tax rates tends to be an incentive to create self-employment.

#### 3.4 Investor Protection and Corporate Governance

Legal structures and the protection of property rights also influence the attractiveness of a VC/PE market. La Porta *et al.* (1997 and 1998) confirm that the legal environment strongly determines the size and extent of a country's capital market and local companies' ability to receive outside financing. They emphasize the difference between statutory law and the quality of law enforcement in some countries. Roe (2006) comprehensively discusses and

compares the political determinants of corporate governance rules for the major economies and focuses on the importance of strong minority shareholder protection to develop a vibrant capital market. Glaeser *et al.* (2001) and Djankov *et al.* (2003 and 2005) suggest that parties in common-law countries have greater ease in enforcing their rights from commercial contracts.

Cumming *et al.* (2006) find that the quality of a country's legal system is more closely connected to facilitating VC/PE backed exits than the size of a country's stock market. Cumming *et al.* (2009) extend this finding and show that cross-country differences in legality, including legal origin and accounting standards have a significant impact on the governance of investments in the VC/PE industry. Desai *et al.* (2006) show, that fairness and property rights protection largely determine the growth and emergence of new enterprises. Cumming and Johan (2007), meanwhile, highlight the perceived importance of regulatory harmonization with respect to increasing institutional investor commitments to the asset class. La Porta *et al.* (2002) find a lower cost of capital for companies in countries with better investor protection, and Lerner and Schoar (2005) confirm these findings. Johnson *et al.* (1999) show that weak property rights limit the reinvestment of profits in start-up companies. Finally and more broadly, Knack and Keefer (1995), Mauro (1995), and Svensson (1998) demonstrate that property rights significantly affect investments and economic growth.

#### 3.5 Human and Social Environment

Black and Gilson (1998), Lee and Peterson (2000), and Baughn and Neupert (2003) argue that national culture shapes both individual orientation and environmental conditions, which lead to different levels of entrepreneurial activity in particular countries. Megginson (2004) argues that, in order to foster a growing risk capital industry, research culture plays an important role, especially in universities or national laboratories. Rigid labor market policies negatively affect the evolution of a VC/PE market. Lazear (1990) and Blanchard (1997) discuss how protection of workers can reduce employment and growth. Black and Gilson (1998) argue that labor market restrictions influence VC/PE activity, though not to the same extent as the stock market. Djankov et al. (2002) investigate the role of several societal burdens for startups in different countries. They conclude that the highest barriers and costs are associated with corruption, crime, a larger unofficial economy, and bureaucratic delay.

#### 3.6 Entrepreneurial Culture

Access to viable investments is one of the most important factors for the attractiveness of a regional VC market, especially for early stage or start-up deals. The number of potential investments relates to the research output in an economy. Gompers and Lerner (1998) show that both industrial and academic research and development (R&D) expenditure significantly correlates with VC activity. Kortum and Lerner (2000) highlight that the growth in VC fundraising in the mid-1990s may be due to a surge of patents in the late 1980s and 1990s. Schertler (2003) emphasizes that the number of both R&D employees and patents, as an approximation of the human capital endowment, has a positive and highly significant influence on VC activity. Furthermore, Romain and von Pottelsberghe de la Potterie (2004) fi nd that start-up activity interacts with the R&D capital stock, with technological opportunities, and the number of patents. Similar to Djankov et al. (2002), Baughn and Neupert (2003) argue that bureaucracy in the form of excessive rules and procedural requirements, multiple institutions from which approvals are needed, and cumbersome documentation requirements may severely constrain entrepreneurial activity. Lee and Peterson (2000) stress that the time and money required to meet such administrative burdens may discourage new venture creations.

# 4. VC index methodology

Previously described determinants for VC investment choice are major six key drivers for one of the worlds' most through research in the field of global VC country attractiveness index, conducted by Groh and Liechtenstein (2009).

The basic and important principle of the index is to make use of "latent drivers". These are criteria that are not directly observable, but driven by others which can be measured. For example, while it is complicated to get data on the number of investment banks, law firms, accountants, or consultants to assess the infrastructure of the deal supporting institutions for the majority of our sample countries, it is easier to gather more general information on the level of debt provided by the banking sector, or estimates about the soundness of banks, the sophistication of the financial system and the ease of access to loans. The better these criteria are developed, the more deal supporting institutions will likewise exist to facilitate VC and PE activity. This principle is applied to all individual stages for the index construction. An unobservable criterion is assessed with several proxy parameters. In principle, the attractiveness of a country is measured by six main criteria, which are mentioned before.

According to the principle to assess latent drivers of VC attractiveness with observable data, the six key drivers are disaggregated in sub-categories. These categories are either actual data series or further sub-constructs, and can be called "level 2 constructs". For example, in Table 2, the key driver "2 Depth of a Capital Market" is divided into five sub-categories: "2.1 Size and Liquidity of the Stock Market", "2.2 IPO Market Activity", "2.3 M&A Market Activity", "2.4 Debt and Credit Market", and "2.5 Financial Market Sophistication". The last sub-category is a data series provided by the World Economic Forum (WEF), all the others are constructs by themselves. For example, "2.1 Size and Liquidity of the Stock Market" is assessed with three different data series (and called "level 3 data"): the "2.1.1 Market Capitalization of Listed Companies", the "2.1.2 Total Trading Volume", and "2.1.3 Listed Domestic Companies". This approach has two major advantages: first, individual data series do not gain too much weight when they are grouped; second, the overall results can be traced to more granulated levels and hence, facilitate interpretations.

Equal weights are applied for all data series, when aggregated from the level 2 constructs. Then again, equal weights are used for the level 2 constructs to aggregate the six key drivers. Finally, the weight of the key drivers depends on the number of level 2 constructs included. For example, "1 Economic Activity" consists of three level 2 constructs, while "3 Taxation" consists of only two. Overall, we use 22 level 2 constructs for our index, and hence, "1 Economic Activity" receives a weight of 3/22, which is 0.136, while the weight of "3 Taxation" is 2/22 - 0.091. The advantage of this weighting scheme is that the key drivers that consist of more level 2 constructs gain more weight. That way, outliers in individual data series are smoothed.

#### Table 2 Structure of the VC index

		VCPE Index	VC Index			VCPE Index	VC Index
1	Economic Activity	0.14	0.14	4.2.3	Intellectual Property Protection	0.33	0.33
1.1	Gross Domestic Product	0.33	0.33	4.3	Quality of Legal Enforcement	0.25	0.25
1.1.1	Total Economic Size	0.33	0.33	4.3.1	Judicial Independence	0.25	0.25
1.1.2	GDP per Capita	0.33	0.33	4.3.2	Impartial Courts	0.25	0.25
1.1.3	Real GDP year-on-year Growth	0.33	0.33	4.3.3	Integrity of the Legal System	0.25	0.25
1.2	Inflation	0.33	0.33	4.3.4	Rule of Law	0.25	0.25
1.3	Unemployment	0.33	0.33	4.4	Regulatory Quality	0.25	0.25
2	Depth of a Capital Market	0.23	0.19	5	Human and Social Environment	0.18	0.19
2.1	Size and Liquidity of the Stock Market	0.20	0.25	5.1	Education and Human Capital	0.25	0.25
2.1.1	Market Capitalization of Listed Companies	0.33	0.33	5.1.1	Quality of the Educational System	0.50	0.50
2.1.2	Total Trading Volume	0.33	0.33	5.1.2	Quality of Scientific Research Institutions	0.50	0.50
2.1.3	Listed Domestic Companies	0.33	0.33	5.2	Labor Market Rigidities	0.25	0.25
2.2	IPO Market Activity	0.20	0.25	5.2.1	Difficulty of Hiring Index	0.25	0.25
2.2.1	Market Volume	0.50	0.50	5.2.2	Rigidity of Hours Index	0.25	0.25
2.2.2	Number of IPOs	0.50	0.50	5.2.3	Difficulty of Firing Index	0.25	0.25
2.3	M&A Market Activity	0.20	0.25	5.2.4	Firing Costs	0.25	0.25
2.3.1	Market Volume	0.50	0.50	5.3	Bribing and Corruption	0.25	0.25
2.3.2	Number of Deals	0.50	0.50	5.3.1	Bribing and Corruption Index	0.33	0.33
2.4	Debt and Credit Market	0.20		5.3.2	Control of Corruption	0.33	0.33
2.4.1	Domestic Credit provided by Banking Sector	0.17		5.3.3	Extra Payments/Bribes	0.33	0.33
2.4.2	Ease of Access to Loans	0.17		5.4	Costs of Crime	0.25	0.25
2.4.3	Credit Information Index	0.17		5.4.1	Business Costs of Crime and Violence	0.50	0.50
2.4.4	Soundness of Banks	0.17		5.4.2	Costs of Organized Crime	0.50	0.50
2.4.5	Interest Rate Spread	0.17		6	Entrepreneurial Culture and Opportunities	0.18	0.19
2.4.6	Bank Non-performing Loans to Total Gross Loans	0.17		6.1	Innovation and R&D	0.25	0.25
2.5	Financial Market Sophistication	0.20	0.25	6.1.1	General Innovativeness Index	0.20	0.20
3	Taxation	0.09	0.10	6.1.2	Capacity for Innovation	0.20	0.20
3.1	Tax Incentives	0.50	0.50	6.1.3	Company Spending on R&D	0.20	0.20
3.1.1	Marginal Corporate Tax Rate	0.25	0.25	6.1.4	Utility Patents	0.20	0.20
3.1.2	Entrepreneurship Incentive	0.25	0.25	6.1.5	Scientific and Technical Journal Articles	0.20	0.20
3.1.3	Labor Tax and Contributions	0.25	0.25	6.2	Ease of Starting and Running a Business	0.25	0.25
3.1.4	Profit and Capital Gains Tax	0.25	0.25	6.2.1	Number of Procedures to start of Business	0.20	0.20
3.2	Administrative Tax Burdens	0.50	0.50	6.2.2	Time needed to start a Business	0.20	0.20
3.2.1	Number of Payments	0.50	0.50	6.2.3	Costs of Business Start-Up Procedures	0.20	0.20
3.2.2	Time spent on Tax Issues	0.50	0.50	6.2.4	Minimum Capital	0.20	0.20
4	Investor Protection and Corporate Governance	0.18	0.19	6.2.5	Administrative Requirements	0.20	0.20
4.1	Corporate Governance	0.25	0.25	6.3	Simplicity of Closing a Business	0.25	0.25
4.1.1	Disclosure Index	0.20	0.20	6.3.1	Time	0.33	0.33
4.1.2	Director Liability Index	0.20	0.20	6.3.2	Costs	0.33	0.33
4.1.3	Shareholder Suits Index	0.20	0.20	6.3.3	Recovery Rate	0.33	0.33
4.1.4	Legal Rights Index	0.20	0.20	6.4	ICT Infrastructure	0.25	0.25
4.1.5	Efficacy of Corporate Boards	0.20	0.20	6.4.1	Broadband Subscribers	0.25	0.25
4.2	Security of Property Rights	0.25	0.25	6.4.2	Fixed Line and Mobile Phone Subscribers	0.25	0.25
4.2.1	Legal Enforcement of Contracts	0.33	0.33	6.4.3	Internet Users	0.25	0.25
4.2.2	Property Rights	0.33	0.33	6.4.4	Secure Internet Servers	0.25	0.25

# 5. Calculating VC index for Serbia

Based on the described VC index methodology, we calculated determinants for VC investment choice values and overall VC index value for Serbia.

SWOT Analysis	Determinants and VC in	dex value
Strengths <ul> <li>Significant demand for all kind of financing</li> </ul> <li>Weaknesses <ul> <li>VC market is in an initial phase of development</li> <li>Limited number of large potential investments</li> <li>Legal and business conditions are not supporting a dynamic SME sector due to a sector</li></ul></li>	Economic Activity Depth of Cap. Market Taxation Inv. Prot. & Corp. Gov. Hum. & Soc. Env. Entrepr. Culture & Opp.	Value 65 7 128,9 45 60 45 34 7
<ul> <li>ack of simple licensing and registration processes, and barriers for investments</li> <li>Opportunities</li> <li>Traditional bank loans become expensive and unavailable</li> </ul>	Comparison within Pee	
<ul> <li>Growth potential in companies that are active in Serbia and neighboring countries</li> <li>Untapped midsize market</li> <li>Threats</li> <li>Cultural structure does not contribute to the development of entrepreneurship</li> <li>Reduced availability of debt financing and general illiquidity</li> <li>Outlook</li> <li>The Serbian market is traditionally bank oriented. Reduced access to bank loans for SMEs is expected to provide a platform</li> </ul>	Poland Czech Republic Estonia Hungary Lithuania Croatia Romania Latvia	Value 45,8 45,5 44,5 41,1 40,4 38,6 38,1 35,6

# 6. Conclusion

In our research, we estimated ranking and position of Republic of Serbia within Venture Capital index that includes and analyses sixty six world countries. Serbia is not included in the index but, it can be positioned within peer group of Eastern European countries between Latvia and Bulgaria which hold 50. and 55. global VC ranking positions, respectively. Index creators have difficulties in Serbian data gathering and, for that reason, Serbia is not ranked. Our conclusion is that Serbian authorities should put more effort in representative data transparency. Although Serbia has low investment determinants value, data transparency would make Serbian entrepreneurs more attractive for venture capitalists.

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# Economic Crisis and IT Strategies of Enterprises in Poland. Results of a Survey With a Focus on Polish SME Sector

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The paper discusses results of a survey – carried out in 2009 – which aimed at analysing how the recent economic crisis affected IT strategies of Polish small and medium sized enterprises (SMEs). The special attention is paid to SMEs, due to their importance to the Polish economy. The initial part presents assumptions for the research project. It is followed by multidimensional statistical analysis of 78 collected sets of data (each comprising: 38 characteristics describing how the crisis affected IT strategies and what changes in strategies were adopted, and 6 features of the surveyed objects). The results are presented in the following sequence. In the beginning it is examined whether, and - if yes - to what extent, companies modified their IT strategies and IT projects - firstly, within groups distinguished by size, and secondly, at certain IT levels. Subsequently, it is analysed how changes in economic situation of companies influenced their IT strategies and ongoing IT projects. Finally, the most important symptoms of changes in IT strategies are detected and depicted in reference to the whole SME cluster and to those objects only where IT strategies were changed. The results obtained support a working hypothesis that the economic crisis affected – to smaller or greater extent – short- and long-range IT strategies in the majority of SMEs. Visible signs of that situations include: decreasing budgets and employment in IT departments, limited spendings on IT investments, reduced scopes of ongoing projects, postponed or suspended IT investments, abandoned investment plans, or substantial cuts in seminars and trainings related to information technology.

#### **Keywords**

economic crisis, Polish SME sector, multidimensional statistical analysis, IT strategies, survey results

#### 1. Introduction

The global financial crisis, which has affected the Polish economy since the second half of 2008, resulted in deteriorating economic situation in majority of companies. Evidence was provided by: current business statistics, economic and social analyses, or monitoring of changes in the economy. Implications of the crisis were observed in information technology domain, too. Clear signals came from producers and providers of IT products and services, as well as from their customers. They were also acknowledged by nearly all the major companies monitoring IT industry in Central and Eastern European countries, including: DiS, Gartner, Forrester Research, IDG or PMR, which issued revised market forecasts in the first half of 2009. The report of PMR, entitled "Revision of forecasts for IT markets in Poland, Russia and Ukraine" [4], may serve as an example here (see Figure 1).







In order to gather more information on the discussed subject, the author of this paper carried out a survey in April and May 2009. It was designed to assess an impact of the economic crisis on informatisation strategies and IT projects in selected companies. The survey followed the author's main research projects, including analytical and diagnostic studies on: current status and changes in Polish IT project management practices, IT projects assessment (with focus on effectiveness), or key success factors for IT projects. Research methodology, data collected and results obtained were presented at numerous specialised, nationwide and international conferences. They were published in several papers and research reports as well (see for example [1], [2] and [3]).

This paper presents various data breakdowns and analyses which help to assess an impact of the economic crisis on informatisation strategies. The attention will be paid to small and medium sized enterprises (SMEs) in particular – due to their importance to the Polish economy.

#### 2. Assumptions for the study

The selection of the study area stems from the author's conviction that awareness of ways in which business organisations respond to the economic crisis (with the focus on IT-related activities) is important in order to counteract effects of the crisis more effectively. Such knowledge should enable the IT industry to get back on track of dynamic growth observed in recent years (see Figure 1) much quicker, which is essential when considering long-range strategies for developing e-society and e-economy in Poland. For the author – an academic – the information collected, beside its cognitive and utilisable aspects, has a certain educational value (both in didactic and in advisory or consulting activities).

The study has an interregional reach, and reflects situation of companies located mostly in Warsaw/Mazovia or in Wroclaw/Lower Silesia. The survey was carried out by students of postgraduate managerial programme "IT Projects Management" at the Faculty of Management of the Warsaw University, and by part-time master-level students of Information Technology and Econometrics at the Faculty of Management, Computer Science and Finance of the Wroclaw University of Economics.

The study was carried out in April/May 2009 – as already mentioned in the introduction. The selection of that period resulted from the author's conviction – substantiated by other sources – that at that time forecasts drawn up at the turn of 2008 and 2009 were modified, and already incorporated information on crisis development, figures from financial statements of 2008 and data from closing reports for the first quarter of 2009. The companies reflected Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 newest data in their strategies, including those from IT area, by either sticking to or modifying prior plans (see for example [4], [5], [6], [7] and [8]).

The overall number of collected – and duly filled in – questionnaires amounted to 139; 52 were delivered by students from Warsaw, and 87 by students from Wroclaw. As mentioned in the introduction, the importance of SMEs to the Polish economy was a decisive factor for paying closer attention to this group in this paper. Due to the substantial share of SMEs in the surveyed group (78 out of 139, i.e. 56.12%), a selection of this subset for further analysis was not only possible but also statistically valid. Even though the composition of the sample did not reflect the structure of the Polish economy, a variance for the SME cluster was much lower than in case of large and the largest companies.

All questionnaires formed a repository comprising in each case: 38 quantitative and qualitative characteristics, describing how the economic crisis affected IT strategies and what changes in strategies were adopted, 6 descriptive and typological features of the surveyed objects, and 5 other, which helped to verify collected data (including sources of information). The repository was stored and proceeded in two formats: primarily as workbooks of Statistica, and secondly as MS Excel files. Since the repository contains data on a very diverse group of companies, a detailed presentation of the group is required. Detailed information on the repository and numerous analyses were published in several papers and research reports (see for example [3]).

# 3. Assessing influence of the economic crisis on informatisation strategies of Polish small and medium sized companies

#### 3.1 General characteristics of the surveyed objects

Before results of the study are discussed, the surveyed companies will be presented in brief. The Table 1 shows a breakdown of examined objects by areas of their operations (sectors and subsectors). It includes: number of objects in particular clusters, importance of clusters in the whole sample, and dominating values (cells shaded in grey).

Sector/subsector	number	%
public (administration and services)	5	6.41
banking, finance, insurance	2	2.56
commerce (commodity trade)	16	20.51
industry	8	10.26
other sectors, with following subsectors:	47	60.26
ICT companies (software houses, IT providers, telecommunication etc.)	33	70.21
consulting and services (accounting, legal etc.)	7	14.89
other subsectors (transport, geodesy, architecture, agriculture, vindication)	7	14.89

 Table 1 Structure of the surveyed SMEs by sector and subsector.

The information presented in Table 1 requires short comment. The author is aware that the sample reflects neither sector- nor subsector-related profiles of the Polish economy. Considering areas of operation, the category "other" prevails, what was a consequence of professional profiles of students who carried out the survey. The data in Table 2 shows high informatisation level for the SME sector (70.51% of objects selected the answers: "high" or "very high"). Nevertheless, this level is slightly lower than the one for the whole sample. The assessment presented in Table 3 shows, in turn, that the economic crisis affected SME

sector less severely than large and the largest companies (55.13% of SMEs indicated "slight" or "substantial" deterioration here, with 62.30% share for large and the largest companies).

I. f	Object siz	Tatal							
Informatisation	micro		small	small		medium		TOTAL	
level	number	%	number	%	number	%	number	%	
very low (< 30%)	1	1.28	0	0.00	0	0.00	1	1.28	
low (≥ 30%)	1	1.28	0	0.00	0	0.00	1	1.28	
some (≥ 45%)	1	1.28	4	5.13	1	1.28	6	7.69	
medium (≥ 60%)	1	1.28	5	6.41	9	11.54	15	19.23	
high (≥ 75%)	5	6.41	4	5.13	12	15.38	21	26.92	
very high (≥ 90%)	7	8.97	15	19.23	12	15.38	34	43.59	
Total	16	20.51	28	35.90	34	43.59	78	100.00	
					-		-	-	

Table 2 Size and an informatisation level of the surveyed SMEs.

Table 3 Size and influence of the crisis on economic situation of SMEs.

Influence of the crisis	Object si	ze	Total					
on economic	micro		small		medium		Total	
situation of an object	number	%	number	%	number	%	number	%
it is much worse	2	2.56	1	1.28	3	3.85	6	7.69
it is slightly worse	10	12.82	11	14.10	16	20.51	37	47.44
nothing has changed	2	2.56	12	15.38	12	15.38	26	33.33
it is slightly better	2	2.56	4	5.13	3	3.85	9	11.54
Total	16	20.51	28	35.90	34	43.59	78	100.00

Having considered the basic characteristics of SMEs, for which data were collected, the following part of the paper will analyse influence of the economic crisis on IT strategies.

#### 2.2 Assessing influence of the economic crisis on IT strategies

Taking into account additional information on the surveyed SMEs, it may be examined whether, and – if yes – to what extent, the companies have modified their informatisation strategies and IT projects – firstly, within groups distinguished by size (Table 4), and secondly, at certain informatisation levels (Table 5). Subsequently, it will be analysed in which ways changes in economic situation of companies influenced their informatisation strategies and ongoing IT projects (Table 6). Finally, the most important symptoms of changes in informatisation strategies will be identified and depicted in reference to the whole SME cluster and to those objects only where IT strategies were modified (Table 7).

Table 4 Influence of the crisis on IT strategies in the surveyed SMEs according to their sizes.

Influence of the crisis	Object size						Total	
on informatisation	micro		small		medium			
strategies and projects	number	%	number	%	number	%	number	%
no change	6	7.69	12	15.38	8	10.26	26	33.33
slight change	9	11.54	15	19.23	23	29.49	47	60.26
radical change	1	1.28	1	1.28	3	3.85	5	6.41
Total	16	20.51	28	35.90	34	43.59	78	100.00

	Influence of the economic crisis on IT strategies and projects							cts
Informatisation level	no change		slight change		radical change		Total	
	number	%	number	%	number	%	number	%
very low (< 30%)	1	1.28	0	0.00	0	0.00	1	1.28
low (≥ 30%)	1	1.28	0	0.00	0	0.00	1	1.28
some (≥ 45%)	3	3.85	2	2.56	1	1.28	6	7.69
medium (≥ 60%)	4	5.13	11	14.10	0	0.00	15	19.23
high (≥ 75%)	7	8.97	13	16.67	1	1.28	21	26.92
very high (≥ 90%)	10	12.82	21	26.92	3	3.85	34	43.59
Total	26	33.33	47	60.26	5	6.41	78	100.00

Table 5 Influence of the crisis on IT strategies in the SMEs according to informatisation levels.

**Table 6** Crisis-related changes in economic situation of the SMEs and their influence on informatisation strategies and projects.

Influence of crisis on	Influence of crisis on informatisation strategies and projects								
economic situation of	no change		slight change		radical change		Total		
an object	number	%	number	%	number	%	number	%	
it is much worse	1	1.28	1	1.28	4	5.13	6	7.69	
it is slightly worse	7	8.97	30	38.46	0	0.00	37	47.44	
nothing has changed	14	17.95	11	14.10	1	1.28	26	33.33	
it is slightly better	4	5.13	5	6.41	0	0.00	9	11.54	
Total	26	33.33	47	60.26	5	6.41	78	100.00	

Table 7 The structure of indentified symptoms of informatisation strategy changes in SME sector.

Symptoms of IT strategy changes	The structure of indentified symptoms of IT strategy changes [%]				
Symptoms of this trategy changes	Whole SMEs group	SMEs which modified their IT strategy			
Budgets of IT departments were reduced	25.64	38.46			
Spendings related to IT investments decreased	30.77	46.15			
New projects were abandoned	11.54	17.31			
Ongoing projects were halted	8.97	13.46			
A scope of projects was reduced	12.82	19.23			
IT investments were postponed	20.51	30.77			
IT services outsourcing was intensified	5.13	5.77			
IT personnel was made redundant	21.79	30.77			
Number of IT seminars and trainings dropped	23.08	34.62			
IT was financed with external funds	1.28	1.92			
IT costs were streamlined (using TCO)	11.54	17.31			
Other	5.13	5.77			

The data presented in Tables 4-7 requires explanation. First of all, the study showing that 66.67% of the surveyed objects adjusted their informatisation strategy and IT projects due to the crisis (60.26% slightly, and 6.41% in a radical way) supports results of similar analyses carried out in Poland in 2009. For example, the study conducted by IDG in March [6] showed that 63.16% of the polled companies were of the opinion that the crises would influence IT industry. The report of PMR issued in April [4] stated that 76% of IT managers found acute

worsening of economic situation in Poland and in the world the major restraint to increase of the local IT market, whereas 88% believed that some segments of the market would negatively respond to the crisis.

Secondly, small and medium sized companies modified their informatisation strategies and IT projects in result of the crisis more often than other surveyed objects (66.67% for SMEs, with 63.31% for the whole sample and 59.02% for large/largest companies). Adjustments were introduced by medium sized companies the most frequently (in 76.47% of cases).

Thirdly, the crises affected informatisation strategies and IT projects of the companies characterised by higher informatisation levels more often than in case of other objects (see shaded range in Table 5). These changes were usually "slight", though.

Fourthly, for SMEs – like for other surveyed objects – a correlation between magnitude of changes in economic situation and modifications in informatisation strategies and IT projects was detected (see shaded cells in Table 6). With regard to data depicted in Table 7, it should be noticed that the surveyed SMEs declared the following symptoms of informatisation strategy changes the most frequently (in over 20% of cases):

- decreasing spendings on IT investments (30.77% of questionnaires),
- reduced budgets of IT departments (25.64%),
- reduced number of IT seminars and trainings (23.08%),
- redundancies in IT personnel (21.79%),
- postponed IT investments (20.51%).

The results obtained for these SMEs which declared changes in their IT strategies were similar, and differed only – what is obvious – in percentage levels (see third column in Table 7). It must be added that both lists differ – in their composition, order and percentage levels – from those referring to the whole analysed group of surveyed companies [3].

Among SMEs which modified their informatisation strategies the most significant decreases were observed in:

- IT investment budgets (57.69% of answers indicated "decrease" or "substantial decrease"),
- equipment purchases for IT departments (55.77%),
- current spendings on IT (51.92%).

Just as for the whole surveyed group, only in case of own IT projects a noticeable growth could be observed (23.08% of answers indicated "increase" or "substantial increase"). In other areas such indications did not exceed 10%-level. Considering IT applications affected by changes in informatisation strategies the most noticeable decreases, for the SMEs which modified their IT strategies, were observed in the following domains:

- purchases, stock management and supply chain management that is in case of SCM applications (28.85% of answers indicated "decrease" or "substantial decrease"),
- information systems that is in case of MIS/EIS software (25%), as well as in sales/distribution (23.08%).

The biggest growth was observed in case of marketing information systems of CRM class (21.15% of answers indicated "increase" or "substantial increase") and in case of MIS/EIS applications (17.31%) – located among most negatively affected areas, too. This leads to a conclusion that in times of crisis small and medium sized companies had to face a dilemma whether they should cancel or intensify such projects.
#### 3. Conclusions

The results of the analysis of data collected in the survey, with a focus on an impact of the economic crisis on IT strategies, enable to formulate the following conclusions.

Firstly, the results supported a working hypothesis that the economic crises did affect, to smaller or greater extent, long- and short-term informatisation strategies in most of the examined objects. Observed modifications in IT strategies (in 63.31% of all the surveyed objects, in 66.67% of SMEs, and in 59.02% of large and the largest companies) are the most evident indicator for this situation. In majority, though, the adjustments had a limited scope. The answer "there was a slight change in the informatisation strategy" was chosen by 87.50% of the surveyed objects, including 90.38% of SMEs and 83.33% of large and the largest companies, which declared modifications in their informatisation strategies. The obtained results indicated that SMEs responded to the crises by redefining activities in the IT area quicker and to the larger extent than other objects, which is typical for this sector.

Secondly, the observed frequency and magnitude of changes in IT strategies was – as expected – correlated with informatisation level, in reference both to the whole sample and to the SME sector (see Table 4). The major symptoms of IT strategy and projects modifications were similar for both groups. They included (see Table 7):

- reduced scope of IT seminars and trainings (by 33.09% for the whole surveyed group and by only 21.79% for the SME sector where this was a fourth top signal),
- decreasing spendings on IT investments (30.94% and 30.77% respectively),
- reduced budgets of IT departments (25.90% and 25.64% respectively),
- postponed IT investments (20.86% and 20.51% respectively).

Two important differences between the entire sample and the SME subset were observed, though. Redundancies in IT personnel, common for the SMEs (23.08% of answers – third position), were less relevant for the whole sample (15.83% and 5th-6th position). On the other hand, IT cost streamlining, important for the entire group, and even more in case of large and the largest companies (15.83% and 5th-6th position) was not so common among SMEs (11.54% and 7th-8th position).

Thirdly, restricting analysis to those objects only which modified their informatisation strategies due to the crisis, the most important decreases – in quantitative and monetary terms – were observed in:

- IT investment budgets (61.36% of answers indicated "decrease" or "substantial decrease" for the entire group, and 57.69% in the SME sector),
- equipment purchases for IT departments (53.51% and 55.77% respectively),
- current spendings on IT (51.14% and 51.92% respectively).

The difference can be observed in reference to IT seminars and trainings, where substantial decrease in the whole group (59.09% – second position), and even more rapid decline among large and the largest enterprises, was less relevant for the SME sector (40.38%, which is less significant than "equipment purchases for end-users", equal to 42.31%). Lower expenses of the SME sector related to seminars and trainings, even in times of prosperity, account for that difference.

The fourth conclusion is that own projects carried out by IT departments were the only area of growth (in other domains a 10%-level was not exceeded), where 20.45% of all the surveyed objects and 23.08% of the SMEs indicated "increase" or even "substantial increase". This means that companies looking for cost cuts resigned, to some extent, from offers of external consultants and decided to continue key projects with their own resources.

Finally, considering applications of information technologies affected by changes in informatisation strategies, the most important modifications – in those objects which decided to verify their IT policy – included:

- purchases, stock management and supply chain management and consequently SCM applications (34.09% of answers indicated "decrease" or "substantial decrease" for the whole group, and 28.85% in the SME sector)
- information systems that is in case of MIS/EIS applications (26.14% and 25.00% respectively).

The latter group was the one which experienced the biggest growth (15.91% of answers indicated "increase" or "substantial increase" for the whole group, and 17.31% in the SME sector). The second area of increase in number of projects and spendings included marketing information systems of CRM type (increase of 14.77% in the entire group, and 20.15% in the SME sector). This situation suggests that despite crisis companies debated whether they should abandon or intensify such projects.

The author believes, that by observing behaviour of companies and their responses to the economic crisis in IT domain, the following two objectives were achieved. On the one hand, the findings presented in other reports and analyses were confirmed and supplemented. On the other – due to evidence gathered – negative consequences of crisis in IT area may be effectively counterbalanced. All these should, at least indirectly, help in achieving goals of long-range strategies for developing e-society and e-commerce in Poland, both more effectively and much quicker.

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## **Social Networking as Driver of EICs formation**

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To understand social networking as driver of EICs formation should take in first place Social Network Analysis theory. SNA assumes that people are interdependent. This approach has turned out to be useful in explaining many real-world phenomen. The important of this theory, are few things, which can help: actors and their actions are viewed as interdependent rather than independent; relational ties (linkages) between actors are channels for transfer or "flow" of resources (either material or nonmaterial);Network models focusing on individuals view the Network structural Environment as providing opportunities for or constraints on individual action and Network models conceptualize structure (social, economic, political and so forth) as lasting patterns of relations among actors. Using SNA tools in organizations are used to explain the major concepts and business benefits as well as their application to business problems. SMEs, managers or organisations should use it as an important component of an overall KM strategy. These representations (networks views) can then be used by managers to better address innovation problems related to corporate communication culture (quality of communication, frequency of communication, etc). Every type of organisation can benefit by using SNA tools, and in that way to understand the social networking as driver of EICs formation

#### Keywords

(EICs formation, Information flow, Social networking, Social Network Analysis, Social Networking websites)

#### 1.Introduction

Over the past decade, significant restructuring efforts have resulted in organizations with fewer hierarchical levels and more permeable internal and external boundaries. A byproduct of these restructuring efforts is that coordination and work increasingly occur through informal networks of relationships rather than through channels tightly prescribed by formal reporting structures or detailed work processes.

Movement toward de-layered, flexible organizations and emphasis on supporting collaboration in knowledge-intensive work has made it increasingly important for executives and managers to attend to informal networks within their organizations. Performance implications of effective informal networks can be significant as the rapidly growing social capital tradition has indicated at the individual, team, and organizational levels. Yet while research indicates ways managers can influence informal networks at both the individual and whole network levels, executives seem to do relatively little to assess and support critical, but often invisible, informal networks in organizations.

Social network analysis (SNA) would likely yield sufficient benefit to justify the investment of time and energy on the part of the organization. Social network analysis can be an invaluable tool for systematically assessing and then intervening at critical points within an informal network.

Design of an organization can have a strong influence on the pattern of informal networks via formal structure, physical proximity and nature of the task. While the outcomes of such

research might influence decision makers in terms of policy variables, a more contextualized perspective is needed to help practitioners apply network analysis to their specific organizational concerns.

Identifying people that are highly central in networks (and so disproportionately impact a group by controlling information or decision making) can help a entrepreneur consider how to reallocate informational domains or decision-making rights so that the EICs formation as a whole is more effective. Social network analysis is based on an assumption of the importance of relationships among interacting units. The social network perspective encompasses theories, models, and applications that are expressed in terms of relational concepts or processes. Along with growing interest and increased use of network analysis has come a consensus about the central principles underlying the network perspective. It is important because these reason:

- Actors and their actions are viewed as interdependent rather than independent, autonomous units
- Relational ties (linkages) between actors are channels for transfer or "flow" of resources (either material or nonmaterial)
- Network models focusing on individuals view the network structural environment as providing opportunities for or constraints on individual action
- Network models conceptualize structure (social, economic, political, and so forth) as lasting patterns of relations among actors.

Network analysis is an entity consisting of a collection of individuals and the linkages among them. Network methods focus on dyads (two actors and their ties), triads (three actors and their ties), or larger systems (subgroups of individuals, or entire networks. Because of these social relations may talk about social network analysis. Social network analysis has emerged as a set of methods for the analysis of social structures, methods which are specifically geared towards an investigation of the relational aspects of these structures. The use of these methods, therefore, depends on the availability of relational rather than attribute data. Data is very important tool to make good decision. Data comes from the individuals, organizations and other groups, in mean, how they are more rapid, frequently, the network is more sucsesfull and making decision for entrepreneurs too. So, network analysis is the study of social relations among a set of actors. It is data which we seek to understand. In the process of working in this field, network researchers have developed a set of distinctive theoretical perspectives as well. Some of the hallmarks of these perspectives are:

- focus on relationships between actors rather than attributes of actors
- sense of interdependence: a molecular rather atomistic view
- structure affects substantive outcomes
- emergent effects

Social network analysis is focused on uncovering the patterning of people's interaction. Network analysts believe that how an individual lives depends in large part on how that individual is tied into the larger web of social connections. Many believe, that the success or failure of EICs formation often depends on the patterning of their internal structure. In this context, its is very important to notise the importance of organizational behavior, interorganizational relations, the spread of contagious diseases, mental health, social support, the diffusion of information and animal social organization.

Social relationship among actors – individual human beings, small groups or economic organizations, nations or world military alliances, are subject to find their connection and what are they reflect to EICs formation.

That why we could see the importance of multiplexity, acces, trust, psychological safety and dependence. A key relational concept is multiplexity. Multiplexity refers to the extent to which one kind of tie between two people is accompanied by another kind of tie between the same two people. Access is also a factor, especially in a sprawling multinational corporation where people may be widely separated geographically and in very different time zones. Another set of issues are trust, psychological safety and dependence.

The structure of social network affects how rapidly information flows from one end of the network to the other. Ultimately, the speed of information flow is a function of path lengths. When the length of the shortest path between a pair of nodes is high, it will take a long time for information to flow from one to the other. Networks with high average path lengths take longer to transmit information to all members. In turn, the average path length in a network is a function of a number of structural factors. The conclusion is that social networking impact in entrepreneurships.

There are , also Social networking websites. Social networking websites have become a hit amongst people of all ages. Today, there are social networking websites for friends, business, entertainment. Social networking websites for entrepreneurs are becoming very popular. Social networking websites for entrepreneurs can help to stay connected to important business friends and colleagues in circle. These websites are a great way to meet people within your target market. Social networking websites are a great way of increasing potential for growth. There can meet new people in same field, meet experts in same business specialization, get more business opportunities and efficiently manage own business. These websites can help to find partners, customers and friends. Also can easily sell your products/services and efficiently collaborate with other people. For example, outsource2india, a pioneer in outsourcing has been providing professional and high-quality social network software development to make the web experience of entrepreneurs more exciting, business oriented and rewarding. O2I's social networking software for entrepreneurs enables customers to network online. If some organization wants to build a customized online social networking website for entrepreneurs, its one of the right place. At O2I, they have a professional and highly qualified team of software professionals who can create the perfect social networking software for an organization. This is an social networks software for entrepreneurs that would enable to communicate more efficiently with customers. Outsource2india has been offering skilled social network software, specialized web portal software and vortal development services that cater to specific industry groups since the year 1999. The development process at O2I is made of several stages such as, the capture stage, the design stage, the development stage and the testing stage.

#### Benefits of social networking for entrepreneurs are:

- Experience and expertise in developing social networking portals for entrepreneurs and corporate networks
- Cost-effective social networks software services
- Professional and high-quality online social networking software development
- Experienced, qualified and well-trained team of software developers
- Quick turnaround time

Outsource the development of social networking software for entrepreneurs give to business a competitive edge. So, the premise of social marketing is to establish a personal dialogue with customers and prospects alike.

Trhrouht the social networking there are a few opportunities:

1. Social Media Strategy

The initial step will be to understand business goals behind taking up a social media optimization / marketing campaign. Based on the industry vertical that the business operates, can identify social networks and customer communities that can be targeted. This is followed by an action plan that details activities that will be carried out. A schedule is then drawn and our marketers follow this plan through the end of the project. Along the course of the project you will be apprised of the progress.

2. Business Blogging – Strategy and Implementation

Implementing a business blog can help in developing business its own personal voice and generate new customer relationships as well as partnership opportunities.

3. Social Media Profile Management

These profiles will act as access points where customers can reach the entrepreneur as well as spread the word about your brand.

4. Link Baiting and Social Bookmarking

Through social bookmarking websites and engaging blog posts can create back links that can used to increase the pagerank of the website. Social bookmarking can also be used to announce important events in the company and promote the communication from the blog.

5. Rich Media – Video, Podcasting and Photosharing

With an increase in broadband networks worldwide, people prefer to consume rich media such as videos and podcasts. It has also been shown that even low quality videos with the right message can generate thousands of dollars in revenue. Incorporating rich media in website can also help in promoting a site and increasing subscribers.

6. Monitoring and Reporting

Combining technology and human insight there is possibility to provide "buzz" tracking and performance analysis for social media campaigns.

Identifying people that are highly central in networks can help a entrepreneur consider how to reallocate informational domains or decision-making rights so that the EICs formation as a whole is more effective.

The most important thing is establishing applications of SNA as a diagnostic tool for entrepreneurs attempting to promote collaboration and knowledge sharing in important networks. Through this process, social networking uniquely effective in:

- promoting effective collaboration within a strategically important group;
- supporting critical junctures in networks that cross functional, hierarchical, or geographic boundaries; and
- ensuring integration within groups following strategic restructuring initiatives.

Social networking can be a very effective tool for promoting collaboration and knowledge sharing within important groups such as core functions of an organization, research and development departments, and strategic business units. By integrating highly specialized skill sets, leadership of the consultancy felt the firm could provide a holistic knowledge management solution that would differentiate it from competitors focusing on solely technical or organizational solutions. However, the partner leading this group felt intuitively that the team was not leveraging its abilities as effectively as possible and asked us to conduct an SNA of information flow within the group.

Social networking can also be an effective means of pinpointing breakdowns in informal networks that cross functional, hierarchical, geographic, or organizational boundaries. People within these networks must often collaborate effectively for the organization to benefit despite the fact that they may reside in different physical locations and/or be held accountable for different financial and operational goals. SNA provides insight into collaborative behavior within and across boundaries that can yield a similar purchase on performance improvement

opportunities as process mapping did for reengineering in the early 1990s. That's the reason to confirm that social networking make out as driver of EICs formation.

Collaboration across functional boundaries of the organization had become acutely aware of the need to create a entrepreneur network that was able to recognize opportunities in one sphere of the network and know enough of what others in the entrepreneurship knew to be able to combine the appropriate resources in response to these opportunities.

Mapping the pattern of information flow functional barriers can yield critical insight into where entrepreneurship should target efforts to promote collaboration that will provide strategic benefit. By tracking changes in networks over time, EICs formation and network participants have a very real way of assessing the impact of interventions on both the informal network and organizational effectiveness.

Social networking can also play role in assessing the health of informal structure after a change has been implemented such as an internal restructuring. It is well known that performance does not always improve as anticipated even when technically sound solutions are implemented. Frequently, this problem is attributed either to a misalignment somewhere in the organization's formal structure or to a failure of entrepreneurship. However, it could found that a lack of social, technical, or organizational support provided to strategically important informal networks is at least as important a predictor of failure. Very often, large-scale change initiatives impair the effectiveness of established networks while at the same time doing little to help development of new relationships.

So, social networking can be a very useful means of assessing the impact of strategic restructuring initiatives on the informal structure of an organization.

#### Conclusion

In today's fast-paced knowledge-intensive economy, work of importance is increasingly accomplished collaboratively through networks. As a result, assessing and supporting strategically important networks in entrepreneurship can yield substantial performance benefits. In addition, network relationships are critical anchoring points for employees, whose loyalty and commitment may be more to sets of individuals in their network than to a given organization.

SNA is a powerful managerial tool because it makes visible the patterns of information sharing within and across strategically important networks. Entrepreneurs usually results in myriad recommendations, as people immersed in the patterns of relationships define and resolve issues affecting group performance. Using social network diagrams as prompts in facilitated sessions can serve to identify issues that are currently hindering a group and the specific behaviors and organizational design elements requiring modification to improve group efficiency and effectiveness.

Social networking involve rich discussions to the members of a group and asking them to diagnose the patterns they see, as well as the issues facilitating or impeding their effectiveness. Often its simultaneously creates common awareness of problems, helps define solutions, and gains agreement on actions, all critical steps to effecting entrepreneurial change.

Social networking can give power to individuals to actively shape their personal networks. While certain entrepreneurial decisions and actions can be important to facilitate development of a network, an equally critical means of effecting change is for each person in the network to actively work on improving their own connectivity.

Social networking provides a means with which to identify and assess the health of strategically important networks within an organization. By making visible these otherwise "invisible" patterns of interaction, it becomes possible to work with important groups to facilitate effective collaboration.

Perhaps just as importantly, social networking serve to focus executive attention on informal networks that can be critical to entrepreneurial effectiveness. Scarce resources—ranging from funding and technology support on the one hand to executive recognition on the other—tend to go to those units that can be found on an organizational chart. Despite often not being reflective of how work is done, entrepreneurial charts and reporting relationships are the agreed on currency of executive decision makers and their trusted advisors.

Researches have shown that while social relationships cannot be mandated by entrepreneurship, they are strongly affected by elements under entrepreneurship control, such as hierarchical levels, horizontal departments, office location, project staffing, and so on. With social networking, entrepreneurs have a means of assessing the effects of decisions on the social fabric of the organization.

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## Is the Triple Helix Model Suitable to Approach Low Density Regions Competitiveness? Insights from a Portuguese Case Study

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This research aims to analyse the innovative performance of a Portuguese region (NUT III Beira Interior Sul) throughout the application of the Triple Helix (TH) approach, examining its capacity to describe and explain the innovative dynamics of the low density regions as engine of its competitiveness. The TH model seems to be a useful analytical tool to approach and organise public policy and actors' strategy oriented to shape and nurture emerging and fragile innovation systems, namely to identify and characterize regional actors and networks, its performance and links with national and international innovation support organisations and firms, the emerging interface institutions, institutional framework, as well as policy implications to embed the regional competitiveness within government-academia-industry partnerships.

#### Keywords:

Regional Competitiveness, Innovative Performance, Innovation System, Triple Helix approach.

#### 1. Introduction

Over the past two decades the innovation systems approach has gained considerable attention amongst both academics and policy makers. In searching of explanations concerning the relationship between globalisation, economic growth, competitive advantage and technological innovation, the operationalisation of innovation system concept was extended to a variety of levels: global (e.g. [1], [2]), international (e.g. [3]), national (e.g. [4], [5], [6]), regional (e.g. [7], [8]), local (e.g. [9]) and sectoral (e.g. [10]). Each perspective emphasises the contribution of different critical elements of innovation process to competitive advantage and economic welfare.

A new approach of the innovation process was introduced by Triple Helix (TP) model which explores the relations between university/academia, industry and government institutions as a way of enhancing regional competitiveness (e.g. [11]). Based upon the contribution of the entrepreneurial cultural of the MIT and Stanford University to the economic success of Boston area and Silicon Valley, the model puts the university at the core of structural economic change. The TP model evolves according to the complex dynamics of trilateral relations between universities, innovative firms and government institutions driven by market and policies stimulus. The creation of hybrid organisations committed with entrepreneurial

norms and engaged in closing the gap between invention and innovation, linking production and use of knowledge, are the expression of the powerful engines that drive the knowledge economy and the current focus of many countries and regions to secure competitiveness and increase prosperity (e.g. [12], [13]).

Regions and local communities with weak structural conditions pose significant challenges to TP approach, namely the absence of oriented research universities, lack of economic competitiveness, human and social capital deficits, ageing and low population density and regional/ local governments with narrow competencies related with the innovation-based development policies.

This paper aims to contribute to a better understanding of the triple helix process at regional and local levels featured by economic and social contextual disadvantages. Based on a Portuguese case study, the paper describes the internal and external dynamics among triple helix partners, analyses critical issues and explores policy implications.

# 2. Triple Helix relations and regional innovation systems: frontiers and opportunities

The regional literature shows several examples of high-tech regions that have flourished around the local universities (e.g. [14], [15], [16], [17], [18], [19], [20]).

The literature identifies different knowledge transfer axes between academia and economy. The education and training function impact upon market labour (e.g. [21], [22]), the spin-offs from university research; (e.g. [23], [24], [25], [26]), the role of formal cooperation in R&D between academic and industry (e.g. [27]).

The TP model gives a strategic role to the university (e.g. [28]). Contrasting with Porter's "diamond" model of competitive advantage ([29]) and national innovation system ([30]), the university moves from periphery to the centre of economic dynamics.

The TP model is based on three institutional spheres: university, industry and government. Its functioning is characterised by decentralised and interdisciplinary dynamics, selforganisation and co-evolution. The development of interactions between the three institutional spheres and the internal dynamics of each one is fundamental to generate a virtuous process of economic growth and development. Thus, a greater emphasis should be given to quality of the institutional set-up, contextual conditions, learning processes and to the strategic behaviour of the actors, namely the role of the university and public policy in the task of translation knowledge and technology into economic value ([31], [32]).

According to Varga ([33]) the university knowledge transfers are strongly affected by territorial agglomeration of economic activities. The territorial agglomeration effects are recognised by Florida et al. ([34]). They state that the university's role in economic development is beyond production of inventions and commercialisation of its research. Its fundamental contribution is rested on generation of technology, talent and tolerance which feasibility is stimulated by urban agglomerations.

New insights are introduced by Saxenian ([35]). She argues that the concepts of agglomeration and external economies cannot explain why high level of concentration activities produces a self-reinforcing innovative dynamic. According this author, spatial proximity reveals little about the local ability to respond to the fast changing that characterise international competition. The agglomeration centred perspective tends to overlook the complex of institutional and social relationships.

The controversy suggests an earlier question. Can any university at any location foster a knowledge economy and society?

A step forward is given by Gaffard et al ([36]). According to the authors the problem should be framed on taking an ex ante view about how increasing returns or external economies are achieved. The analysis must not be only centred in the process of allocation resources, but

fundamentally in the creation resources. Regional performance seems to be related with the internal consistency of the clustering process and the ability to take advantage of external relations.

Another avenue is opened by Fourth Helix Model ([37], [38]). The authors sustain that the TP analysis must take into account not only enterprises and private markets, but also the public sector and civil society.

From theoretical point of view, these perspectives offer a landscape of opportunities favourable to the emergence and organisation of knowledge intensive process phenomena at lower levels of spatial aggregation.

#### 3. Research Methodology

In this research, the adoption of a qualitative methodology was based on the empirical model. Although the TP model can be generalised, the results are specific to the region under study. In this context, the research takes the form of a case study ([39]).

This research focuses on the unit of analysis NTU III South Beira Interior (Portugal) comprising four counties: Castelo Branco, Idanha-a-Nova, Penamacor and Vila Velha de Ródão. Given the specific aspects of this empirical research we chose to use three different methods of data collection: bibliographic research and documents, semi-structured interviews and observation The interviews were centred on the actors with actual physical presence in the region and which present a regional based strategy; thus public institutions of national character were excluded.

#### 4. Applying the Triple Helix to NTU III – South Beira Interior

The NTU III South Beira Interior has a land area of 3748.3 km<sup>2</sup> and a resident population of 73,923 inhabitants. The population density in 2007 was 19.7 inhabitants per km<sup>2</sup> ([40], [41]). It is a region in demographic decline with high levels of dependency and ageing and largely homogeneous in primary factors of competitiveness, particularly with regard to population, accessibility, production support infrastructures such as energy infrastructures and telecommunications. The county of Castelo Branco (and essentially the city) emerges as the natural hub of development.

After conducting a survey of entities present in South Beira Interior it was possible to draw a representation of the regional Triple Helix (Figure 1).

The analysis of the proposed model shows that the individual spheres present a higher number of elements than the jointed spheres; this fact shows the current weakness of the interface structures and the need to strengthen the network of partnerships between regional actors.





# 5. Evaluation of the Potential of Triple Helix as a Regional Innovation System

A regional innovation system (RIS) analysis must be made considering two types of complementary factors: first, the activities that support the functioning of regional innovation system, including the characterization of actors involved in these activities and secondly, the level of involvement in socio-economic regions ([42]). For the first type of factors, that is, the subsystem for the creation and dissemination of knowledge, six activities to support regional innovation system are taken into account: basic and applied research, technology transfer, management and support to innovation, financing of innovation, education and training and regional economic development.

These activities have an impact on three levels – individual firms, firm's networks and regional economy - which represent different degrees of involvement. The combination of these two dimensions is shown in Figure 2, where each side of the hexagon is a support innovation activity and the concentric circles represent the degrees of involvement: the innermost refers to the firm level, the middle one refers to the firm network level and the outer circle corresponds to the level of the regional economy.



Figure 2 RIS of Beira Interior Sul

Regarding Education and Training it is noticed that the region has a strong capacity for this activity. As strengths we highlight the presence of the Polytechnic Institute of Castelo Branco, which is an higher education institution (HEI) deeply rooted in the region and the existence of a provision of vocational training geared to the needs of regional firms. The education and training activity is reflected at the three involvement levels early refereed.

In what concerns regional economic development the region relies on the presence of several public institutions that implement national government policies. The role of the municipalities should be highlighted due to the financial effort made on the attraction of foreign investments. The results of this activity benefit the entire region, that is, once again, we will find an impact on the considered three levels of involvement.

Considering management and innovation support activities, the entities that provide this service have no physical presence in the region and thus this activity is borne by business associations which act as priming agents of the regional economy.

Financing innovation is exclusively undertaken by the national government. There is no kind of positive discrimination for low density regions so these regions have to compete with other best-equipped both in terms of technological infrastructure and in terms of human capital.

The lack of both private research and experimental development or a center of science and technology is a structural weakness that must be overcome.

The application of the TP model of the Beira Interior Sul, helped to identify the most representative institutions in each sphere, as well as the interface institutions that have already been established. The running activities and projects that are being completed allow inferring about the beneficial impact of TP in the regional economy and regarding it as the embryo of a RIS.

#### 6. Final Considerations

This study argues that the creation and dissemination of knowledge are located activities and depend on individual local actors and on its capacity to create hybrid institutions able to enhance new synergies between them.

As examples of hybrid or interface structures, we find the business incubator of Idanha-a-Nova, the office of technology transfer and the Cluster Agro-Food of the Centre.

In the region under study, the role of innovation organizer is assumed by the Polytechnic Institute of Castelo Branco. This means that academia is the driven force for regional innovative performance, though this performance is hampered by financial reasons lack of human resources.

With regard to endogenous factors that promote innovation and competitive performance we emphasize (i) - the presence of a university deeply rooted in the region and the existence of a provision of vocational training, targeting the real needs of regional firms, which translates into a strong capacity-wide training of senior technicians and professionals; (ii) - the activities undertaken by municipalities (iii) - setting up an interface entity, such as the Technology Agro-Food Centre will density the research infrastructure and the technological transference (iv) –the creation of the Technology Centre for Agro-food is consistent with the regional productive system, in which the agro-food industries take a position in the world of transforming industries; (v) - natural conditions that support the diversification of food products and thus creating added value; vi) creation of support structures for entrepreneurship such as the business incubator of Idanha-a-Nova; (vii) - the existence of institutions providing support services to private firms; (viii) - emergence of a logic of interaction between actors aiming the use of indigenous resources, stimulation of the economy and increase of regional competitiveness.

The existing activities and projects that are being completed allow the inferring about the positive impact of Triple Helix in regional competitiveness. However the different players that form the model do not yet constitute a regional innovation system; there are several factors contributing to this fact: (i) - lack of policies for regional innovation, science and technology (ii) - very thin control and influence over strategic infrastructure, (iii) – a very limited regional financial capacity; (iv) – lack of private research entities and of experimental development from laboratories and other public research facilities; (v) - low degree of openness to the outside, (vi) - underdeveloped network dynamics, particularly with regard to networks, vertical and horizontal, between companies, (vii) - the supremacy of the logic of competition over the logic of cooperation.

As contribution of this research we can refer that despite the many studies published on the subject, the majority is of a conceptual nature, with little empirical applications. Being a relatively new and still little empirically studied subject, it opens a wide range of possibilities Proceedings of International Conference

for future investigations: we suggest the continuity of the study in order to verify the dynamic evolution of the TP and paths of consolidation of regional networks and the application of this model to contiguous territorial units in order to identify the opportunities for cooperation and complementarities between the players aiming the enhance of a broader RIS.

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### Knowledge Intensive Business Services: What are they and Where are Located? Some Portuguese Evidences

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The importance of knowledge and innovation in modern economies justifies the increase interest by researchers in Knowledge Intensive Business Service (KIBS). The role played by innovation KIBS is stated above all because of not having a single performance in innovative activity, as would be to simply meet the wishes of demand and more specifically to the wishes of its customers, but by creating knowledge bridges or innovation bridges between business and science. We aim to identify the nature of KIBS in Portugal based on dichotomy rural KIBS (r-KiBS) and urban KIBS (u-KiBS), and the typology professionals KIBS (p-KiBS) and technology KIBS (t-KiBS).

#### Keywords

Intensive Knowledge; KIBS; location theories; Rural and Urban regions

#### 1. Introduction

Despite growing awareness that innovation is not confined to sheer technical processes and products, some recent research on innovative activities has focused its attention only on technical innovation and, in particular, on the transforming industries sector (eq. [1],[2], [3], [4]). The importance of the services industry has only been acknowledged recently (eg. [5]; [6]). According to Tether et al. [7] innovation in the service industry companies is perceived as something that occurs very slowly. Services are perceived as being incapable of innovation, ending up adopting innovation generated by transforming industry firms. Alongside Tether et al. [8], Pavitt [9] also believes that smaller services firms are less likely to develop R&D roles, thus becoming recipients of technology and innovation produced in other sectors. Within the services industries, the rapid growth of Knowledge Intensive Business Service (KIBS) has exposed their major role in innovation processes (eq. [10], [11], [12], [13]). The role played by KIBS in innovation process is affirmed, above else, by the fact that they do not have a simple performing role in the innovating activity, such as meeting demand and, more specifically, their clients' wishes. Rather, they act as builders of "knowledge bridges", or "innovation bridges", between firms and science ([14],[15]). Nevertheless, few studies have been made on the innovative activity carried out by this sector of services (eq. [16]). In the opinion of Howells ([17]), the fact that very few studies on innovation in the sector of services exist lies, basically, in the fact that this sector in particular is very heterogeneous in its origin, which disheartens many researchers. However, and according to Howells ([18]) there has been a constant rise in the number of firms operating in the sector of services. Particularly with regard small KIBS, their place as dynamic and core players in the "new" knowledge-based economies has been Proceedings of International Conference for Entrepreneurship, Innovation and **Regional Development ICEIRD 2010** 

acknowledged. This position has been achieved thanks to their innovative creations, in their own benefit, which means that they have ceased to be perceived as mere adopters or users of new technologies developed by others. This recognition has fostered recent research on this sector of services – KIBS ([19]). Furthermore, some KIBS are strongly technology-oriented, while others are much more concerned with knowledge of administrative and regulatory affairs. In this sense, this research aims to fill the gap in the literature concerning to nature of KIBS and their location.

For these reasons, we decided to carry out a study about what are KIBS and where they are located in Portugal based on dichotomy rural KIBS (r-KIBS) and urban KIBS (u-KIBS) and professional KIBS (p-KIBS) and technology KIBS (t-KIBS).

The paper is structured as follows: next to this introduction, comes a theoretical framework of the characteristics, nature, and location of KIBS. In the third section, a brief characterization of KIBS distribution of KIBS in Portugal are developed, and the research conceptual model are proposed. In the end, the final considerations and future lines of research are addressed.

#### 2. Framework of KIBS: Characteristics, Nature, and Location

Although the debate on the growth of KIBS swirls around their new specializations and the rise of the tertiary sector in general, it is becoming increasingly obvious that both the new manufacturing processes and the new services and innovations in general find their origin more and more on KIBS ([20]; [21]). Miles et al. ([22]) distinguish three fundamental characteristics in KIBS: (i) these firms pay a lot of attention to professional knowledge; (ii) these firms wish to be, in their own right, primary information and knowledge resources, or use their knowledge to produce services that act as intermediaries between themselves, clients and their production processes; (iii) the services that KIBS offer firms are extremely important to the latter, in terms of competition and competitiveness. Frell ([23]) concluded that technological KIBS<sup>1</sup> employ higher qualified people, and that this relates to their level of innovation. In the case of professional KIBS, the author noticed that the relationship between them, suppliers and clients fosters innovation. As for the transforming industries, as it is not in their interest to invest in R&D, their level of innovation is extremely low ([24]). According to Amara et al. ([25]), KIBS arise out of knowledge-based services. In this type of industry, transactions take place at the level of knowledge, and outputs are often intangible. In most cases, innovations are the product of new knowledge combinations, instead of new combinations of physical artifacts.

Distinct authors have mentioned the role of KIBS in regional innovation systems, especially as support activities in the transforming industries and SMEs in general ([26]; [27]). Some progress has been made regarding recognizing services, including KIBS, as contributors to the increase in technology and innovation ([28]; [29]; [30]; [31]). According to Miles ([32]), nowadays KIBS are acknowledged as playing a key role as intermediaries in the innovation of systems. The relationship of KIBS with firms from different sectors has a visible positive influence on the latter ([33]). According to this author, this relationship increases resorting to R&D, enhances the performance of staff, and encourages cooperation relationships, thus increasing the ratio of innovation. In the viewpoint of Sheamur and Doloreaux ([34]), there are two perspectives that indicate how KIBS contribute towards regional development: (i) the way KIBS interact with other local players with the aim of producing innovation and subsequent regional

<sup>1</sup> The difference between technological and professional KIBS will be explained in methodology section. Proceedings of International Conference for

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development. Thus, this first perspective suggests that KIBS should be involved in the development of regions as long as synergy effects occur in the very same regions; (ii) on the other hand, KIBS may be involved in regional development, but instead of being in the regions, they may be located elsewhere in the country, and so be involved at a distance. From the two perspectives supported by Sheamur and Doloreaux ([35]), we are inevitably led to the question of location of KIBS. The location of these firms and their contribution to local economies have been analysed by several researchers ([36]; [37]; [38]). Their localization in the urban system, their sensitivity to the economies' general agglomeration ([39]; [40]; [41]) and their tendency to set up around spatial clusters ([42]; [43]), have been documented through several tools and methodologies. A large part of these studies has been motivated by interest in researching the dynamics of local economies, regional development and the reason why some regions grow faster and more than others ([44]). According to Malecki, et al. ([45]), KIBS are essentially located in cities, as the latter are the optimum places for corporate innovation, as well as for networks leading to innovation. Sheamur and Doloreaux ([46]) present a distinct viewpoint, based on their study in Canada, whereby the sample was selected from Censuses carried out in 1991 and 2001. They selected KIBS from 152 urban agglomerations and KIBS from 230 rural areas. The authors then noticed that in the beginning of the 1990s, this service providing companies were, in their large majority, based in urban areas. The information yielded by the 2001 Census indicated, however, that these firms had moved out of cities into rural areas, thus leading to a drop in the KIBS sectors in urban agglomerations.

#### 3. Theoretical Approaches on Firm Location

According to Capello ([47]) there are two groups of theories (which she refers to as regional economics) that look into the issue of economic logic, which intends to explain the location of firms or, in other words, the existence of areas that are more developed than others: (i) Location theories: economic mechanisms that cause the distribution of activities in space; (ii) Growth and regional development theories: they focus on spatial aspects of economic growth and on territorial distribution of income. On the other hand, Hayter ([48]) set off to analyse the location of economic activity through three distinct approaches: (i) the neoclassical, which focuses mostly on the location theory and centres its analysis on profit maximization strategies and minimization of costs (transportation costs, human resources costs and external economies); (ii) institutional, which states that it is important to consider not just the firm's search for an appropriate location but also the institutional milieu it is part of (clients, suppliers, commercial associations, regional systems, the government and other companies); and (iii) behavioural, which focuses on situations of uncertainty and lack of information. Galbraith ([49]) studied 98 entrepreneurs of high technology firms in Orange County. California (USA). He concluded that high-technology firms, in their location decision process operate within a framework of factors that are different from those observed in traditional industries. These conclusions are similarly shared by Arauzo and Viladecans ([50]) in their study on the level of spatial concentration of new firms (in the period 1992-1996) in the municipalities of Spanish urban areas. In fact, smaller cities appear to be preferred for the location of technology-based firms, as they offer a quieter environment, better quality of life and become highly advantaged by the presence of qualified individuals working in these industries. Felsenstein ([51]) based on a study on a sample of 160 firms, both in urban and non-urban areas in Tel Aviv (Israel), he analysed the trend of high-technology firms to choose urban areas as a location. The author concluded that the location of firms does not follow a strategy or a calculation; in other words, it is not a founded decision. In turn, Ferreira, et al([52]) identified three

types of approach on the location of technology-based firms (behavioural, neoclassic and institutional) and argue that the rurality constitutes no obstacle to the location of firms.

Based on review literature our conceptual model is the following (figure 1).



#### Figure 1: Conceptual Model

#### 4. Methodology

KIBS were identified through use of database provided by COFACE Group integrating the total number of KIBS in Portugal created up to 2008 (latest year with available data). The extraction of the database was made from the turnover of the firms, i.e., only found that firms experiencing turnover exceeding € 0.01. These firms were selected for their CAE (Rev.3) codes and NACE (Rev. 2), as others researchers have mentioned already addressed. KIBS location was based on different theories of location and dichotomy rural KIBS (r-KiBS) and urban KIBS (u-KiBS), and typology of professionals KIBS (p-KiBS) and technology KIBS (t-KiBS) ([53], [54]; [55], [56]). The criteria that distinguish the rural and urban regions are not unanimous. Whether we seek a universal concept, with its boundaries of rurality, we cannot find. We will use the Kayser ([57]) criteria to distinguish the rural and urban regions. This author has used the resident population, which considered all rural areas with less than 5000 inhabitants, and all urban areas with people living above this value.

We can state that in Portugal, from 39,254 KIBS, only 113 are located in rural areas which 72 are p-KIBS (table 1). Based on these data we can also evidenced that 69,9% of KIBS are p-KIBS and only 30,1% are t-KIBS. In terms of rural versus urban is the most part of KIBS is located in urban areas (99,7%).

			Urban/Rural		Total
			Rural	Urbano	
	P_Kibs	Count	72	27371	27443
		% of Total	0,2%	69,7%	69,9%
KIBS	T_Kibs	Count	41	11770	11811
		% of Total	0,1%	30,0%	30,1%
Total		Count	113	39141	39254
		% of Total	0,3%	99,7%	100,0%

#### Table 1: KIBS distribution

P Kibs/ T Kibs \* Urban/Rural Crosstabulation

So, there is a greater incidence of professional KIBS in Portugal (graph 1).





#### **Final Considerations**

In the present research, we aimed to focus on two theoretical topics, which, due to their complexity, have gained increased importance. We started by referring to the growing interest on the study of KIBS, due to their influence on innovation and regional development. Subsequently, we referred about location theories that help us to explain how and why some types of firms are located in a specific place. Through a brief descriptive analysis we found out that there are, in Portugal, more professional than technological KIBS as well as its location is more characteristic of urban than rural areas.

The main limitation of our study is precisely the failure to apply our model empirically and the absence of statistical multivariate analysis in order to evidence the influence of the nature of KIBS in regions innovation. Therefore we propose in future studies to analyze these type relationships and to study the evolution and transformation that occurred in Portugal in relation to KIBS location in the last 5 years. These are issues that we have in mind and already in course.

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# How to use Complexity and Uncertainty for New Business?

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This article is structured in the following way. The first part describes the idea of reflexive modernization as espoused by Beck and suggests some broad areas where the theory may illuminate activities in the economy. The second part describes complexity and uncertainty as main aspects of the new modernity. The third section offers some thoughts, how organizations can make business in such environment.

#### **Keywords**

Complexity, Uncertainty, Reflexive Modernization, Management, SME

#### 1. Modernization, Post-Modernization and Reflexive Modernization

Bell (1973) outlined the three stages of the development of the human society: pre-industrial (agrarian), industrial and post-industrial society. Modernization was the term to explain the transformation from agricultural society to an industrial society. According to HE (2004:3) the passing of Classical Modernization Theory (CMT) was described by several authors: Modernizing the Middle East (Lerner 1958), Politics of Modernization (Apter 1965), Modernization: Protest and Change (Eisenstadt 1966), Modernization: The Dynamics of Growth (Weiner 1966), Modernization and the Structure of Society (Levy 1966), The Dynamics of Modernization (Black 1966), The Stages of Economic Growth (Rostow 1960), Political Order in Changing Society (Huntington 1968). Some aspects of this kind of modernization are rational expectations and rational decision-making models. Management theories for example are focused on reducing complexity (Bandte 2007), managing risks and organizations are seen as machines (metaphor). This mechanical approach is focused on technical sciences and rational expertise. In this system customers are seen as homo oeconomicus and employees and supplier can be substituted by any other person/organization. Management models like Quality Management (DIN 2000), Total Management (Zink 2004), Lean Production and Quality Lean Management (Womack/Jones/Roos 1994), Business Reengineering (Hammer/Champy 1994) and Kaizen (Imai 1992) are traditionally grounded on Scientific Management (Taylor 1911). In this context Taleb (2007:275-276) is wondering, that students and businessmen all over the world are focused on "scientific methods, all grounded in the Gaussian" and he believes, that "people want a number to be anchored on".

Postmodernism tried to sketch the culture situation in the post-modern, which are very different from the classical modernization. La Condition Postmoderne (Lyotard 1979) is a very popular book on the post-modern issues. In this *Knowledge Society* (Stehr 1994) and *Knowledge Economy* (Rodrigues 2002, Soete 2006) *knowledge-based organization* (Drucker 1996) new management models appeared like Learning Organization (Senge 1990, 1992, 2000), Knowledge Management (CEN/ISSS 2004, Heisig 2005, Mertins et al. 2005, Nonaka/Takeuchi 1995/1997, Pobst et al. 1998). Drucker (1959) coined the term Knowledge-

worker to differentiate work in industrial settings from work in knowledge-based organizationsto. But in practice autonomy and external contacts - integral components of the new knowledge work - continue to be limited or non-existent in many workplaces (May/Korczynski/Frenkel 2002). Dankbaar/Vissers (2009:3) argue, that "the expected growth in the share of knowledge work may be less than expected: along with the forces pushing for an increase in knowledge work, there are also forces counteracting these." Moldasch (2010) brings forward the argument, that the dichotomy of knowledge work vs. industrial work isn't helpful to characterize work in modern organizations. So post-modernism comes under criticism on organizational level and as a social theory (Abicht 2010). This post modern approach was extended by several authors: Ecological Modernization (Huber 1985), Reflexive Modernization (Beck 1986), the Modernization of Modern Society (Zapf 1991), the New Modernization (Tiryakian 1991, Alexander 1995), the Multiple Modernities (Eisenstadt 1992, 1998) etc. In this paper, we will have a closer look on Second Modernization or *Reflexive Modernization Theory* (Beck/Giddens/Lash 1994).

Beck's Risk Society (Beck 1986/2008) was a critique on the post-modern society and Beck/Bonß/Lau (2003). argue, that modernists and postmodernists are interested in deconstruction without reconstruction, second modernity is about deconstruction and reconstruction. Second modernity (Reflexive Modernization) is therefore different to modernization and postmodernism. What is new is that modernity has begun to modernize its own foundations. Where postmodernism simply celebrates this multiplication of boundaries, the theory of second modernity starts with the problem this new reality poses for individual and collective decisions, and with the problem that the continued existence of such decisions poses for theory. Institutions that are capable of such conscious boundary drawing are enabled in a way that those of the first modernity were not. A good example is the financial sector, where it is very common to use mathematical models, risk management systems, business intelligence, simulations etc. But as we know from the last two years, financial crisis emerged anyway. So, what happened? Some researchers said, that mathematical and analytical models should be improved (Welp 2009), but Phelps (2009) assumed, that the crisis is based on uncertainty (Knight 1921). "Uncertainty, as Keynes knew, is not the same as risk, or probability: risks can be calculated, uncertainty escapes calculation" (Mitchell/Streek 2009:6). So complexity and uncertainty increase in Reflexive Modernization and it involves far-reaching and deep changes to national, regional, and international institutions of economic, social, cultural, and political governance (SFB 2008). Reflexive Modernization is a social theory grounded on three theorems (Böhle/Weihrich 2009:10; Bonß 2009): Risk Society, forced Individualization, multidimensional globalization and with several interdependencies (Beck/Grande (2004:50).

#### 2. Complexity and Uncertainty

"The social world, like most of the biological world and a good part of even the physical world, is populated by highly contingent, context-sensitive, emergent complex systems. Understanding these features of complexity requires an expansion of our paradigm of science itself" (Mitchell/Streek 2009:4). Complexity and historicity mean above all that human action inevitably takes place in the face of an uncertain future (Reflexive Modernization). Haken (2006:1-7) characterizes complex systems like this: "In a naive way, we may describe them as systems which are composed of many parts, or elements, or components which may be the same or of different kinds. The components or parts may be connected in a more or less complicated fashion. Systems may not only be complex as a result of being composed of so many parts but we may also speak of complex behaviour. The various manifestations of human behaviour may be very complex as is studied e.g. in psychology (...) An important step in treating complex systems consists in establishing relations between various macroscopic quantities. These relations are a consequence of microscopic events

which, however, are often unknown or only partially known". In business organization its about complex/uncertain problem solving for customer. "Complex Problem Solving (CPS) occurs to overcome barriers between a given state and a desired goal state by means of behavioural and/or cognitive, multistep activities. The given state, goal state, and barriers between given state and goal state are complex, change dynamically during problem solving, and are intransparent. The exact properties of the given state, goal state, and barriers are unknown to the solver at the outset. CPS implies the efficient interaction between a solver and the situational requirements of the task, and involves a solver's cognitive, emotional, personal, and social abilities and knowledge" (Frensch/Funke 1995:18). Therefore knowledge must be applicable to different, new, and complex situations and contexts.

#### 3. Second Modernity Business

So the question is: How to manage an organization *through* complexity and uncertainty (Baecker 1999:170)? It is against this background that the concept of *Multiple Competencies* (Rauner 2004, Freund 2008, 2009; Freund/Tsigkas 2007) has attracted increased research attention. Competencies are conceptualized as complex ability constructs that are context-specific (Koeppen et al. 2008:61) but the concept of *Multiple Competencies* (Freund 2009) broadened Competency Management for social and reflexive environments to solve the problem of missing synchronization on individual, team and organizational level (Figure 1).



Figure 1: Missing synchronization (Reinhardt/North 2003:1373)

Reflexive Modernizations points on secondary-effects of industrial production. A simple example for this are cars, because it's the production of cars which is a big problem for climate change and other problems. This may remind one of John Ruskin's lament, put forward one and a half centuries ago: "We pour our whole masculine energy into the false business of money-making" (Ruskin 1865:88). Well, private firms always have to "make money", but that is not their business. "Organizations are in *the business of solving customer problems*, be they individual needs such as nutrition, health or locomotion, or the social and ecological problems faced by our world. These kinds of functions and purposes bestow upon organizations their very *raison d'être*" (Schwaninger 2006:78). To make business in a social, complex and uncertain environment is difficult, because economists and sociologists each hold half of the truth, "so to speak, when it comes to markets, it seems natural that they should try to coordinate their efforts" (Swedberg 2003:15). According to Economic Sociology (Smelser/Swedberg 1994, Swedberg 2008) capitalism follow the interest of shareholder and sociology follow the interest of social communities. We should follow the interests of both. *Follow the interests*! (Swedberg 2003:49) of Economic Sociology.

- Sociology of production:
- Sociology of consumption
- Sociology of profit

May be new business models like the *Mass Customization* (Pine 1993) or *Open Innovation* (Chesbrough 2003, von Hippel 2005, Daniel/Piller 2010) are able to support the idea of Economic Sociology.

#### 4. Conclusion

*Reflexive Modernization* is different to modernization or post-modernization. It is argued, that scientific management or post-modern management models like knowledge management will not solve the problem of secondary-effects. To solve complex customer problems in an uncertain environment, dispositions of selforganization (multiple competencies) are necessary. The concept of Multiple Competencies is able to synchronize multiple competencies on individual, team and organizational level. According to Swedberg, business should follow the interest of social communities <u>and</u> shareholder. Further research: More and more business models should be reinvestigated from the *reflexive modernization* point of view.

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## Product Lifecycle Management with Knowledge Management as a Strategic Approach for Innovative Enterprise Environment

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Process planning knowledge (PPK) is one of the most important knowledge in production manufacturing enterprise. This paper analyzes the PPK and the concept of process planning information model (PPIM) implemented in production enterprise. In second part of the paper, there is done the basic information about PLM concept as a business strategy for product development where are included PPK and PPIM approaches, strategy which offer possibilities for innovation. Product Lifecycle Management (PLM) is the process of managing the whole life cycle of a product starting from generating an idea, concept description, business analyzes, product design, solution architecture and technical implementation, to the successful entrance to the market, service, maintenance and innovative product improvement.

#### Keywords

Process Planning, Knowledge Management, Product Lifecycle Management

#### 1. Introduction

With the development of knowledge economic, knowledge resource becomes the most important resource in mechanical manufacturing enterprise. The competition superiority of enterprises comes from the effectively development and management on knowledge resource. Nowadays, with the rapid application of enterprise information software [1], the location of knowledge resource is changing from employee's brain and papery document to digital databases in mechanical manufacturing enterprise. These databases are the foundation and sources of knowledge management. How to change these data into knowledge is the work of knowledge discovery. Knowledge management in production enterprise can be divided into three parts; they are creating knowledge, finding knowledge and spreading knowledge.

Process planning knowledge (PPK) is one of the most important knowledge in production enterprise. It includes foundation data, process planning specification, experience of expert etc. for process planning. For the complexity of PPK, the PPK acquisition in process planning instances of papery documents needs human knowledge engineers to accomplish. With the in-depth application of Computer Aided Process Planning (CAPP) system, digital process planning data is accumulated rapidly in databases. How to accomplish knowledge discovery of technique, experience, data, principle, and specification in industry practice has been the key problem in production enterprise.

How to discover new knowledge and enrich PPK based on the accumulated product process planning database (PPDB) is concerned by engineers significantly. It is a new technology as it is called process planning knowledge discovery (PPKD). Nowadays, knowledge discovery technology has been widely used in finance industry, communication industry, retail industry etc., but for production industry, especially on process planning knowledge discovery in CAPP application system, it has less report and research. But, it is on contemporary way to develop innovative product or process in the company.

In fact, process planning discovery technology covers the theoretical issues related to data mining, learning-by-examples, knowledge acquisition, knowledge discovery, database, and information mapping. The PPKD is certainly not for humans entirely; actually, most analysis work needs to be automated [2]. A goal for PPKD is to build a foundation for the application of knowledge discovery based on CAPP database from an interdisciplinary perspective including artificial intelligence, database, software technology, statistics and management. Recent research achievement in expert system (ES), artificial intelligence (AI), knowledge management (KM), data mining (DM), database (DB) etc. have established abundant foundation for PPKD.

#### 2. Enterprise system activities

The product development and production involves several production management activities with a series of individual tasks that are to be completed in order to design and produce a product of a required quality. These tasks are usually carried out in a linear sequence, but very often the feedback is necessary from the subsequent task to the previous one. Many of these feedback loops are requests to modify the previous task's solution in order to generate a better solution in the subsequent one. This interlinking is what has become known as concurrent or simultaneous engineering.

#### 2.1. Product development cycle

Product development cycle may be seen as a set of answers to a series of simple questions [3,4]: Why to produce? What to produce? How to produce? Where to produce? Who to produce? When to produce? The answers of these questions will identify what functions a necessary in the cycle from developing an idea to the realization of the final product.

Answers to these questions may be given by connecting them with particular manufacturing functions: marketing function, design function, process planning function, resource planning function, production control function (shown of Figure 1). The product development cycle is not a linear path without obstacles. Usually, the product development follows some zigzag pattern between functions with frequent needs to feedback information from a function to previous one. There are numerous feedback loops and overlapping between functions. Therefore, there are process planning tasks that can not easily be classified into particular functions and these tasks lead toward integration between these functions.



Figure 1. Basic product development cycle

Starting from analyzing set of tasks of process planning and other activities, it is possible to develop the model that shows interactions between process planning and tasks that have to be done in the product development. All of these activities are identified in manufacturing planning literature as activities required during the product development and production. There are numerous tasks that require interactions between two or more activities that represent integration links.

#### 2.2. Process planning

Knowledge discovery in database have been attracting a significant amount of research, industry attention in recent years. Process planning knowledge (PPK) is one of the most important knowledge in mechanical manufacturing enterprise. The traditional method of turning data into knowledge relies on manual analysis and interpretation. On the basis of the widely application of computer aided process planning (CAPP) system in mechanical manufacturing enterprise, the concept of process planning knowledge discovery (PPKD) is proposed based on process planning databases.

Planning of manufacturing processes provides the link between design and production. Its task is to determine a plan of discrete manufacturing operations that, when executed in an actual production environment, will produce the part as required by its design description. Computer-Aided Process Planning (CAPP) may result in better designs, lower production costs, larger flexibility, improved quality and higher productivity and they are develop by the application of artificial intelligence (AI) methods and tools [5]. The reasons of this are two:

- CAPP is a complex problem that includes part analysis, selection of operations and resources, operation sequencing, setup planning, fixture design, and the determination of process parameters. The domain knowledge of a process planner has to cover geometry and tolerances, material properties, manufacturing processes and tools, fixtures, as well as machine tools. Besides generating executable plans, the optimal allocation of resources is the main concern of planning.
- General-purpose AI planning systems provided clear-cut logic-based representation formalisms and more and more efficient solution methods. However, the restricted representation formalisms did not allow to capture all of the relevant domain knowledge and to define planning strategies. Solvers could not handle optimization objectives and support mixed-initiative, interactive problem solving. Hence, they could not fit the realworld problems like the CAPP problem.

#### 3. Process Planning Knowledge Management

#### 3.1. Analysis of Process Planning Knowledge

Process planning knowledge in production manufacturing enterprise includes foundation data, process planning specification, and experience of expert etc. for process planning. All types of PPK are synthetically used generally, for example, selecting manufacturing method, designing fixture, arranging route etc. In commonly, PPK can be divided into four types.

(1) *Handbook knowledge:* It includes data and knowledge in handbook and engineering standard for process planning, for example, tolerance, material, cutting feed and process planning specification etc.

(2) *Manufacturing resource knowledge*: It implies data and knowledge that has close relation with manufacturing environment, such as machine, cutter, fixture and process planning database etc.

(3) *Decision-making knowledge*: It is compose of experiential rule, procedure algorithm and control knowledge for process planning that commonly exists in engineering expert's brain.

(4) *Model knowledge:* It includes process planning data model and process planning knowledge model, for instance, product, part, process planning, operation, step, fixture, machine etc.

The traditional method of turning data into knowledge relies on manual analysis and interpretation. PPKD is the process of mining and formalization domain process planning knowledge in manufacturing enterprise. Nowadays, the main method of PPKD is done by human knowledge engineers assisted by domain expert from literature, document, handbook, process planning file etc. in papery information source. For example, in mechanical manufacturing enterprise, it is common for experts to periodically analyze current trends and documents in enterprise, and on a quarterly or yearly basis. The experts can provide an outline document of the analysis to the engineering department; the effect of this document for decision-making and planning on new product is rather limited [8]. In addition, this form of manual probing of information set is slow, expensive, and highly subjective, and depends on domain experts greatly. In fact, as information volumes grow dramatically, this type of manual information analysis is becoming completely impractical in engineering work, and these problems result in the poor implementation of PPKD.

In fact, with the application of CAPP system in manufacturing enterprises, process planning knowledge is implicated in digital process planning databases. It becomes a main PPK source in manufacturing enterprise. Based on representation of process planning knowledge model, technology and method, discovering knowledge from digital process planning databases can be an effective method to solve the PPKD.

The PPKD refers to the overall process of discovering useful process planning knowledge from CAPP database, and process planning data mining is a particular step in this process. The whole steps in the PPKD include, such as data preparation, data selection, data cleaning, incorporation of appropriate prior knowledge, and proper interpretation of the results of mining, are essential to ensure that useful knowledge is derived from the CAPP database.

#### 3.2. Process planning information model

In order to represent the commonness of PPK in mechanical manufacturing enterprise, process planning information model (PPIM) is founded based on the overall analysis of process planning information in mechanical manufacturing enterprise. PPIM is the foundation of PPKB and PPDB. PPKD is founded on the analysis of PPKB and PPDB based on PPIM in CAPP system.



Figure 2. Process planning database and knowledge base based on PPIM

PPIM includes all fundamentals process planning object (product, part, process planning, manufacturing resource, route etc.). PPIM establishes the protocol on PPKD in CAPP system database by the standard description of concept, item and model for the sharing on PPK. Figure 2 shows the relation of PPKB and PPDB based on PPIM.

#### 4. Concept of Product Lifecycle Management

In today's demanding global economy, product success depends on company's ability to beat the competitors to market with products that capture customers' imagination with stylish yet appropriately functional content that performs as required while being delivered at a price the market is willing to pay. In other words, the products must be able to satisfy customer requirements for: timing, function, performance, style and price. Since these variables frequently change during the course of a product lifecycle, the innovation process must be able to account for change and easily accommodate its demands on a systematic and repeatable basis.

#### 4.1. Definition of PLM

Product Lifecycle Management (PLM) is generally defined as a strategic business approach for the effective management and use of corporate intellectual capital. Today, challenges faced by product development teams include globalisation, outsourcing, mass customisation, fast innovation and product traceability. These challenges enhance the need for collaborating environments and knowledge management along the product lifecycle stages. PLM systems are gaining acceptance for managing all information about the corporation's products throughout their full lifecycle, from conceptualisation to operations and disposal. The PLM philosophy and systems aim at providing support to an even broader range of engineering and business activities [6,10].

PLM is a strategic business approach that applies a consistent set of business solutions in support of the collaborative creation, management, dissemination and use of product definition information across the extended enterprise from concept to end of life – integrating people, processes, business systems and information. PLM is an integrated, information-driven strategy that speeds the innovation and launch of successful products, built on a common platform that serves as a single repository of all product-related knowledge, data, and processes. PLM is the process of managing the whole life cycle of a product starting from generating an idea, concept description, business analyzes, product design and solution architecture, technical implementation and product testing, to the successful entrance to the market, service, maintenance and product improvement. PLM gathered and make accessible all the data and information of all stages of this process.

As a business strategy [7,8,9], PLM lets distributed organizations innovate, produce, develop, support, and retire products, as they were if they were a single entity. It captures best practices and lessons learned, creating a storehouse of valuable intellectual capital for systematic and repeatable re-use.

As an information technology strategy, PLM establishes a coherent data structure that enables real-time collaboration and data sharing among geographically distributed teams. PLM lets companies consolidate multiple application systems while leveraging existing legacy investments during their useful lives. Through adherence to industry standards, PLM minimizes data translation issues while providing users with information access and process visibility at every stage of the product's life.

PLM systems support the management of a portfolio of products, processes and services from initial concept, through design, launch, production and use to final disposal (Figure 3)

[8]. They coordinate products, project and process information throughout new product introduction, production, service and retirement among the various players, internal and external, who must collaborate to bring the concept to fruition.



Figure 3. PLM System

The PLM concept gives the strategies to organize and to manage product information the entire life cycle, from concept to re-cycling of the product through:

- Share the updated product information's within the organization to design, manufacturing, marketing and procurement divisions,
- Collaborate internal team with external users, suppliers and customers for iterating new designs,
- Maintain a repository of product information for design reuse and to reduce part redundancy,
- Systematically gather and analyze customer or market product requirements,
- Streamline sourcing team to identify a list of preferred suppliers for purchasing custom and standard parts,
- Streamline resource management and analyze the cost-benefits of allocating resources for specific projects.

Management and distribution of enterprise information by PLM system is realized on different modules or data levels, as: ICT, Processes, Data & Objects, Method & Tools, People & Organization.

#### 4.2. Application of PLM

#### 4.2.1. Medium to large enterprises

In the current economic climate, addressing global business challenges is the top priority of most medium and large enterprises. Whether they want to expand their customer base in new markets, or to leverage more cost competitive resources, conducting their business globally is a necessity [1,7]. To sustain an advantage, they have to overcome the challenges of a dispersed organization, while still empowering individual team members to excel.

PLM concept offers comprehensive solutions to help enterprises address their challenges and create competitive advantage. Five areas where medium and large enterprise should have achieved success include:

- Managing new product introduction, to create a winning product portfolio.
- Achieving concurrent engineering globally, to be faster to market.
- Creating platforms for reuse, to reduce cost and speed product customization.
- Managing product and manufacturing complexity, to avoid program problems.
- Supporting products currently in-service, to ensure they are available for use at minimum cost.

#### 4.2.2. Small to medium enterprises

Small and medium enterprises have special needs and limited resources. PLM concept brings a complete solutions designed specifically for them; solutions that help them respond better to their customer's needs.

Small businesses need a product lifecycle management solution designed from the groundup –one that is pre-configured with the industry's best practices, and offers fast and affordable deployment. Fully integrated PLM solutions are designed to provide what small and medium enterprises need to maximize their innovation strategy, and easily scale to meet their needs tomorrow.

One significant PLM software solutions is Siemens PLM software [11]. It helps mid-sized manufacturing companies to transform their process of innovation by applying preconfigured best practices to everyday engineering tasks and processes. Companies using PLM software benefit from:

- Securing their corporate design data while facilitating access by authorized personnel
- A more successful move from 2D to 3D
- Increasing their design reuse, facilitated by a powerful and flexible search capability
- Streamlining their engineering process with simple design review and release workflows and effective change management
- Error reduction through more effective collaboration between their departments and the elimination of mistake manual handoffs to manufacturing
- Rapid deployment of a full-featured product data management (PDM) solution
- Low total cost of ownership.

#### 4.3. PLM Business Value

When the enterprise implements the PLM concept in work, than it can move forward strategically while achieving near-term results and can establish a platform for innovation. As the enterprise address specific business issues and builds a solid foundation for future success through PLM platform [11], it will be able to realize measurable innovation benefits both immediately and over the long term, shown on the Figure 4.

#### Figure 4. PLM business value

Traditionally, companies brought their products to market in time-consuming serial processes that delayed the participation of downstream contributors, such as suppliers, manufacturing



experts and service/maintenance providers. By allowing to the enterprise to execute as many lifecycle tasks as possible in parallel processes, PLM enables to the enterprise to streamline and collapse critical stages in the product lifecycle. PLM delivers aligned, accurate, and highly synchronized product knowledge to multiple disciplines early in product lifecycle –

thereby avoiding the cost and scheduling impact that comes when late suggestions and unexpected concerns arise from downstream players. PLM enables to the enterprise to beat the competition to market with innovative product content that carries first to-market advantages and drives early product sales.

#### 5. Conclusions

Although a quite new method with short history PLM has proven itself to be useful for all management levels within the company in both vertical and horizontal organization. By making relevant historical information structured and available PLM is used both for those who are doing execution and decision makers within the organization answering to the rapid changes in the business environment. A business approach for coordinating design process through the implementation of PLM systems is proposed for improving design coordination in company. Firstly, this business approach is based on a method for analysing informal collaborative practices and modelling detailed design processes. Secondly, these processes are implemented by using PLM technologies. Multi-level workflows are implemented to control progress of design schedule from project management level to document lifecycle management level.

PPKD and PPKM as the strategic approaches implemented in the PLM modules are important foundation part of work in the production enterprises. By the industry practice of using PPKD technology and PPKM developed and based on CAPP platform, PPKD can be executed automatically in PPDB and PPKB. It can help the standardization and specification of process planning data effectively.

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# Small Selective Tourism Business In The Croatian Region

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The chosen theme, which is in accordance with the global tourist trends very current today will be processed through a whole as follows:

1. Defining business strategies of small businesses in the Republic of Croatia.

2. Selective small businesses in tourism by Croatian coastal counties.

3. Analysis of appropriate tourist accommodation offers through the form of small and family run hotels in order to satisfy the very heterogeneous and dispersed needs of contemporary travel demand.

4. Summarize the advantages and disadvantages of small and family hotel in the Republic of Croatia through the analysis of management and business planning, marketing, human resources management, procurement management, finance and controlling, and Facility Management.

5. The role of the Croatian Association of Family and Small Hotels OMH and its mission of improving the methods and terms of business development and marketing of small family hotels in Croatia.

#### Keywords

business strategy, family hotels, selective tourism, small business,

#### 1. Introduction to small business in tourism

"Business tourism is defined as the wholeness of entrepreneur's knowledge, skills and abilities for successfully managing and implementing the above in the area of tourism activities. In order to highlight the concept of an entrepreneur's in tourism as a subsystem of the global tourist system as well as the specific tourist values interacting with numerous environmental factors, we may conclude that the subsystem of the entrepreneurship in tourism is made up of the following factors:

*Tourists* - as people looking for various activities, experiences and inspiration for their rest, recreation, mental and physical rehabilitation. All above of course depends on the choice and quality of destination-supply, and the range of activities as the result of social status, education-level or socio-geographic and demographic dimensions of any entity.

*Entrepreneurs* - as people taking tourist needs, such as: catering services and supporting activities as the option of implementing their business ideas as well as acquiring economic effects from selling their goods and services.

*Government* - that should regard tourism as an important factor in the economy, a generating employment and an important area for creating foreign exchange inflows, as well as other multiplicative conversion and inductive functions of tourism.
*Local - Regional* - which sees tourism as a phenomenon contributing to the local economy, employment, and the process of cultural and social interaction between local people, but sometimes as a phenomenon in the sphere of tourist pathology that is the source of crime and other deviant behaviour, too.<sup>1</sup> (Geić, S. 2010)

Most of the theories applied to the tourism practices accepted by globalized corporate agencies and hotel chains, based on the concept of mass-tourism, and large complexes as holders of growth and development, have been gradually abandoned. Actually, market changes of mostly selective forms within sustainable tourism have become so dynamic that that the very form of so called "soft" tourism within small and middle tourist business can meet their needs.<sup>2</sup> (Alfier, D. 1994)

For these reasons, tourist business and its innovations are now in the focus, because the future socio-economic development through tourism can be most effectively implemented within the modern entrepreneurial society. That very fact was long ago recognized in the developed countries, therefore today's leading hotel-business in these counties is based on small family businesses participating more than 80% in total accommodation capacity. An entrepreneur who runs a venture in tourism has to fit his business plan into the framework of a tourist destination but cannot resist global changes; he has to continuously improve and modify their products, recognizing rapidly changing global tourist trends, which will make them recognizable on the tourist market.

Such a business, logically, assumes a constant process of tourism market research, analysis of information and data, timely decision making, risk-taking and the achievement of entrepreneurial profit. Due to the complexity of these tasks, a significant part must be realized through the processes of association and coordination of various economic and social entities within the destination and destination management activities.

Dynamic development of entrepreneurship in tourism is mostly realized owing to innovation and creativity, now associated with modern information technologies, with the option of easy communication, which provides interactive marketing and quality as the base of a successful market economy. Prioritizing selective forms of tourism in the modern tourist industry as an important ground for small and medium tourist businesses, provides a number of positive effects that can be achieved by their implementation within the framework of a tourist destination. These processes are particularly evident in the selective forms of tourism such as cultural, rural, environmental, sports, health and recreation, etc., which, among other, provide tourism opportunities all the year around, as well as incorporating a wide range of supporting activities in the framework of tourist attractions and tourism products. That creates a series of economic and social benefits that are reflected through:

- Self-employment and job creation
- Commercial evaluation of indigenous agricultural products
- Revitalization of rural areas
- Preserving conservation area and its values
- Restoration, preservation and revitalization of cultural heritage
- Stimulation of nurturing native customs and cultural heritage preservation
- Improvement of existing tourism products
- Fitting into the new trends of modern travel demand, etc. <sup>3</sup> (Hajdaš, S. 2006, 150)

Proceedings of

<sup>&</sup>lt;sup>1</sup> Geić, S., Menadžment selektivnog turizma, Sveučilište u Splitu, Split 2010. (i.p.)

<sup>&</sup>lt;sup>2</sup> Alfier, D., Izbor radova Institut za turizam, Zagreb 1994

<sup>&</sup>lt;sup>3</sup> Hajdaš, S. Primijenjeno poduzetništvo, Zbirka tekstova, Beretin, Split, 2006.

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It is logical that the projects of SMEs in the tourism enable entrepreneurs to engage all family members, especially younger ones, which means self-employment and creating new jobs, preventing depopulation of rural areas, islands, hinterland and the continent as well. It represents a long-term goal achievement which contributes to the overall more balanced sustainable development of Croatia, and increasing the quality of life and improving living standards in tourist destinations.

## 2. Defining business strategy in small business in Croatia

Nowadays, the total operates 65.5% of Croatian employees operates-that is 677,000 people. Small businesses realize a total of about 55% of GDP in Croatia, in the total exports to about 27%, and accounts for 37.6% of the total assets of the economy.<sup>4</sup> (Avelini Holjevac, I., 2006., 5/24) The increasing processes of individualization and segmentation in tourism are the main impulse to the development of many forms of selective tourism. It aims at meeting the extremely demanding, heterogeneous and highly dispersed needs of modern tourism demand as a kind of detachment from the mass, uniformed and less attractive tourism. This has resulted in creating of appropriate tourist accommodation facilities especially in forms of small and family hotels, along with many other entrepreneurial initiatives in supporting activities.

Given the tendency to this entire sector of tourism and supporting the superstructure in order to raise the quality and standardization and harmonization necessary marketing organization as relevant market categories organized and legally regulated as a part of small businesses are quite certain much enhanced effects of the growth in demand satisfaction. This is particularly important for Croatia, which, in the segment complementary accommodation has more than 70% of capacity, which need to be urgently modernize and organized in forms of small businesses according to the marketing trends

Small business in the tourism attracts unprecedented attention of economists and economic policy, because it encourages employment, creativity, and opens new market opportunities that are favourable for the development of innovative small business. This includes the detection of specific marketing niche market through market research, radical technological developments due to shorter product lifecycle and flexible and sophisticated demand for higher quality and differentiated products and services. Objective, comparative and competitive advantages of small entrepreneurial ventures provide guidelines for a potential effective strategy that are summarized by Willy J. <sup>5</sup> (2001)

- Personalized service
- Flexibility and adaptability
- Specialized and customized products
- Quick decision making
- Employee motivation
- Geographic Specialization.

Summarizing the conventional wisdom about appropriate competitive strategies for small business, Cooper M.J.  $^{6}$  (1995) suggests choosing a niche and avoiding direct competition with large companies. Although direct competition is possible, a small business should concentrate on the point where they have the most of competitive advantage, or where large

<sup>5</sup> Willy, J., Special interest tourism, Brisbane, 2001

<sup>6</sup> Cooper, M.J. Tourism and Australian economy, Tourism management 5(1) 1995

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<sup>&</sup>lt;sup>4</sup> Avelini-Holjevac, I., Kvaliteta kao strategija razvoja malih hotela, Restaurant and hotel, 2006. str. 24)

companies are weak. In fact, large companies usually concentrate on the mass market so accordingly, small ones should concentrate on specialized markets, which are not covered by multinational hotel chains and large tour operators.

Exactly the development of special interest tourism (selective tourism) offers special opportunities in small business. Its niche market requires a specialized, innovative and customized experience created by as much demanding and more experienced consumers. Mere small businesses can show their innovation, flexibility and quick decision-making opportunities into competitive advantage. Therefore, one should not ignore the growth of concerns about ecological environment at the global and local level and the fact that this type of tourism encourages the development of the underdeveloped rural areas on land and sea, protecting the natural environment and heritage and many other activities that fall under the so-called. "complementary" activities of modern tourism, which often affects the overall economic and social structure of the destination. <sup>7</sup> (Geić, S., 2007)

# 3. Entrepreneurship in the form of small family hotels in Croatia

Characteristics of small hotels are determined by the size and structure of assets, personnel and capital that is proprietary. Criteria for determining the size of the hotel vary in different countries, but share their room number or the number of beds. Upper limit of capacity for small hotels ranges from 100 rooms, for medium 100 to 200 rooms and over 200 for large room. <sup>8</sup> (Galičić, V., et al, 2005, 15) In Croatia there is still no official criteria for the classifying of hotels in the small, medium and large, which is why some authors, including some of the region and sector associations use different ranges of the number of beds and rooms for the classifying of small, medium and large hotels. Small family hotels are the new face of Croatian tourism. The newspaper in the Croatian tourist offer combines all the qualities of Croatian tourism so far known to those benefits that have begun to discover the quality only in recent years. In order to meet the original, authentic local values, each a separate story hotel, presents its own story.

To make architecture that reflects the influence of climate, distinctive interior design, smells and tastes of local cuisine, wine map typical for the region, hiking tours which drain into the attractive historical sites and landscapes, and spaces with sports and health and recreational activities. Owners of small hotels, encouraged and coordinated through their organization are trying, among other things, to impose high quality criteria, provide guests with an unforgettable experience with a maximum of fostering tradition. The advantage of small objects are in the individual approach to each guest, a family that owns the hotel is fully available to their visitors, and are therefore important characteristics of small hotels uniqueness, personality and recognition. Small hotels are resilient, better use of capacities, achieve maximum savings and greater spending and satisfaction of guests, and quickly adapt to changes in the tourism market and thus achieve greater profitability and other economic effects.

In addition to accommodation, guests are offered full board or half board and food is easily adapted to the structure of the hotel guests and their wishes with maximum attention. These hotels may offer other services related to selective forms of tourism: sport, recreation, entertainment, beauty services, health services, the possibility of buying souvenirs, local food and handicrafts, various cultural events, etc. Particularly appreciated are family hotels which

<sup>8</sup> Galičić, V., Hotelska prodaja i recepcijsko poslovanje, Sveučilište u Rijeci, 2005 Proceedings of International Conference for Entrepreneurship, Innovation and

<sup>&</sup>lt;sup>7</sup> Geić, S., Organizacija i politika turizma, Sveučilište u Splitu, Split, 2007

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cherish traditional local identity in architecture, gastronomy, typical family hospitality, which includes the possibility of knowledge and participation of guests in the traditional way of life and customs.

# 4. Advantages and disadvantages of small and family hotels in Croatia

In a small hotel, an owner is a businessman who controls and has the function of top and operating management. Regardless the legal form of ownership, the person investing in the hotel, financing it, making policy decisions, is responsible for planning, management, organization, marketing, recruitment and supervision. This type of entrepreneurship offers economic independence through business that provides funds for the entire life of the wider family in activities full of interesting encounters with people of different ethnic cultures, which provides space for personal inspiration to each employee. <sup>9</sup> (Medlik, S., 2002, 52)

In contrast to European traditions of Croatia's hotel industry is still characterized by a modest share of small hotels and according to it and a minor share in the number of employees and total revenue hotel industry.

The advantages of the small hotel can be summarized in the following:

- The independent management and company planning: the company internal flexibility, direct channels of internal communication and decision making, simplicity and company transparency, personalities and independent position
- Marketing: personal relations and contacts with customers, use of market niche, offering high quality personalized service
- Management in human resources: the involvement of family members, a simple team building
- Procurement Management: taking into account local products
- Finance & Controlling: independence
- Facility management: transparency facility and equipment
- Recent trends of return to nature and experience of the original and historic traditions of different cultures that are realized through tourism, strongly encourage the development of very small, family hotels, apart hotel and similar facilities. <sup>10</sup> (Cerović, Z., 2008).

The disadvantages are:

• Managing and planning business: insufficient medium and long term planning, underqualified and uneducated management, insufficient guidance of jobs, lack of organization, the problem of succession

• Marketing: insufficient attention to positioning, insufficient systematic market research and acquisition of information, limited use of marketing instruments, poor sales position, tending acceptance of the difficult framework conditions, the low rate of innovation

• Management in human resources: not well developed job descriptions and profiles of staff required, not enough take care of employees, not adequate staff development, poor career prospects attract worse "shots"

• Management of Procurement: small market power

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<sup>&</sup>lt;sup>9</sup> Medlik, S., Hotelsko poslovanje, Golden marketing, Zagreb, 2002, str. 52

<sup>&</sup>lt;sup>10</sup> Cerović, Z., Hotelski menadžment, Rijeka, 2008.

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• Finance & Controlling: difficult access to capital, low share of equity capital, insufficient controlling and under-developed management information systems, a larger share of revenue from food and beverages, suboptimal management costs

• Facility management: low degree of standardization, low use of technology. <sup>11</sup> (Geić, S., 2010)

Scattered across the country, family-owned hotels in Croatia embody the diversity and richness of many segments of culture, historical and natural heritage. The most beautiful of them are located in old historic buildings, monuments protected in environmentally protected rural areas. Development of family hotels in the historical center and monuments are a part of the tourist attractions that particularly wishing to develop and evaluate the large number of preserved historic towns of the Adriatic, which are, among other, respected by UNESCO. All these attractions are an important impetus to the development of various forms of selective tourism in the wake of rich experience in Europe, where they are extremely popular "boutique" ("design") hotels that are different from large hotel chains because of a personalized service offer. They mostly offered 3 to 50 with five or six stars, providing peace and comfort and luxury. <sup>12</sup> (http://en.wikipedia.org)

# 5. The role of entrepreneurial infrastructure business small and family hotels in Croatia

The main institutional holder of development of the small business in the Republic of Croatia are: the Ministry of Economy, labour and entrepreneurship, Croatian Chamber of the twenty-County Chamber of Commerce, Croatian Chamber of Trades, with twenty of the county Chamber of Commerce, the Croatian Association of Cooperatives, the Croatian Agency for Small Economy, Croatian Bank for Reconstruction and Development, county institutions to the local centers, agencies and incubators. In the last few years, the Republic of Croatia in the last few years has begun to create a favourable entrepreneurial climate and environment that will positively affect the development of new businesses and improving the existing ones. The strategy of tourism development in Croatia, extremely small private hotels and small businesses in tourism should become initiators and proponents of change and improvement of the entire hotel and tourism industry. National Association of Family and Small Hotels (OMH) had 50 members in 2004 – nowadays it has more than 150 members. That association has largely contributed to the fact that new trend in the local tourist industry has been recognized. .<sup>13</sup> (www.omh.hr)

The activity concept of the association OMH is based on high quality services, nurturing authenticity and uniqueness. Hotels are located throughout Croatia, they search for new value that will enrich tourist holidays. It is an independent association of Croatian hotel entrepreneurs which has been created to meet the needs of small and family hotel in Croatia. It aims at improving quality services and creates better business conditions. The aim of Association OMH is to bring together the best of family and small hotels in Croatia, providing guests with an unforgettable experience, offering better business opportunities to its members, giving tourist sector a group that can follow the path of constant improvement of the Croatian tourist product, and providing local communities and the country as a whole with a socially and environmentally responsible partner looking to the future. Association created

<sup>&</sup>lt;sup>11</sup> Geić, S., Menadžment selektivnog turizma, Sveučilište u Splitu, 2010 (i.p)

<sup>&</sup>lt;sup>12</sup> http//en.wikipedia.org (17.06.2009.)

<sup>&</sup>lt;sup>13</sup> http://omh.hr/default.aspx?id=10 (20.01.2009.)

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and launched many activities in the field of market presentations, lobbying, education, consulting and information meant to offer various benefits to their members. Nowadays the Association has 108 hotels and 47 high quality guest houses, villas and rural households situated around Croatia.

We can also point out, Croatian Agency for small and medium-size farms (HAMAG) that its activities involved in encouraging the development of small and medium-size farms through quality programs, raising awareness of the importance of entrepreneurship and corporate social responsibility and development of economy knowledge through the Knowledge Centre, striving for balanced development of the whole economy. Creating a favourable entrepreneurial climate and encourage the development of entrepreneurship is realized through: guarantees for business loans, grant funding, training and Development Consultants' Network for Small Business...

Swot analysis of small hotel business in Croatia gives the following elements (table 1)

Table 1	Swot analysis	of small hotel	business in Croatia
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ADVANTAGES	DISADVANTAGES				
<ul> <li>Micro location of the object</li> <li>Specialties and specialization</li> <li>High quality service/ product</li> <li>Quality staff</li> <li>Tradition, hospitality, family gathering</li> <li>Strong strategy</li> </ul>	<ul> <li>Lack of support for small entrepreneurship</li> <li>Lack of quality tourist destination</li> <li>Lack of quality staff</li> <li>Big business expenses</li> <li>Loan duties (loans, investments)</li> <li>Lack of good promotion channels and positioning on the market</li> <li>Lack of accommodation capacities</li> </ul>				
POSSIBILITIES	THREATS				
<ul> <li>Creating new markets</li> <li>New tourist products and contents</li> <li>Selective forms of tourism</li> <li>Continuous education of the staff and professional development</li> <li>Possibility of all year round business</li> <li>Evaluation of cultural heritage</li> <li>Partnership</li> <li>Using on line selling possibilities</li> </ul>	<ul> <li>Lack of "destination" value</li> <li>Inadequate infrastructure (roads, walkways, beaches)</li> <li>Overpopulated areas (apartments)</li> <li>Continuous changes and enforcement of new law regulations</li> <li>Pollution</li> </ul>				

Sours: Milohnić, I., Competitive advantages of small hotels: Qualitative approach towards tourist destination improvement (29.1. 2009.)

For small and middle business, particularly in the hotel tourism it is useful to compensate "know-how" that is missing and so highlight their strengths and compensate for the lack of cooperation. Joint procurement, hiring other companies to perform certain tasks (outsourcing), cooperation in the field of distribution, particularly in new markets, joint staff development, cooperation in research, coordination of capacity, are just some of the areas where cooperation is possible networking, Entrepreneurship Education, Governmental and regional policies on entrepreneurship, innovation and R&D.

## 6. Conclusion

Small businesses in tourism and family hotels are representing an important component of the future of Croatian tourism as a fundament national tourist product and goal orientation of development and its positioning on the world tourist market, as confirmed by the development strategy of Croatian tourism. Namely, well-defined marketing hotel products in this category replaces the monotony of mass tourism in the hotel offer according to successfully meet the needs of specific segments of demand.

Entrepreneurship and related innovations in tourism are presenting a spotlight today, because the future socio-economic development can be most effectively realized exactly through tourism in the modern entrepreneurial society. The Entrepreneur who runs a venture in its tourism business plan must fit into the framework of a tourist destination but also cannot resist global changes, yet their product must continually improve and modify the best way in order to adapt and take into consideration the rapidly changing global travel trends, which will make it being recognizable to the tourist market.

Family Hotels in Croatia are the holders of the new trends in tourism. Until a few years ago were barely on the market, while today their economic importance is not negligible, relating to their daily rise. This phenomenon, in the developed tourist countries had been recognized much earlier, and we can say that the hotel industry such countries is based precisely on a small family entrepreneurship with the participation of over 80% of total accommodation capacity, while in Croatia is still only to on 10 % of capacity.

Comparative advantages of this type of hotel industry are obtaining great synergetic effects to the tourism, but also to the overall economy. Apart from opening a significant number of new jobs, family-run hotels engage all local-use of construction companies for their construction, to equipment and food supply. Provide not only seasonal, but year-round employment, and the extension of the tourist season, which is ultimately the goal of Croatian tourism. Relevant factor of Croatian family hotels development, constitutes a successful cooperation of the Association of small family hotels and the Ministry of Tourism, which has, through the vary of incentive programs, shown that Croatia has recognized the potential of small enterprises and especially small family-run hotels and began to treat them as a substantial figure of development. Preliminary named offer is also aligned with current contemporary trends that sequences mass tourism has become the past, and being replaced by an individual tourist approach.

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## Application of Geographic Information Systems Technology in Entrepreneurship Education

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Considering the fact that the general development strategy for the Serbian economy is based on the principles of a market economy, the nucleus of which is the central role of small and medium size enterprises, entrepreneurship education at all school levels is of critical importance for strengthening of the country economic growth. Subject entrepreneurship in the secondary vocational schools has been introduced only in the reformed curricula - profiles. During the course of the subject entrepreneurship students acquire skills of planning, organization, analysis, communication, implementation, evaluation, capacity for teamwork, the ability to act proactively and to react positively to changes and to develop positive attitude toward changes and innovations. This paper presents current state of entrepreneurship education in secondary vocational schools by using Geographic Information Systems (GIS) technology. Research sample is consisted of three student generations, 2007/08, 2008/09, 2009/10, attending reformed vocational education. Results' insight will be available to entrepreneurs i.e. owners of small and medium enterprises in Serbia. The starting point was the assumption that the beneficiaries of entrepreneurship education small and medium enterprises (SMEs) are not informed enough about the human resources which possess entrepreneurial competencies, where are they located – in which districts, cities and municipalities and to which economy sector they belong. The aim of this paper is to improve social partnership between schools and business environment by establishing a two-way communication.

#### **Keywords**

communications, entrepreneurship, Geographic Information Systems, secondary vocational education, small and medium enterprises.

#### 1. Introduction

Current economy requires high level of expertise and competency of the work force, flexibility and adaptability, but also continuing professional development and lifelong learning. General developmental strategy of Serbian economy is based on market economy with a core of the small and medium enterprises. Even 99,8% of the whole economy are micro, small and medium enterprises and entrepreneurial, from which 77,9%, (in private ownership 87,4%), small 18%, medium 3,2% and 1% of the large enterprises [1]. In the period 2005.-2006., municipalities started developing their own economic function more intensively. Actually, they Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 started influencing the faster development of small and medium enterprises and entrepreneurship in their territory with the aim to increase the employment. The orientation of local authorities toward development of modern market economy requires education from the field of entrepreneurship on each school level.

## 2. Entrepreneurship in secondary vocational education

Modernization and development of the system of secondary vocational education is based on principals of social partnership, decentralization, accessibility, openness, program and organizational variety, professionalisation of the teachers' and associates' work, as of outcome orientation [2]. Teaching contents have modular organization whereas modules, specific segments of learning, lead to achievement of clearly defined learning outcomes i.e. to acquirement of vocational competences (knowledge, skills and attitudes). Reformed secondary vocational education is directed to strengthening vocational knowledge and acquiring of key skills necessary to join the world of work and the whole society. Strategy of vocational education development in the Republic of Serbia (Official Gazette, 2007) foresees possibility to acquire business and entrepreneurial skills and knowledge through vocational education and training (VET).

With the reform of secondary VET, the new concept of curriculum has been introduced which, among the others, contains teaching subject entrepreneurship as a novelty. Within this subject students acquire: skills of planning, organizing, analyzing, communicating, realizing and evaluating; abilities for team work; abilities for proactive behaviour and positive reacting to changes; abilities for risk overtaking; positive attitude toward changes and innovation. Pilot teaching curricula have been realized in 56 educational profiles within 13 fields of work. The whole reform of secondary VET has been realized in 176 schools, in 1.176 classes and 20.500 students are included.

Entrepreneurship as a subject represents consistent part of pilot curricula of all educational profiles, except in the profiles in the Economy, law and administration field of work whereas entrepreneurship contents are introduces cross curriculum (integral approach). The objectives of the subject are set as follows [3]:

- development of business and entrepreneurial knowledge, skills and behaviour;
- development of entrepreneurial values and abilities to recognize entrepreneurial opportunities in the local market and to act accordingly;
- development of business and entrepreneurial way of thinking;
- development of consciousness of own knowledge and abilities in further professional orientation;
- development of ability for active job seeking (employment and self-employment);
- development of ability to make a simple business plan of a small firm.

The program of the entrepreneurship subject is organized thematically and based on learning outcomes. Up on the end of defined themes, the student has acquired the outcomes of entrepreneurial knowledge and skills e.g. he/she will be able to [4]:

- explain the significance of motivational factors in entrepreneurship;
- develop marketing strategy for his/her business idea and to present his/her marketing plan;
- collect information needed to lead a successful business;
- compose financial reports in the most simple form (balance-sheet, cash-flow of the enterprises);
- make a simple business plan according to adopted business idea.

The concept of entrepreneurship in VET is new and still not enough explored. Just a few researches indicate on the first effects of the introduction of the subject. Students of the pilot classes compared to their companions from the non-pilot classes, which don't have a subject entrepreneurship, are a step forward when it comes to acknowledgments about what they should do to develop successful enterprise; to whom they could address for help if they have some business idea, in development their own business ideas and explore the employment possibilities in own profession [4]. However, relevant international researches indicate the fact that our students have low ability of application of practical knowledge [5]. Everything mentioned leads to the need to develop a special conceptualization of entrepreneurship in the next period, which would relates to different ages of participants in education and to educational levels (Action plan for implementation of strategy of vocational education development in the Republic of Serbia, for period 2009-2015., 2009).

## 3. Overview of representation of the entrepreneurship education by using GIS

Geographic information system (GIS) is an instrument of a large help for understanding the geo-space and the relations and links which rule within it. All definitions of GIS point out its most important attribute – ability to comply very different data in the new information as a base for decision making in different areas of human acts. It is a complex system which provides collection, analysis, management and presentation of spatial information [6]. The biggest advantage of GIS is a possibility to connect spatial and attributing data by which is provided to use data stored in relational data bases for the need of a spatial analysis. Having in mind the significance of entrepreneurship education, the use of GIS provides not only easer insight in current state of this type of education in secondary vocational schools in Serbia, but also shows a trend that exists in some municipalities.

In 2008. there are reformed educational profiles with the subject entrepreneurship in 70 municipalities, of 189 (with Kosovo), yet in 2009. the number of municipalities with the reformed educational profiles is 80 (Figure 1).





Also, there is a notable number growth of reformed educational profiles by municipalities. If we look at the example of North-Bačka district, in last three years the number of reformed educational profiles in Subotica denotes growth, while in Bačka Topola it stays at the same level (Figure 2).



Figure 2 The number of reformed profiles in three consequent years

In Subotica in 2009. the number of reformed educational profiles increased for 50% in comparison with 2008. Also, the interest of students i.e. the number of pupils which enrolle these profiles, denotes growth. In Subotica in 2008. the number of enrolled students in educational profiles where they acquire entrepreneurial education is 148, and the number increased in 2009. onto 289 (Figure 3).



Figure 3 Number of students in reformed and not-reformed profiles within three consequent years

In Subotica municipality in the year 2007., 168 students are enrolled. They are finishing the school in 2010. and 2011. and they represent potential work force.

Educational profile	Field of work	No. of students
Bank clerk	Economy, law and administration	20
Dry construction fitter	Geodesy and civil	26
Roof-tiller	engineering	30
Technician for furniture design	Forestry and wood	36
Upholster-decorator	processing	
Technician for design of graphic products	Chemistry, non-metals and	26
Technician for graphic preparation	graphic	30
Nutrition technician	Agriculture, food production and processing	18
Operator of mechanic processing	Mechanic engineering and metal processing	18

Table 1 The structure of enrolled students in the municipality of Subotica in 2007.

GIS base contains data about field of work, type of educational profile and number of students (Table 1).

#### 4. Conclusion

The use of GIS, in one hand, gives the possibility to monitor these changes in the time and space and to notice more quickly the trend that exists in some municipalities. In the other hand, it gives the information to the small and medium enterprises, as beneficiaries of entrepreneurial education, where i.e. in which cities and municipalities their future potential personnel goes to school in which they acquire entrepreneurial competences.

Cooperation between schools and enterprises represents one of the ways for development of social partnership. As it is the one of the strategic areas of secondary vocational education reform in Serbia, it needs to be improved. This improvement could be done only if the improvement happens in the two-way communications and dialogue between secondary vocational schools and enterprises, as the enterprises are beneficiaries of entrepreneurial education. In the same time, this should become the first issue on the list of the school priorities.

Necessity of this improvement represents the essential need with the tendency to become long-term sustainable model. Few of the objectives of the partnership defined in this way are:

- organization and joint efforts with the purpose of gaining wider public;
- development and improvement of the program of entrepreneurial education.

Strengthened role of entrepreneurs, as a social partners in educational system and their active involvement in the creation of the entrepreneurial education program, will contribute to harmonization of the needs and demands in the employment system. Contemporary teaching methods based on the case studies' analysis, simulation of economy surrounding, establishment of social partnership with the entrepreneurs, but also based on their active involvement in the practical teaching of students in secondary vocational schools,

undoubtedly will contribute to more qualitative entrepreneurial education and its implementation in practice.

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# From General Support to More Sophisticated Kind of SME Support

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Importance of SMEs is emphasized in the condition of World Economic Crisis, as an agent of innovation and competition improvement. During transition period Serbia improved overall climate for SME development. It has succeed to define its strategy and policy for SME support and, more important, to implement them. Number of SME established every year, from 2001 on, became considerable, the share of number of SME in total number of companies, total employment and value added became dominant.

However, it is important to bear in mind that Serbia is facing very sensitive phase of SME development and adequate supportive policy. Namely, it is essentially important to move from the period of extensive into intensive SME growth. It means that the role of innovative, knowledge based and fast growing small and medium sized companies is becoming predominant throw time.

Experience of other transitory economies pointed out that new phase of Serbian SME supportive policies has to stress entrance of companies which are innovative and knowledge based so - called gazelles.

Those are the reasons why is important to envisage how to create and realize a switch from general SME support to more sophisticated kind of support, in order to make Serbian economy more competitive globally. The aim of the proposed paper is threefold: firstly, to examine achievements of SME support in Serbia during transition period, secondly, to point out experience of other transitory countries in attempt to overcome expansive SME development and thirdly, to envisage the main points of an intensive policy support.

#### Keywords:

economic crisis, gazelles, SME, transition

#### Introduction

In the period of transition, 2000-2009, Serbia has succeeded to create and introduce strategy and policy supportive to SME development. As a result more favorable environment for establishment of small companies and their growth existed and number of new companies starting every year, absorbing great deal of former employees of already closed companies. Facing World economic crisis Serbian economy is suffering, including SME sector. In spite of increasing financial and other support in 2009 small scale business results were deteriorating. Considering those companies as agents of innovation and changes, it is right time to change attitude of state support into more intensive one. It means supporting knowledge based and fast growing companies. It is important to bear in mind that this policy should have basis in Europe 2020 Agenda.

## **1. Serbian SME Supportive Policy and Its Outcomes**

Transition of Serbian economy to fully market "role of game"during current decade produced, amogn others, macro economic stability, legal and institutional changes which business conditions made better of, resulting in investment growth and economic and social development. Until 2008 GDP growth was more than 5% on average.

From governmental to local level a great deal of measures and activities were introduced aiming to support entrepreneurship:

- Overall business climate was improved,
- Institutions for SME support were established,
- Legal framework for easier business was created,
- Tax and custom incentives were introduced and
- Financial support was realized.

World Bank and International Financial Corporation [1] labeled Serbia as a leader in market reforms in 2005, when its rank was improved from 95<sup>th</sup> to 68<sup>th</sup> position. It was result of realization of SME Development Strategy 2003-2008[2]. In practice, business climate was considerably improved, as time for enterprise establishment was shorten to 7 days, for registration to 13 days, for license issuing to 279 days, for tax payments to 279 hours per year, for custom declaration of import to 12 days and import to 14 days. Investment climate became better, as well: index of credit reporting is 6 and index preservation 5.3. Company liquidation is easier then before, as 2.7 years is necessary for formalities and 635 days for court disputes. Serbia belongs to countries with fast reform and is well positioned in comparison to other neighboring countries.

As a part of overall market reforms in the period 2000-2009 overall climate and conditions for SME development were considerably improved. The main result was increasing number of new small enterprises and shops, which absorbed a number of unemployed people. In the period under consideration number of SME was increasing constantly and in 2008 reached 303 thousand of legal entities, with more than 7.3 thousand new small companies and shops. It is important to note the decreasing trend of establishment of new companies from 22% in 2006 to 18% in 2008, while rate of closing is increasing at the same time (from 10% to 13%, respectively). SME, as one could expect, were the most important source of creating new jobs. In the period 2004-08 only number of working places increased by 24.9% (more than 187 employees) absorbing decreasing number of employees in closing big business (26.3% or 164 thousand workers).

In the period 2004-2008 segment of small companies became important factor of Serbian economy in market reforms and in revitalization. In 2008 SME was created 35% of GDP, 43.2% in total employment according to data form Agency for economic registries. The share of SME sector was 66.6% in total turnover, 59.1% of total added value and 58.7% in total profit. More important, SME share in total foreign trade was 45.5% of total export and 59.3% of total Serbian import.

There is constant trend of small companies to operate in a few industries (concentration), like trade and processing industry (3/4) and in two well developed regions only (Belgrade and South Bačka region).

SME sector is above average according to cost competitiveness, as it has less then average working costs and working costs per hour. However, if consider average costs per unit of product (measured by costs of wages/added value) then one can see competition worsening.

A Comparative analysis between SME in Serbia and EU [3] pointed out that Serbia is on EU average according to: their share in total number of companies, in total employment, in GDP and total turnover. However, Serbian SME is well below average considering turnover per employee, GDP per employee and profit per employee. Indicators of investment are well

bellow EU average, as well, counting that investment per employee in Serbian SME was 4.100€(EU 7.400€) and investment per company 12.200€ (EU 31.700€).

Considering 2008, as the last year before World economic crisis, Serbia improved supportive policy definition and implementation, mainly, and in process of implementation of EU charter for SME Serbia made biggest step in Western Balkan. In Report "Policy Index of SME" [4] it was emphasized that Serbia from the policy definition and goals formulating very fast went into the phase of policy implementation. Serbia, also in 2008, mainly improved financial support of SME. Through Program of start up lending 2.158 credit lines were realized in amount of 35 million  $\in$ . National office for employment employed more than 22 thousand by financial support of 25 million  $\in$ . The Program of new cluster succeed to establish 10 new clusters. Ten SME incubators are active, 5 are registered only and 3 are in phase of registration. The competition for the best technological innovation was started.

## 2. SMEs are Suffering in Crisis

A negative expectation of entrepreneurs regarding expansion of Global economic crisis produced in 2009 tendency of slowing down establishment of new and, at the same time, considerable increase in number of closed companies and shops. It is important to note that financial support on different level and from different sources to Serbian SME during the last year increased.

Slow down is seen as number of SME and shops in 2009 increased by 9.337 (for 45% less then in 2008) – 6.417 companies and 2.920 shops (for 21.6% and 66.8% less, respectively, in comparison to year before). In 2009 in Serbia 44 SME or shops on each 1thousand citizens operated (1 more than in 2008) and 7 subjects of new established was less than year before.

Table 1         Entrepreneurial Activity 2009								
	TEA	TEA	TEA TEA Index Total Rate % TEA Index					
	Beginners	New	Index	Existed	rate	of	TEA	TEA
		entrep.		entr.	of	Break	need	avail.
					owners			
BiH	3,1	1,3	4,4	3,9	8,3	3,1	39	20
Croatia	3,5	2,2	5,6	4,8	10,4	3,9	37	39
Hungary	5,4	3,7	9,1	6,7	15,8	3,2	24	45
Romania	2,8	2,3	5,0	3,4	8,4	3,6	34	31
Slovenia	3,2	2,1	5,4	5,6	11,0	1,3	10	69
Serbia								
2009	2,2	2,8	4,9	10,1	15,0	1,9	41	46
2008	4,0	3,6	7,6	9,3	16,9	3,7	-	-
2007	4,8	4,0	8,6	5,3	13,9	-	-	28

Source: Global Entrepreneurship Monitor

TEA index (measurement of early phase of entrepreneurial activity)[5] for Serbia in 2009 was 4.9<sup>1</sup>, which pointed worsening climate for starting business (8.6). Number of those who are starting business is decreasing (indicator TEA beginners from 4.8 to 2.2) and new entrepreneurs, as well (indicator TEA new entrepreneurs from 4.0 to 2.8). Consequently GDP growth and new working places were limited. The share of mature entrepreneurs increased (the share of existed entrepreneurs increased from 5.3 to 10.1), which points that measures aiming better climate for fast growth companies and so - called gazelles are

desirable and measures for start up, as well. Index of motivation increased (from 29% to 46% in 2009), which means that there are more those entrepreneurs who saw his own chance, but at the same time number of potential entrepreneurs decreased.

Economic crisis perpetuated disadvantages for entrepreneurship: weak and decreasing foreign and domestic demand, narrowing investment opportunities, increasing risks and costs and fear of failures. TEA index – measurement of early phase of entrepreneurial process – for Serbia in 2009 was 4,9(almost 5 persons among 100 elder people were entrepreneurial active) – points worsening overall entrepreneurial climate in 2009.

Mutual relations of partial rate of early entrepreneurial activity (motivation Index 1,12) pointed firstly, that Serbian entrepreneurship is developing more on the basis of chances seen (2,25), then as an alternative to secure existence (2,01). This index is lower then in other European countries, except Romania and B&H. Secondly, death index 0,79 pointed that number of beginners was smaller then number of new entrepreneurs, which succeed to run business more than 42 months. Thirdly, sustainability index of 3,61 means that each 36 existed entrepreneurs is related to 10 new entrepreneurs who run business less than 4 years. Fourthly, stability index (2,06) points that each 20 existed entrepreneurs run business more than 4 years are related to 10 beginners and new entrepreneurs. At the same time it points stagnation trend in new company establishment, and more important, more unfavorable than in other countries under consideration.

Those unfavorable figures were registered in spite of increasing financial support to SME. From public sources in 2009 was intervened with total 29.9 bill RSD (318.8 mil €), of which from Republican Budget 113 mil €. Financial SME support from foreign sources, like Fund revolving credit, APEX Global credit II and Italian Government credit, was in 2009 realized with 50.8 mill €.

The main finding of WB Report on business climate [6] is that basic indicators were unchanged in 2009. In other words there were no improvements in business climate strong enough to absorb negative results of transition and economic crisis. Although overall position was improved (from 90<sup>th</sup> to 88<sup>th</sup> position) comparative analysis with neighboring countries pointed out slowdown in market reform in Serbia. The main improvement Serbia made regarding company foundation (35 positions improvement) and credit lending procedure (8 positions improvement).

## 3. Toward More Intensive Policy Support

Policy supportive to SME assumes that small and medium companies are a key for sustainable development aiming to improve business environment for SME and shops and to encourage entrepreneurship. The main target of supportive policy is to dismantle limits for growth and development of those companies. At the same time all measures are introduced in order to improve efficiency of those enterprises during their whole life.

During the previous phase of transition considering Serbian SME supportive policy start up (companies and persons) and their financing were emphasized. The priority was defined considering the goal as follows: in the first phase of transition priority is to establish critical number of new companies as the basis for growth and development of the national economy. By numbers it means: make room for, at least, 10 thousand new companies and 20-30 thousand new shops, which produce 50 new working places.

A comparative analysis pointed out low level of SME sector in Serbia in comparison to EU-27, especially regarding productivity. So, *the first priority of policy supportive to SME in the next phase is competitiveness support.* It would be realized threw:

• Economic structure development in line with EU and compatible to UE structure, which means increasing activities with value added above average,

- Improvement in competitive abilities of companies, by closing discrepancy to EU average in gross value added per employee,
- More balanced regional development.

Competitiveness support policies include horizontal measures for securing increase in productivity, competitive abilities on company level, internationalization and investing and improvement in mutual cooperation of companies and clusters. Government has the role of a catalyst, initiating knowledge transfer to companies.

In the next medium term period, entering the second phase of transition to developed market economy, it is important to continue with measures for entrepreneurship promotion and development of supportive business environment, especially for start up and SME development and investment. Additionally, measures would be introduced for improvement in companies' competitive abilities, in order to operate more successful on the global market, and for technological improvement of products and services. Among others it is important to strengthen and develop linkages between, on one side, educational and research institutions and companies, on the other side.

Programs for improvement competitiveness are especially important and would be oriented to:

- Support investing in research and development and innovation,
- Support companies internationalization,
- Introduce strategy for productivity increase in companies,
- Support cooperation and strengthen linkages between companies and developing clusters.

The second priority is support to dynamic and fast growing companies, especially the most dynamic, so - called gazelles. In recent period those companies became subject of interest and economic policy of members of European Union and OECD. While big enterprises dominate, due to sources they are controlling, entrepreneurship, research and development and new working places are development priorities in which small and new firms play important role. A small number of dynamic companies, at the same time, create far more working places then others.

During last two decades number of investigation proved that net increase in employment is result of development of dynamic companies[7]. Those companies are not concentrated in certain industry, but rather are dispersed within whole economy. They are research and development oriented, innovative and younger then average company. So, developed economies support especially those dynamic enterprises in order to make their economies more dynamic and to open new working chances for their citizens.

The analysis of Serbian gazelles in the period 2003-2007[8] covered 532 dynamic companies, of which 53 the most dynamic, although it has to bear in mind that Serbian dynamic entrepreneurship is not fully in line with European standards according to economic strength, innovation and competitiveness. The main characteristic of those companies, which employed more than 43 thousand workers, is vitality, as they survived and developed in spite of transition problems and increasing foreign competition.

The share of dynamic companies in total number of companies in Serbia was 0.6% only in the period under consideration. It is important to note that number of employees within those enterprises was dabbled from 2003 to 2007 (more than 22 thousand new working places).

Rate of growth of their turnover in real terms was above average (117% in comparison to 54% respectively). So, they increase their share in total turnover from 3.2% to 4.5% at the same time.

All business indices during the period were more than dabbled, while income increased more than three times. During the period under investigation dynamic companies were profitable, while Serbian economy as whole in 2006 and 2007, only.

		2003		2007			
		Dynamic companies			ompanies		
	Economy		Share in total %	Economy		Share in total %	
Number of companies	68.882	532	0,8	84.563	532	0,6	
Numer of employees	1.233.376	21.144	1,7	1.108.576	43.311	3,9	
Total revenues Million RSD	2.397.170	76.287	3,2	5.698.525	255.310	4,5	
Business revenues Million RSD	2.169.650	74.047	3,4	5.302.313	247.039	4,7	
Capital mill RSD	1.719.681	16.870	1,0	3.818.871	68.310	1,8	
Profit mill RSD	70.979	3.857	5,4	328.506	18.835	5,7	

Table 2 Main Business indicator of Serbian dynamic companies 2003-2007

Total revenues of dynamic companies increased by 116.8% and number of employees 104.8% (whole economy at the same time 51.9% and -12.1%, respectively). Considering concentration they are mainly oriented toward processing industry (207 companies), trade (145 companies) and construction (79).

In the period 2003 -2007 the most dynamic 53 companies – gazelles were also investigated. They were the most dynamic in employment and revenues mainly due to: constant investment into research and development and its implementation, into training, presentation at fairs, education of employees and improvement of quality of product and services they offered.

<b>Table 3</b> Main Business indicators of Serbian gazelles	(Constant prices	2007-thousand RSD
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	Ecor	nomy	Gazelles		
	2003	2007	2003	2007	
Capital	2.654.949.550	3.818.871.003	2.411.759	11.285.057	
Total revenues	3.700.899.252	5.698.525.044	17.822.314	58.289.234	
Business revenues	3.349.639.439	5.302.313.019	17.182.743	55.943.736	
Profit	109.581.633	328.505.548	710.383	4.147.251	
Real growth )					
Capital	100,0	143,8	100	467,9	
Total revenues	100,0	154,0	100	327,1	
Business revenues	100,0	158,3	100	325,6	
Profit	100,0	299,8	100	583,8	

According to their development one could see that while they were in 2003 exclusively small and medium scale (37 and 16 respectively) in 2007 they were increasing (6 small, 32 medium and 15 big companies). In the period they opened more than 8 thousand new working places. They are still of minor importance for the while national economy, considering their share of 0.1% in total number of companies, 1% in total employment, 0.3% in total capital, 1% in total revenues and 1.3 in total income. They are really most dynamic if consider main business indices: capital increased 4.7 times (whole economy by 44%), total revenues 3.3 times (54% total economy) and income 5.8 times (Serbian economy 3 times). Those companies are concentrated in manufacturing industry (18) and trade (14). They are also concentrated regionally – in Belgrade 26 gazelles operate.

Serbian government should support dynamic enterprises and gazelles especially. Until now policy supportive to entrepreneurship was based on improvement of overall business climate in order to improve overall level of business. Institutional supportive network is almost finished and importance of SME for development and economy is widely recognized. So, it is time to recognize dynamic companies and introduce more specific measures and policies.

Strategy for development of competitive and innovative small and medium scale companies 2008-2013 was defined. Its implementation should concentrate measures and activities to those specific companies with potential for fast growth and export expansion. Priorities for dynamic companies and gazelles support are:

- Legal framework reform, with an aim to harmonize laws in line with EU, to minimize administrative procedures and requirements;
- Innovation support, with an aim to define system of stimulative measures for research and development and innovative activities and their implementation within companies;
- Functional education, with goal to increase overall level of knowledge of managers and employees improving bought formal and especially informal education system;
- Financing improvement, with aim to disperse institutional framework for micro financing, investment funds and venture capital funds;
- Closing institutional infrastructure, in order to develop further institutional network covering whole territory;
- Opening to World market, with goal to improve competitive strength of dynamic companies and gazelles on the global market.

#### 4. Conclusion

Serbia has started market reforms as the last among central and eastern European countries, but in short period of time has made very good improvement in overall business climate and supportive policies for small and medium scale companies and entrepreneurship. As a result a number of new SME increased every year absorbing surpluses of employees from companies in restructuring process. Serbian economy suffered very much from current economic crisis, as other transitory economies and SME were not excluded from negative consequences. Their business results were deteriorating and number of new companies deceased as overall business climate is not so favorable any more. Considering that dynamic SME and most dynamic one – gazelles, can contribute a lot to economic recovery and, at the same time, that the first phase of SME support is almost finished, it is right time to introduce more intensive policy, aiming to support especially those dynamic SME. Some beginning steps were made, but point is to implement it. As a future candidate for EU membership for Serbia is important to note that this shift should be in line with Europe 2020 Agenda [9], aiming to break through crisis and prepare economy for development in the next decade.

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# Small- and medium-sized enterprises as economic entities of medical tourism

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In studies on importance and influence of services on economy, that have been carried out in recent years, influence of medical and specialized tourism has been particularly emphasized. It has been estimated that this type of tourism would become more important with respect to total supply of service sector. The Balkans is a region of ideal climate and curative thermal springs for development of medical tourism, as for accompanying economic activities (agriculture, craftsmanship, well as handicrafts). Due to transition or recession, number of the unemployed is rising. Old people, but also a growing number of young people, women and skilled and educated workforce, see development of small- and medium-sized enterprises as a solution. The goal is to have SMEs which directly or indirectly participate in tourism development. Organizing a cluster in this area should contribute to defining position of The Republic of Serbia. In this context, domestic and foreign medical institutions, local communities, non-governmental organizations, small- and medium-sized eneterprises should cooperate. The effects of more active involvement of all participants could then serve as a stimulus for action.

#### Key words

Medical tourism, opportunity cost, business connection of enterprises, small- and mediumsized enterprises, clusters

#### Introduction

Tourism stimulates development of national economies and it is a significant factor of including national economy in global economic activities. There are numerous problems in the area of tourism in Serbia, which hinder fulfillment of strategic goals. Former approach to development of medical tourism was not whole and it did not aim at accomplishing full economic development. It is possible to eliminate traditionalism and to pave the way for longterm development and transition of the tourism sector by optimal use of natural resources and by work based on acquired prerequisites and technological possibilities. Due to high degree of adaptability to changes of business environment, the focus was put on the importance of SMEs and enterpreneurship, as a subject of development of medical tourism. The modern marketing thought enables creation of new product, new service and new market in conditions of production reduction, increase of unemployment, fall of economic efficiency, illiquidity and overindebtedness, difficult product and service placement and decrease of solvent domestic demand. Countries and markets that were first to acknowledge the importance of new, creative thinking are leading centers of medical tourism today.

Spas are not just mere objects in which public health is maintained. The level of modernization of a society, its respect and use of its own potential and its ability to participate

in the competitive world market can be determined according to the example of spa development. As competitiveness of offer in medical tourism is increasing, profit is being generated by the countries which are investing in scientific development of this type of tourism, in inventiveness and development of accompanying cultural offer, modernization of accompanying facilities and infrastructure, as well as in media promotion and in creating a unique image of their spas and healing resorts. Potential of economic growth of regions and cities in transition countries lies in the area of medical tourism, i.e. in tourism specialized in recreation, leisure and improvement of body and spirit. In this way tourism, as an important economic sector of a transition country, can represent one of key segments of economic development of middle class. This social class has almost disappeared, due to wars, international sanctions, brain drain and bad economic situation. Tourism is necessary so as to give a new lease of life to development of villages and provinces, whose economy and culture had been neglected for a long time.<sup>1</sup>

## 1. Medical tourism potential in the world and in Serbia

Accelarated industrialization and pace of life create new needs, desires and trends. In order to meet new lifestyle demands, tourism centers and health centers are developing a new approach to health. Today, apart from tourist service, there is a possibility of providing and carrying out serious medical interventions. In this way, provision of a certain health service becomes a "useful experienc". Using services of medical tourism abroad and outflow of financial assets into health insurance funds of other countries is a subject of serious economic analyses. Data indicates that use of services of medical tourism increased in the year 2009 by 100% in comparison to 2008. There are predictions that use of services of medical tourism will averagely increase at annual rate of 29,86% in the period lasting until 2017. It is estimated that the value of demand for health services will amount to 15,75 million dollars.

Table 1: Demand of patients of medical tourism (millions of USD) and opportunity cost (billions of USD)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Patients	1,50	3,00	6,00	7,50	9,38	10,78	12,39	13,64	15,00	15,75
Growth rate	100	100	25	25	15	15	10	10	5	
%										
Spending	2,1	4,4	9,0	13,9	21,4	27,6	34,1	40,4	45,7	49,5
(US patients)										
Opportunity	15,9	32,8	59,2	91,5	117,8	145,5	172,4	195,3	211,2	228,5
cost										
(US patients)										

Source: Deloitte, Medical Tourism: Consumers in Search of Value, 2008

The projected growth of service demand of medical tourism will be followed by rise of opportunity cost, i.e. lost earnings or benefits. Data indicates that American patients spent 2,1 billion USD on medical tourism services in 2008. Opportunity cost amounted to 15,9 billions in 2008. It is estimated that opportunity cost will averagely increase at annual rate of 34,46% until 2017, amounting to 228,5 billions USD in 2017. Consumers of medical tourism services from the USA and other highly developed countries primarily resort to this type of service because of price and speed of service provision. Consumers of medical tourism services from less developed countries also make a decision to use services on the basis of

<sup>&</sup>lt;sup>1</sup> Šuljagić, S., Natural and cultural resources as a factor of modernization processes, Political review no. 3/2005, pg. 655-678

price, although high level of expertise and competence of health personnel and degree of other services plays a significantly more important part in this case.

Graph 1: Projection of increase in demand for medical tourism services, value of opportunity cost and foreign exchange outflow due to export tourism for the period 2007-2017



Consumers of medical tourism services travel to Third World countries to receive health services as a result of lower prices and faster service provision there. The second group of medical tourists consists of consumers from less developed, i.e. poorer countres. Their motives are different. This group of tourists is on the search for high quality health services and they usually aim at European countries. Decisive factors of service consumers belong to the category of services in the domain of health, hotel and other services

Medical tourism offer in Serbia branches in two directions. The first direction is the traditional offer of medical spas and the second direction is the offer of health services (mostly in the domain of dental medicine and plastic surgery) in several bigger cities in Serbia. Specific features of Serbia are high qualified treatment techniques that cannot be found elsewhere. Basic elements of spa tourism are quality medical personnel, well equipped spas, natural healing factors, such as fresh air and pleasant climate, as well as very moderate service prices. Out of 150 thermal springs only 59 are in use in Serbia today. Exploitation of natural, curative and water resources in Serbia is below 5%, with average stay of 6,46 days in a spa tourism destinations and wellness centers. Most consumers of spa services have secondary education (54%), while consumers with higher education comprise only 12% of all consumers.<sup>1</sup>

Users of health services are a specific category of tourists. They are primarily motivated by a specific medical intervention, while a significant number of consumers prefers relaxation and health maintenance. General spatial organization, political and personal security and hospitality are important to consumers. Offer of related content is also significant for consumers. Health resorts and centers must broaden their offer in an original way. Some countries completed their offer in an innovative manner. In some places the offer was broadened to hosting of expert meeting, seminars and promotions of companies or products in the domains of medicine and cosmetics. Other countries utilized their natural resources (geothermal springs, curative-medical waters, medicinal plants and medicinal mud) and promoted health resorts and healthy lifestyle in a well-designed media campaign. Set of offers of Serbian health centers should also connect natural resources, agricultural production, craftsmanship, handicrafts and so on. Using experiences of developed countries in the region of Serbia and the Balkans would imply nurturing innovative, original ethno style. A link with spirituality and promotion of historic-cultural monuments would complete the offer.

<sup>1</sup> Collection of papers from the Spa Conference in Vrnjacka banja spa, 25<sup>th</sup>-26<sup>th</sup> May, 2009 Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 Small and medium-sized enterprises do business in medical tourism sector. SMEs are established and conduct business in area of production and even significantly more in sectors of retail, wholesale and services. They are chracterized by a high degree of flexibility and low fixed costs. Innovativeness, creativity and entrepreneur initiative is of special importance here. A high degree of motivation of employees in small- and medium-sized enterprises is directly linked to structure of employees. Family business is dominant in the structure, i.e. property over capacities. Business transactions of SMEs are of special importance for Serbia, a country undergoing a process of transition and technological development. Profitable business and cooperation with large enterprises, tourist complexes and health centers open up new employment opportunities. SMEs contribute to the increase of employment on a higher level and in long-term period, so they provide a significant portion of all employees. Strategic importance of SMEs lies in the possibility of absorbing employees that have lost their jobs in the process of market restructuring. Many SMEs hire highly educated and trained workers, which stresses their importance. In conditions of high unemployment, it of particular significance to contribute to rural development by actively including SMEs in development of medical tourism and by hiring workers from the local area.

Enterprise organization and business activities based on scientific principle with a high degree of specialization of work provide a great power of adaptation to market demands. Transfer of knowledge and technology, together with using experience of leading countries of medical tourism as model, could significantly contribute to increase in work productivity. Apart from independent business activities of SMEs, long-term horizontal relationships are also possible. Horizontal connection of small- and medium-sized enterprises contributes to increase in their efficiency (to a large extent due to ability to accept innovations), because increase of income and number of employees on the basis of demand growth in one sector affects growth and new investments in other sectors of rural economy. This also applies to effects of connecting enterprises from the same production chain. The possibility of transfering additional value of one enterprise to other enterprises is not utilized sufficiently in the rural areas of Serbia. As a result of connections between enterprises in rural and urban areas and easier approach to financial assets, rural development of concrete areas is also increasing.<sup>1</sup>

Optimal use of health and tourism resources can be achieved with development of smalland medium-sized enterprises. Results of business of SMEs could be improved by business connections with domestic and foreign tourist agencies, insurance companies and health, pension and disability funds.

Role of SMEs in health tourism belongs to the domain of production and services. The following services belong here:

- Hotel accommodation and private accommodation
- Production of prescribed and specific food
- Production of curative plants and auxiliary curative remedies
- Production of souvenirs
- Translation services
- Internet and mobile telephony services
- Services of market research and marketing
- Services of organizing and hosting of conferences, seminars and symposia in centers
- Services of organizing short sightseeings of cultural and historical monuments
- Services of local transport and transport to airports and health centers
- Services of facial treatment designed for skin's special needs

ICEIRD 2010

<sup>&</sup>lt;sup>1</sup> Đekić, S., Small and medium-sized enterprises as business subjects in food production, no. 4/2005, pg. 49-56 Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development

- Services of circulation of medicines (safe medicines and parallel to foreign medicines)
- Services of vehicle rental
- Organizing art and music events in centers
- Organizing and hosting expert counseling on proper nutrition
- A set of spa services etc.

Activities of SMEs are divided into several phases; they encompass production, processing and circulation. Role of every local participant should be designed according to his/her potential. Raising awareness of the necessity of partner relationship is of particular importance.

## 3. SME development trends

The importance of SME development in the process of transition of our society was emphasized in the strategy for SME development. The goals included in the strategy for development of SMEs and entrepreneurship are high quality provision of existing services, good knowledge of modern demand flows, boost of market share and general increase of market efficiency. Within the strategy for SME development, tourism was identified as a sector capable of stimulating economic development, increasing employment and foreignexchange revenue.

Tangible contribution to development of SMEs is reflected in meeting concrete demands and interests of SMEs and strengthening institutional support on all levels. Regional agencies, centers and offices are pillars of creation of new business environment and a series of operating programs. Support programs of SME development belong to the following domains: introducing quality system; strengthening links between education, scientific and research system, and SME sector; education and provision of advisory services; marketing and PR activities.

Low competitiveness of domestic enterprises, of their products and services, is one of the main problems of SME sector. Improvement of unfavorable position of medical tourism in Serbia should start with privatization of economic entities and with bringing in legal and sub-legal acts of high quality, which would define the role of SMEs in the sphere of medical tourism. Introduction of ISO standards is important for setting up a quality system on domestic level, while the international healthcare accreditation guarantees to consumers quality of service equal to that of renowned world centers. 120 hospitals from all around the world were accredited in 2007. Neither a single private or public medical institution, nor an enterprise for provision of services in the area of medical tourism was accredited in Serbia.

It is necessary to introduce medical and non-medical education of the employees through the programs of training and occupational retraining of staff. This implies opening vocational school, or organizing courses and seminars in the domain of medicine, tourism, catering industry, foreign languages etc. In India, the leading country of medical tourism, 240 medical high schools were founded. Business activities of agencies also include marketing and PR activities. Medical tourism marketing should start with identifying target groups. Guests or patients from Scandinavia should rank first. They do not have developed spa treatments and prices of health services are very high. During promotion, emphasis needs to be placed on medicine as the basis of medical tourism. Partnership with international associations and promotion activities at international fairs and specialized domestic fair events are very important. In order to promote medical tourism, there is also a need to make a medical tourism travel guide. Some countries undertake actions in the domain of foreign policy to improve medical tourism. Changes in visa regime also reflect the adaptation of countries to needs of medical tourism service users.

Acquiring financial assets for SME sector is another, separate problem. Many activities have been undertaken, so as to facilitate approach of SME sector to sources of capital. Domestic banks lack experience in granting credits for SME sector. The problem should be solved in the following period by establishing private investment funds and through activities of Guarantee Fund and donor help. Investments in medical tourism imply serious investments in building a local transport and utility infrastructure and in building modern centers. Spa investments amounted to 162 million dinars (RSD) in 2007, and in 2008 they totaled 98 million dinars and additional 40,5 million dinars of investments in spa infrastructure. It is necessary to find new mechanisms for facilitating private investments flow in SMEs.

## 4. CONCLUSION

Three economic potentials - economy, tourism and SMEs need to develop harmoniously, coherently, to complement one another and to receive full support. It is necessary to reach coordination on all levels, including universities, non-governmental organization, agencies, banking, health care system and other institutions. SMEs should then design a strategy that would enable them market survival, together with fulfilling economic goals of business. As a result of profitable investments placement and self-employment promotion, SMEs can stimulate employment and thus satisfy increasing needs of medical tourism users.

With help of governmental and non-governmental bodies, SMEs should be activated and potential, knowledge and existing experiences utilized. Serbia has necessary infrastructure, highly specialized staff and effective treatment techniques. Medical tourism is at the same time a new concept and modernization process of society and economy. The number of medical services users shows the tendency of growth. It is necessary to make the most of innovative ideas and SME management, which is ready to vigorously enter medical tourism offer.

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## Towards Investigation of Logistics Information Systems in Former Yugoslavian Republic of Macedonia (FYROM) Organizations: Present Status and Future Patterns

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This study aims to explore the current status and future patterns of Logistics Information Systems (LIS) of organizations in FYROM. Basically the aim and objectives of this research are threefold: 1) To identify the major challenges and developments of Logistics Information Systems by organizations' in FYROM, 2) To assess the current state and future policies of LIS 3) To clarify the need of LIS efficiency and effectiveness to organizations strategies. Grounded methodology is adopted in order to analyze the data collected as well as other sources of information. However, the questionnaire used in this research was adopted from the study developed by Ketikidis et al [2] but again changes were incorporated. The data collected from 65 companies are analyzed by the employment of descriptive statistics by utilizing 'Statistical Package for Social Sciences' (SPSS) software in order to test the collected data. The findings, nevertheless recommend that organizations face common challenges in general, majority of the respondents state that they are emphasizing more into closer partnership with suppliers and Just In Time (JIT) supply rather than concentrating on customer service. Thus, findings suggest that companies in FYROM are not ready yet to play an important role in the South-East European supply chains or in global supply chains. The present obstacles that embrace the abilities of developing relationships with the forward links, weak organizational strategic planning and low level of infrastructure as well as low level of Logistics and Supply Chains Management education are the main drawbacks for this country. Indeed changing managerial mentalities within these companies is gradually progressing and in the future it is expected for better Logistics and Supply Chain knowledge.

#### Keywords

FYROM, Logistics Information Systems, Organizations, Supply Chain, Information Sharing

#### 1. Literature Review

In today's business environment a good starting point of understanding the right pattern of developing logistics concepts and strategic alliances emphasizes on appreciating the interorganizational technology adoption decisions. The contemporary notion of global economy is to stimulate the demand for the usage of new systems, technologies, tools & techniques, methodologies and other frameworks in organizations for Logistics Information Systems (LIS). Organizations extend their nodes and links continually, therefore it is stated that the competition is run through supply chain that organizations do adopt rather than the execution of their generic strategies [1].

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The emergent of LIS provides organizations with an advantages to be more dynamic to manage the collaboration and the relationship with the suppliers, suppliers' supplier, customers and even in many cases collaboration with the competitors, sharing information and knowledge offers the chance to develop a collaborative logistics and supply chain strategies in order to break the asymmetric barriers of the markets or of a particular industry. Yet, developing and sustaining such logistics strategies in organizations located in FYROM is very difficult, but this does not mean that is not possible.

However, Gunasekaran et al [3] note that logistics function incorporates the smooth flow of materials, products and information throughout the organizations supply chain that must be supported by Information Systems (IS). The excess of literature regarding Material Resource Planning (MRP) [4], Manufacturing Resource Planning (MRP II) [5, 6], Enterprise Resource Planning (ERP) [9], Extended Enterprise Resource Planning (ERP II) [10], Supplier Relationship Management (SRM) [9], Customer Relationship Management (CRM) [7], many more IS are respected which aim to improve the state of logistics performance. On the other hand, advanced information technologies have been recently applied to manufacturing, services, logistics providers and retail sector. The main distinguished advanced technologies are Global Positioning Satellites (GPS) [10], Radio Frequency Identifications (RFID) [11], Wireless and mobile technology [10]. The ability to trace and track the products throughout the supply chain process with an increased effectiveness and efficiency in the information processing and security as well as improved control of the suppliers and customer relationship is known to work properly in the developed countries with high rate of infrastructure in place [4].

According to Ketikidis et al [2] the lack of information sharing is noted to be the main bottleneck for maximizing the organizations profit. Thus, different LIS and technologies have been adopted to manage accurately their logistics operation. Certainly adopting LIS could provide an organization a competitive advantage in order to differentiate in the industry it competes.

#### **1.1 Vital issues of Information sharing in the Logistics Information** *Management*

There is no doubt that information sharing is a prerequisite for operation of the logistics success. The crucial issues of Information Technologies (IT) in the logistics are facts of reducing the costs, provide strategic planning approaches. Therefore, information must be available to all organizations in their LIS and other business processes should be in a way structured so they make use of it whenever and wherever needed [14, 15, 16].

Yet, it must be mentioned that the use of IT, networks e-business are not alone a sufficient to provide benefits sharing information leads to improvements and to better coordination of activates. It should be claimed though that Internet itself reduces certain costs; however utilization of strategic information sharing is the most important achiever for desired business coordinator [13, 15].

#### 1.2 Achieving LIS fit in Organizations

The capabilities of LIS match demands for supporting business unit's competitive strategy. Thus, the alignment of LIS involves a fit between IS strategy, competitive strategy, organization's processes and infrastructure. For this reason, achieving LIS requires for a degree of communication and collaboration in the whole extended logistics partners; this means that an organization must have a strong knowledge of the internal and external environment [16].

## 2. The use of Information Systems in Logistics Management

It is worthy to mention that logistics management emphasizes on the formation of essential network, which mainly consists of functional entities that must provide information and resources in order to achieve the objectives. The Business-to-Business (B2B) environment requires fro

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suppliers to be able to provide delivery properly and be compatible with the customers' demand [2]. Thus, required delivery performance should be approached in effective and efficient employment of an ERP system that provides accurate flow of information within an organization with skilled employees [9]. However, this is also applicable and beneficial to Business-to-Customer (B2C) industries, where the demand chain is seeking to meet delivery of the customer performance. The constrains of this kind are services, which can be outsourced to logistics providers as are the Third Party Logistics (3PL) and Forth Party Logistics (4PL) [17].

Basically, an ERP system integrates the departments, management and supervision in an organization. Indeed ERP systems have been developed for the fragmentation of information within an enterprise's business in order to integrate both intra-enterprise and inter-enterprise information. On the other hand, there is a bottleneck of integration of an ERP system in the whole Supply Chain Management (SCM) because it depends on what ERP system the suppliers and customers have adopted and this makes it incompatible. The solution of this problem has been approached with the adoption of an ERP II system, which creates a link between different ERP systems to be integrated in one regarding the whole chain [11].

Moreover, an organization must not rely on an ERP system for managing its LIS, because its limitation is due to its uncertainty. Other systems must be incorporated as well, such as RFID, wireless and mobile technologies that will assist products tracking and tracing in the whole logistics processes. To this end, this can reduce the uncertainty since an updated flow of orders, parts and materials can be monitored [2]. Furthermore Gunasekaran et al [3] argues that an "intelligent agent-based knowledge management system" can be used in conjunction with other advanced technologies and can drastically reduce the uncertainty obstacles in the production logistics.

There are a wide range of ERP and ERP II systems for sale in the market but they are expensive and not every organization can afford them. Therefore, its recommended to adopt and MRP or MRP II since they are still well known in the manufacturing organizations, they are used mainly in the production planning, while inventory control is managed with the use of a Warehouse Management System (WMS) [4, 5]. Nevertheless, LIS notion is to integrate with the suppliers and customer, thus SRM and CRM have been widely adopted so organizations can merge such systems for better performance [7, 8].

As mentioned earlier EDI's are used for transferring information among suppliers and customers, whereas Bar coding is still accepted as one of the most effective tools for ensuring parts and for tracing products [2]. Such technologies are not expensive when comparing to RFID tags even though it is expected to be reduced in the near future. It is suggested that RFID's should considered as transformational event rather than as innovative technologies [2, 11]. The RFID technologies, from the security context can offer great economic advantage to organizations and customers, but it is still an issue that threatens customers' privacy since it is thought to be one of the invasive surveillance technologies [11].

## 3. Methodology

The aims and objectives of this research paper are threefold:

- To identify the major challenges and developments of Logistics Information Systems by organization in FYROM.
- To assess the current state and future policy of LIS
- To clarify the need of LIS efficiency and effectiveness to organizations policy in FYROM.

The study adopts Grounded Theory (GT) in order to analyze the primary and secondary data. According to, Mello and Flint [18] GT emerges from deep and contemplative analysis of data that are obtained from the conducted research rather than a "prioi" assumptions developed before the research is conducted. Thus, GT offers the ability to employ exploratory research since it embraces both qualitative and quantitative data. The qualitative data in this study will be used for enhancement of the findings.

However, the primary data was collected by the use of a questionnaire and interviews later were conducted in order to make sure that the surveys were truly answered and are reliable. The questionnaire used in this research was adopted from the questionnaire developed by Ketikidis et al. [2] with their permission, yet minor changes were made.

## 4. Findings

The survey was delivered to more than 300 organizations via e-mail, fax and personally handed for a period of 18 months, however only 65 responses from different cities located in FYROM could be collected for this period. As can be noted from the table below, the majority of the respondents belong to manufacturing sector that mainly gained 40 percent, whereas other represented only 7.7 percent.

Industry	Frequency	Percent
Manufacturing	26	40.0
Services	23	35.4
Commercial	11	16.9
Other	5	7.7
Total	65	100

	Table	1.	Sector	tvpe
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The majority of respondent employee 100 to 500 people as represented with 50.8 percent and only one company can employees between 1001-5000 which 1,5 percent and this not surprising for such a small country,

Number of	Frequency	Percent
Employees		
51-100	19	29.2
101-500	33	50.8
501-1000	12	18.5
1001-5000	1	1.5
Total	65	100

#### Table 2. Size Organization

However, an interesting point is that organizations in FYROM manage their supply chain through close partnership with suppliers that are 32.3 percent of the sample and by the use of JIT supply which is represented with 26.2 percent. According to the information gained in the visits, it was stated that close partnership helps them with the accounts payable and can be prolonged if a strong relationship is developed and also in some cases was stated that helps about new product development. Unfortunately other logistics tools are not used much so far.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Close partnership with suppliers	21	32.3	32.3	32.3
	Close partnership with customers	3	4.6	4.6	36.9
	JIT supply	17	26.2	26.2	63.1
	e-procurement	2	3.1	3.1	66.2
	EDI	2	3.1	3.1	69.2
	Outsourcing	1	1.5	1.5	70.8
	Subcontracting	1	1.5	1.5	72.3
	3PL	4	6.2	6.2	78.5
	Plan startegically	3	4.6	4.6	83.1
	Supply Chain Benchmarking	4	6.2	6.2	89.2
	Verical integration	2	3.1	3.1	92.3
	Few suppliers	2	3.1	3.1	95.4
	Many suppliers	1	1.5	1.5	96.9
	Use external consultants	1	1.5	1.5	98.5
	Other	1	1.5	1.5	100.0
	Total	65	100.0	100.0	

Table 3. Supply chain tools currently in use

Furthermore, the respondents provided reliable feedbacks since 75.4 percent of organizations stated that are somewhat successful in managing their logistics and only 10 of the surveyed organizations or 15.5 percent believe that are successful in managing their logistics.

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Managing	Frequency	Percent
Logistics		
Successfully		
Not successful	4	6.2
Somewhat	49	75.4
successful		
Successful	10	15.4
Very successful	2	3.1
Total	65	100

Moreover, table 6 below shows organizations in FYROM that have separate logistics department.73.8 percent if the respondents stated that they do not have a separate logistics department.

Table 5.	Separate	logistics	department

Separate logistics department	Frequency	Percent
Yes	17	26.2
No	48	73.8
Total	65	100

The table below portrays the current systems that are used and the intended ones planed to be implementing in future by organizations in FYROM. Therefore the most current used systems are SCM with 24.6 percent, JIT with 23.1 percent and ERP 12.3 percent

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respectively. On the other hand, 29.2 from the sample stated that plan to implement SCM in the future and 26.2 plan on implementing an ERP system. Indeed other system did not get that much attention by the organizations, some of them which are contemporary these as is e-business, e-commerce were not planned at all for future implementation regarding the sample .Therefore, according to these findings it can be noted that organizations are more focused on backward chain rather than customer chain orientation.

Current Systems and future implementation	Current Systems/ Frequency	Current Systems/ Percent	Future Systems/ Frequency	Future Systems/ Percent
Material Requirement Planning (MRP)	4	6.2	2	3.1
Material Resource Planning (MRP II)	2	3.1	5	7.7
Enterprise Resource Planning (ERP)	8	12.3	17	26.2
Warehouse Management System (WMS)	4	6.2	7	10.8
Supply Chain Management (SCM)	16	24.6	19	29.2
Customer Relationship Management (CRM)	1	1.5	8	12.3
Supplier Relationship Management (SRM)	4	6.2	0	0
Just In Time (JIT)	15	23.1	4	4.6
Theory of Constrains (TOC)	2	3.1	0	0
E-commerce	3	4.6	0	0
E-business	3	4.6	0	0
Decision Support/expert system	1	1.5	3	6.2
Electronic Data Interchange (EDI)	1	1.5	0	0
Bar Coding	1	1.	0	0
Total	65	100	65	100

**Table 6.** Current systems and future implementation

As can be noticed benefits gained are oh high importance, most of the benefits are above 4. Such information is surprising, since organizations can clarify their strategies through the use LIS in an effective and efficient manner. To sum up, according to these findings it urged to organizations in FYROM for adopting the right LIS that fits their strategy in order to generate more benefits.

	N	Mean	Std. Deviation	Std. Error Mean
How much did you actually benefit from using these systems?	65	3.54	.99	.12
Better quality of information	65	3.74	.82	.10
Better quantity of information	65	4.11	.85	.11
Flexibility	65	4.29	.80	9.98E-02
Reducing lead-time in production	65	4.31	.88	.11
Cost saving	65	4.35	.78	9.67E-02
Forecasting	64	4.17	.88	.11
Resource planning	65	4.57	.71	8.76E-02
Better operational efficiency	65	4.42	.79	9.78E-02
Reduce inventory level	65	4.57	.64	7.90E-02
More accurate planning	65	4.48	.77	9.58E-02
Increased coordination between departaments	65	4.29	.76	9.49E-02
Increased coordination with suppliers	65	4.29	.72	8.97E-02
Increased coordination with customers	65	4.40	.77	9.51E-02
Increased sales	64	4.38	.75	9.32E-02

Table 7. Gained benefits of using these systems

#### 6. Conclusion

According to the findings organizations in FYROM manage their supply chain through close partnership with their suppliers and the use of JIT supply even though most of them do have a separate logistics department. Indeed they are not so much focused on their on serving better their customer, the back-ward chain has more power for them currently. The limited ability to develop forward valuable ability is very low and causes them to loss sales generations and building relationships with their valuable key accounts, this is one of the main bottlenecks of not being satisfied with their logistics management.

Yet, SCM,JIT and ERP systems are currently used more accordingly, while in the future they plan also to concentrate on implementing similar systems as SCM, ERP and CRM systems. The benefits gained from such systems is noted be of high importance as can be the findings and this can have a great impact on their long term strategy. To conclude, organizations in FYROM in general concentrate on more in the backward chain and less on their forward links.

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## Role of Academy in Supporting Sustainable Development Strategies

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Factors of changes in business, education and daily living rise from globalization and all accompanying phenomena. We currently live in the threshold of the most important scientific, technological and industrial revolution in the development of mankind: the future belongs to those who are able to connect the knowledge on the most advanced technologies with the best practice, people empowerment, strategic management and business and marketing skills. To provide the necessary skills in this area, it is appropriate that a field of teaching and research that one may call management of technology (MOT) is developed. With the increasing complexity of our environment MOT focuses more and more on managing the processes and people who are involved with them. Therefore a real challenge for academia, government and industry is: how to provide industry with the youth educated leaders that will develop and carry out the future manufacturing strategies.

#### Keywords

technology, management, knowledge, academic program, evaluation

#### 1. Introduction

Technology is the driving factor which is the cause of biggest changes in our everyday life. Its influence on business is even more dramatic as technology has become one of the most important sources for most organizations. Technology is also one of the key means companies use to remain competitive, be included in the labor market, keep contact with their customers and form enlarged partnerships. Practice shows, however, that the successful transfer and efficient use is more important than the technology itself [1], [2], [3], [4], [5]. Technology is thus gaining importance in the everyday managerial activities (technology as knowledge, products, procedures, methods and systems used for forming goods or service provision).

Managers develop technology, use technology, buy technology and sell technology. To provide the necessary skill base in this area, it is appropriate that a field of teaching and research that one may call MOT is developed [6]. MOT (Technology management or Management of Technology) includes different processes, namely the management of technology development, introduction and implementation in economy and in administration. Apart from managing innovation processes at research and development, it includes also the introduction and the management of new technologies and products, production processes and other related functions in the company (MSB at National Academy of Sciences, USA) [7]. MOT influences various functional units: from research to development, product design, production to marketing, finance, HRM and informatics. It refers to daily operative activities

and strategic questions. Various studies (especially from the USA) have shown that managers focus their efforts on the operative part of business, thus on the short-term results and less on the long-term effectiveness of a company. By acting like this they underestimate the significance of their decisions for long-term successfulness of the company. MOT is focused on potential weaknesses – it is focused on the organization's strategic goals [8].

That is why MOT is a demanding and wide discipline which includes the interdisciplinary knowledge of technologies and management and exceeds by far the management of technological processes, management of research or management of innovations. Because of exceptional technological development, MOT is becoming as important across the globe as the management of organizations and its business processes and functions. The fact of the matter is that managers are facing technological challenges daily. They must be able to respond promptly and adequately, which requires new knowledge and brings about new tasks. Basic processes of MOT or the work a manager of technology does are [9], [10]:

- Identification of technology as a cooperation between the universities, institutes or development departments on one side and the top management of the organization on the other side;
- Selection of technology, based on the agreement and mutual trust between the technical experts and top management;
- Acquisition of the selected technology (could be achieved through company's own R&D, through buying, strategic partnership etc.);
- The use of new technology which enables the increase of added value and profit [2];
- Protection of knowledge which was invested in the production of new technology or new technological products and services.

### 2. Mot as an interdisciplinary field of study and research

Most comprehensive review of research and academic programs of MOT was done by the IAMOT (International Association for Management of Technology). The census included analysis of 148 international academic programs on MOT and it concludes that the titles and the content of these programs vary significantly; thus also the MOT discipline itself includes various activities [11]. Given this diversity, an initiative was launched in 2001 to find common ground for MOT and to establish the credibility of the discipline. Numerous international organizations (IAMOT, Technology Management Education Association, Portland International Center for the Management of Engineering and Technology, Engineering and Technology Managers Education and Research Council, European Institute for Technology and Innovation Management, MOT Consortium in Japan, International Forum for Technology Management) participated in this debate. A Credo for MOT was produced. It should neither be associated with particular individuals nor particular academic institutions [12]. The framework could help at forming research and academic programs from the field. Because of several multidisciplinary bases, and various academic content, it is also impossible to form a unified and rigid framework which could serve as a basis for all programs.

Thus a flexible format was proposed, that the MOT program should fulfil the following requirements:

- It must reflect the characteristics of technologies;
- It must connect the whole field of MOT;
- It must enable creative diversity and special competences of an organization.
- In accordance with this proposal, MOT academic program should have three components [14]:
- The first component covers the accepted range of management specialties corporate functions of marketing, operations, MIS, finance and the knowledge of overall strategy.
- The second component is knowledge of technology itself and of technology related management procedures. Topic would include the core theory of knowledge, technology foresight and forecasting, emerging technologies, innovation management, project management, science and technology policy etc. This is the component that distinguishes significantly the MOT programs from general management program.
- The third component covers the contextual setting of MOT. It underlines the holistic views and addresses topics of ethics, environment, evolution, macroeconomics and politics.

MOT academic programs address technology at an operational, at a strategic and at a policy level [13]. The operational level focuses on the internal technology base of the organization, whereas the strategic level contains mapping the future, external, technological environment through identifying technology based opportunities and aligning overall strategy to reap those opportunities. The policy level addresses the interaction of MOT with national and international policy.

MOT is thus a distinctively interdisciplinary field which combines the knowledge from science, management and engineering as well as practical experience and skills. From the academic point of view, science and engineering contribute to the scientific discoveries and the creation of technologies, whereas in the field of business, it traditionally helps at understanding management, economics, finance and marketing.

MOT connects disciplines that focus on technology creation with those that enable its conversion to wealth. The field studies how the technology is created, how it can be exploited to create business opportunities, how to integrate technology strategy and business strategy, how to use technology to gain competitive advantage, how technology could improve manufacturing flexibility and service systems, how to structure organizations and prepare them for technological changes, and when to enter and when to abandon technology.

### 3. Main goals of mot academic program

MOT thus comprises of diverse academic, research and expert activities. The research of IAMOT identified around 270 different academic programs [14], whereas the data on 148 programs at various universities are available. The results of the research show that:

- MOT programs are offered by very different schools, universities and education centers (typical examples: business schools, science-engineering schools etc.).
- Titles of programs vary, typical examples include: Management of Technology or Technology Management, Engineering Management, Engineering and Technology Management, MBA Management of Technology, Systems Engineering Management.
- Program contents vary, too. They comprise different courses about 30 courses were identified.
- Professional affiliations vary the professors belong to somewhat 20 different associations.
- Apart from special programs, aspects of MOT are taught as individual courses in other institutions.

The program offers necessary knowledge, tools, and skills as well as the self-confidence students need in order to participate at adequate managerial positions in big companies or in aggressive new companies, international organizations or public administration. This academically demanding program is a special challenge for the students as it is significantly different from other usual programs at business schools. At the same time, apart from providing academic knowledge, the program enables the student to experience real-life business situation and gain contacts from industry. It enables the students to reassess their careers, as the practical experience they gained opens a new view and potential in various branches of industry, financial institutions and state administration. The MOT program goal is

to acquire integral knowledge from the fields of MOT, business and innovation as it is understood in the economically advanced countries. Such MOT includes a chain of activities, from identifying, selecting, acquiring and implementing new technologies, through knowledge protection and the importance of knowing the technological capacities at forming company's strategy, to explicit entrepreneurial thinking.

The basic content of MOT program addresses the creation of Chief Technology Officer – CTO. A CTO performs his tasks on the level of top management, which indicates the importance of technology as a means for strengthening company's competitive position. Basic tasks of a CTO are:

- Forming company's technology strategy and harmonizing it with business strategy;
- Foreseeing and analyzing the upcoming technologies;
- Creating the company's technological competences;
- Forming the plan for acquiring technological sources and maintaining healthy technological portfolio;
- Developing formal networks on the basis of informal networks and technology connections and assuring the interweaving of company's culture, employees and technology;
- Being in charge of technological assessment;
- Organizing and structuring company's technological sources;
- Organizing programs of technology education for the employees;
- Assuring that the technologies in the company are transferred and expanded;
- Protecting all the technologies in the company's technology portfolio;
- Technology and intellectual property rights protection;
- Researching the technologies of other companies.

Apart from this, students will gain knowledge that will be the basis for establishing and effective management of a company, namely:

- Skills and knowledge for exploiting and commercializing research results and the transfer of these new discoveries into new products and processes;
- Strategic and financial managerial skills for establishing and growth of technology companies;
- Tools for developing and implementing technology strategies, integrated in the complete business strategy in large international companies or new high-tech companies.

### 4. MOT academic programs in Slovenia

In Slovenia, MOT topics are currently being taught only as a subject or part of the discipline within other study programs (International Postgraduate School at Institute Jožef Stefan; Faculty of Economics of University of Ljubljana; Faculty of Economics and Business of University of Maribor). Adequate academic program "MOT" must therefore offer holistic knowledge from the field of MOT, entrepreneurship, and innovation, as it is understood in economically and technologically most advanced nations. Such MOT includes a chain of activities, from identifying, selecting, acquiring and implementing new technologies, through knowledge protection and the importance of knowing the technological capacities at forming company's strategy, to explicit entrepreneurial thinking [15].

On 17 March 2006, the HE council of Slovenia gave its approval to the proposed 2nd level program of the University of Primorska Faculty of Management Koper (UP FM). With this, UP FM is the first HEI in Slovenia that has obtained also accreditation for implementing the MOT program according to the so-called Bologna model.

Fig. 1 shows vertical links between the courses of the accredited MOT program at the UP FM. The content of these courses includes general management, linking courses and completely technology based courses. Student acquires general managerial knowledge and that specialized knowledge which enables him to successfully master technology. The courses complement each other also on the horizontal level. Knowledge gained at one course is upgraded with the content of another course; e.g. Management course equips students with general overview of management, whereas this is later upgraded at the Legal aspects of management course and Economic aspects of management course.

Postgraduate program MOT is designed for the continuation of undergrad studies regardless whether student has finished studies under old (pre-Bologna) study programs or the continuation of study on the 2nd level under Bologna-system. It comprises of basic courses from the field of management, economics, and business, which provides student necessary knowledge from the issue areas which will be needed at the study of MOT [16].



Figure 1. Vertical connectedness of the courses

### 5. Methodology

Available literature, documents and records were studied closely and included analysis of data from databases, web sites and other sources. Observations were performed during lectures and monitoring which is still being continued. Students who participated into the survey were from undergraduate program and participants of the (UP FM) MOT course. The questionnaire was developed for the purpose of research and monitoring the development of MOT course. Questionnaire was divided into four sections: course organization, course contents, course study materials and students estimation of lecturers. The latter section was not used in factor analysis.

Some questions were open and some questions were consisted of a five point scale from 1 (poor) to 5 (excellent). In all sections of the questionnaire the interviewees could express their comments. Answers were analyzed qualitatively and quantitatively with the factor analysis method in the SPSS Statistics software. Survey was performed in the 2006/07 academic year.

### 6. Empirical findings and discussion

For development and improvement of the MOT course is very important to monitor respond and opinion of students. For this purpose we performed survey which we conducted in three study centers of the FM i.e. Nova Gorica, Škofja Loka and Koper (SCNG, SCŠL and SCKP). The results are shown in the table 1 below.

### 6.1 Quantitative analyses

Study Centre	P.Corr.	KMO	Sig.	Comm.	%Var.	Factor	Reliab.	Ν
Organization	-	0,794	0,000	>0,45	74,202	Org.satisf.	0,882	31
Contents	-	0,840	0,000	>0,48	73,635	Con.satisf.	0,907	31
Study Material	-	0,828	0,000	>0,6	70,310	SM.satisf.	0,888	31
SCNG Sum	good	0,790	0,000	>0,6	61,744	overall satisf.	0,950	31
Organization	-	0,776	0,000	>0,45	68,308	Org.satisf.	0,842	24
Contents	-	0,710	0,000	>0,6	68,829	Con.satisf.	0,883	24
Study Material	-	0,880	0,000	>0,5	77,894	SM.satisf.	0,926	24
SCŠL Sum	good	0,621	0,000	>0,8	59,712	overall satisf.	0,946	24
Organization	-	0,481	0,049	>0,5	67,585	Org.satisf.	0,800	7
Contents	-	-		-	-	-	0,143	7
Study Material	-	-		-	-	-	0,462	7
SCKP Sum	low					-	0,692	7

Table 1 Factor models and reliability by Study Centre's

Note: Used Extraction method was Principal Axis factoring or Maximum likelihood.

Results of the Factor analyses are assembled in one table because of space limitations.

First statement based on the KMO statistics (>0,5) is that the most part of the used data were adequate for the factor analyses. Namely some of the questions with scale remained unanswered. Lacking data influence is probably reflected in the result of factor analysis.

Second statement is that most of the considered variables are good indicators because their communalities were greater than 0,5 (SCNG:10, SCŠL: 12 and SCKP: 4 of 14 considered variables).

And the third statement about explained variance percentage is that selected factor models were relatively good because in all three Study Centre's (SC) survey results explains the variance with more than 60 % (see table1). On the basis of factor analysis we have labeled 9 factors. Cronbach's alpha reliability of the questionnaire is 0,95 and 0,946 in two SCs' (Nova Gorica and Škofja Loka) and 0,692 in one SC (Koper). In the case of SCKP some of the statistics couldn't be computed because of the lack of variance in the data.

Main picture consisted from the factor analysis result is the confirmation of the successful harmonization of MOT course with the principles of the MOT Academic Program suggested by [12], [14] and others. Factors from analyses confirmed the satisfaction of students with the course organization, contents and study materials.

It must be also emphasized that all MOT lecturers were estimated relatively highly from the students (Table 2). Beside that it is also important that professors (lecturers) choose "appropriate technology" that meets pedagogical goals with minimum disruption in the MOT processes. Namely choosing pedagogically appropriate technology with the lowest support requirement and the simplest learning curve encourages faculty adoption and student learning alike. On many campuses, professors have designed new courses, programs, workshops, seminars, and other activities to help students "survive"in an increasingly technological environment [2], [3], [14], [17], [18].

Study Centre	Lect. A	Lect. B	Lect. C	Aver.
SCNG (N=31)				
Level of expertize	4,57	4,6	4,53	4,57
Clarity, logic substances	4,29	4,3	4,48	4,36
Complementing theory with practical examples	4,521	4,5	4,181	4,4
Raging degree of independent work	4,14	4,2	4	4,11
Use of visual instruments	4,33	4,05	4,181	4,19
Average	4,37	4,33	4,27	
SCŠL (N=24)				
Level of expertize	4,86	4	3,9	4,25
Clarity, logic substances	4,81	3,85	4	4,22
Complementing theory with practical examples	5	3,85	3,8	4,22
Raging degree of independent work	4,52	3,9	3,85	4,09
Use of visual instruments	4,67	4,05	3,9	4,21
Average	4,77	3,93	3,89	
SCKP (N=7)				
Level of expertize	5	4,86	4,17	4,68
Clarity, logic substances	4,83	4,86	3,83	4,51
Complementing theory with practical examples	4,83	4,86	3,67	4,45
Raging degree of independent work	4,5	4,29	4	4,26
Use of visual instruments	4,33	4,29	4,5	4,37
Average	4,7	4,63	4,03	

Table 2 Students estimation of professors or lecturers or assistants

Note: Lecturer is the code applied to a person who has being involved in the MOT course as a teacher and could have different title i.e. professor or lecturer or assistant.

As shown by table 2, in most cases, assessments by students assigned to lecturers are above 4 (very good). However, there is still room for improvement in all measured categories.

#### 6.2 Qualitative analyses

Expectations and suggestions of students were mainly, connected with fulfillment and surpassing their expectations as well as the desire to have many practical examples that complement the theoretical part of the lectures. Some students are satisfied with the level of practical examples and some of them want even more practical examples.

Students have also noted that they have acquired a clear understanding of the course contents and insight into the importance of technology as the company's assets. They were also interested in assessing the technological capacity or capability of the companies. The interest comes from the fact that technology is ubiquitous. Namely, technology's impact on companies, people, processes and activities is contingent on a broad set of factors, including the reasons for its introduction, management philosophy, the labor-management contract, the degree of a shared agreement about technology and activity organization, and the process of technology development and implementation. The social reality of technology in sense of identifying, selecting, acquiring, implementing and protecting is highly complex [1], [2], [3], [5], [19]).

### 7. Conclusions

Technological development has at least two key effects: obsolescence of knowledge and the development of society. The fact is that the pace of technological development is so extensive that theoretical and professional engineering knowledge is fast becoming obsolete. With the usual practice of renewal, as commonly accepted by academia, at every 10 - 15 years, it is very difficult to meet all the needs for engineering knowledge and skills which are demanded by industry. Quite obviously, technological development and globalization has a huge influence on the requirements of the economy to have a different kind of graduates, which cannot be provided by the exiting natural science and technical study programmes. Therefore a real challenge for academia, government and industry is: how to provide industry with the human capital that will develop the future manufacturing strategies. To do that, universities need to develop a new generation of manufacturing curriculum with professors, who understand the future industry and the need to attract youth with an interest in technology and natural sciences. To provide the necessary skill base in this area, it is appropriate that a field of teaching and research, that one may call management of technology (MOT), is further developed. Within the MOT program graduates are and will obtain interdisciplinary knowledge to master different processes, from identifying, selecting, acquiring and implementing new technologies, through knowledge protection and the importance of knowing the technological capacities at forming company's strategy, to explicit entrepreneurial thinking.

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# How To Understand the Compass Which We Already Have?

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Purpose of this research is the identification and analysis of the key process indicators which significantly contribute to the benefits of the business processes exploitation in the Luka Koper, d.d., and, to display the importance of the systematic process approach. With this case study we attempted to get deeper understanding, and to clarify and evaluate the enablers and results in the frame of the implemented EFQM business excellence model. Medium framed qualitative and quantitative analyses indicate the benefit of the identificated key processes (performance) indicators or Balanced Scorecard (BSC) and their influence on the strategic directions.

#### **Keywords**

EFQM, business processes, BSC, sustainability, entrepreneurship

### **1. Introduction**

The Port of Koper was established in 1957. Since then they developed into the significant port and logistic system in the Adriatic maritime market. Luka Koper, d.d. of today is exceedingly successful and rapidly developing company, which is founded on their adopted values: knowledge, enterprise, partnership, responsibility and respect.

Company Luka Koper, d.d. was the winner of the Slovenian national quality award (PRSPO) in 2002 and finalist in the European Excellence Award 2006 (EEA). With the European Foundation for Quality Management (EFQM) model integration in management system, the company develops a holistic measurement system, continuous improvements, self-assessment, benchmarking, inter-organizational learning and good practice transfer. EFQM model is usually implemented within the pilot project. Most frequent purpose for such approach is bound to participation in a national quality award (NQA) process.

EFQM model, when used in practice, shows that is difficult to determine transparent relations of enablers (causes) with business results (effects). Connecting approaches are undefined [1] and the problem lies in the structure of the EFQM model [2]. However, the implemented model doesn't enable the identification of all information on the relationships (correlations) between process Key Performance Indicators (KPI's) and the business results. In this manner company doesn't have transparent evaluation of resource inputs in efficiency of the implemented EFQM model in the management system. Diagnostic activities, in this context, are usually "too expensive" to the company and it's usually overworked employees. Because of the latter's outlook, diagnostic is regarded as being time-consuming activity. With the development and application of a model for identification of the influential processes KPIs' which gives important contribution to the business results, company can perform its own diagnostic activities and focus on improvements of the key processes in a short and long-time period.

Analysis of researches, documents and records, semi-structured questionnaires and processes KPI's values indicates the latter's significant influence on the business results. Qualitative and quantitative analysis of many researches about excellence model implementation, performed all over the world i.e. Australia, China, EU, New Zealand and USA, indicates the general favorable influence of KPI's on the business results of organizations [3,4,5,6,7,8,9].

### 2. Literature and researches review

EFQM model was developed, mainly from recommendations of dr. Tito Conti, at the beginning of ninety's of twentieth century, and introduced to the public at EFQM Forum 1991 in Paris. First European Quality Award, actual EFQM Excellence Award (EEA), was handed over in 1992 [2]. Slovenian first pilot project of National Quality Award (PRSPO) was accomplished in 1996, and first award was handed over in 1998. EFQM model is founded on the self-assessment likewise as other excellence models around the world i.e. Malcolm Baldrige NQA (MBNQA) in USA and Deming Prize (DP) in Japan [10]. Self-assessment contains regular activity review and identification of active inertia on every area of organization's activity against the nine criteria of EFQM model [11], [12].

First five criteria represent enablers and the last four criteria represent business results of the organization. Enablers tell what organization is doing; meanwhile results indicate what organization achieves. In such a manner results are the consequence of enablers and enablers are improved on the feedback information's basis from the results. Model enables many approaches for the excellence achievement in all viewpoints of organization activities. Excellent results at key performance, customers, people and society are achieved with leadership which is the driving force of policy and strategy, people, partnerships and resources [13].

Self-assessment should be triggered from the management board when company defines key strategic objectives and directions. Triggering should be ended with the list of objectives which have the highest priority. At the same time the objectives list and priority tasks form the framework of the self-assessment process [11]. EFQM model is applicable also at definition of the Total Quality Management (TQM) philosophy. In that way represents a help at fostering TQM from the part of the management board [10], [14].

American research about effective implementation of the management paradigm-TQM and its impact on the financial results of 600 quality award winners, showed, that all of them achieved significant improvement in stock returns, operating income, sales, total assets, employees, return on sales and return on assets [4], [12].

In Europe, EFQM and BQF organizations sponsored the research for the identification of correlations between adopted principles of the EFQM model and improved business results. Research showed business performance improvement on a short and long-term for the companies which effectively implemented the principles of the EFQM model [9].

Results of PriceWaterHouseCoopers research on the sample of 3500 public sector organizations in the UK indicated that the tool for continuous improvements is the EFQM model in 56% [6].

Research, in the EU northern region, conducted by Kristensen, Juhl and Eskildsen showed that Danish companies, who applied Danish Business Excellence Index are achieving significantly better results than other companies [15]. Sweden Institute for Quality performed equal research for the Swedish companies which showed similar results [5].

Likewise the results of researches in Australia, New Zealand and China confirmed positive effects of systematic application of the excellence model [3], [7], [8].

Winning the Slovenian PRSPO means to get the highest national quality award of the Republic of Slovenia, which basis on the EFQM model.

Research about registered competitors in the frame of Slovenian PRSPO and comparative data from the EEA showed that main motives and benefits of the EFQM model application in the EEA frame are self-assessment, benchmarking, employee engagement and feedback information's. Meanwhile the Slovenian PRSPO competitors emphasized excellence as a part of the strategy, continuous improvements and good practice exchange [16]. In Slovenia we have, after more than a decade of PRSPO existence, some cases of excellent companies which achieved exceptional success also on the European level and placement among the EEA finalists. This are: Hermes Softlab, d.d., in 1998, Luka Koper d.d. in 2006, and Trimo Trebnje d.d. in 2007.

Adaptation of the EFQM model to the company and its capabilities [2], [13] with regularly usage of self-assessment [16], [17] is essential for the successful companies. Prestigious award winner's cases all over the world are confirming that organizations with the systematic use of tools for continuous improvements are achieving lasting operational excellence. In the last 19 years the EFQM model showed validity in excellence recognition, as an informal standard for assessment and benchmarking tool [2]. At this segment excellence project represents important contribution to the measures for carefully planned operations, quality increasing as well as assurance for uniformed platform for benchmarking and understanding the business excellence achievement in EU space and wider.

### 3. Methodology

Main purpose of the research was to establish if it is possible to set up an adequate model for identification of the processes KPIs' which have significant influence on the business results. Based on problem identification and purpose of the research, the following specific objectives were defined:

- 1. Determination of the groups of processes KPIs' and groups of results,
- 2. Determination of the cause-effect relations between processes KPIs' and results.
- 3. Identification of influential processes KPIs' which gives important contribution to the key performance results of the company.
- 4. Setting up and the application of the model for identification of the KPI's in correlation with the results of the company.

The paradigmatic orientation of this research is quantitative, because the influence of the process KPIs' on the company's business results is discussed. As a research method was chosen case study [18] which is based on the following criteria: self-assessments are performed regularly since 1999, participation in PRSPO competitions (PRSPO winners in 2002) and participation in EEA competitions (R4E in 2005, Finalist in 2006 and participation in 2009).

Documents and records were studied closely and included analysis of public available data from company's application reports for PRSPO and EEA competition, web sites and annual reports. Observations were performed during research which is still being continued. Employees who participated into the research were mainly from the middle management level and some experts which are acquainted with the EFQM model and its terminology [14], [18], [19]. Data for the model testing, application and analyses were gathered in September and October 2009.

### 4. Empirical findings and discussion

With the NCCA method we discussed non-linear relationships among four groups of variables, on the nominal and/or ordinal and numerical level [20], [21], [22]. All observed variables are processes KPI's, which are measured in eight Profit Centres (PC) for maritime throughput. The values of the general canonical correlations, implemented in the three year analyses, are relatively high and somewhat different. In most, the difference is expressed between the analyses of the years 2006 and 2007 and also between 2007 and 2008. In addition to the high canonical correlations are also high Eigenvalues, which show the suitability of the NCCA method (analysis 2007 Fit = 1,996). Loss or unexplained variance is relatively evenly distributed by the two dimensions and groups of variables, and is low (analysis 2007 Loss = 0,004).

General canonical correlations	0	0			
Analysis and optimal scaling level	<sup>–</sup> <sup>р</sup> 1	P <sub>2</sub>	Fit	Mean Loss	
1. Analysis 2006					
Ordinal	1,000	0,667	1,750	0,250	
Numerical	0,893	0,665	1,669	0,331	
2. Analysis 2007					
Ordinal	0,999	0,667	1,749	0,251	
Ordinal and Multiple Nominal	0,997	0,996	1,996	0,004	
Numerical	0,937	0,608	1,659	0,341	
Numerical and Multiple Nominal	0,989	0,952	1,956	0,044	
3. Analysis 2008					
Ordinal	1	0,667	1,750	0,250	
Numerical	0,831	0,592	1,567	0,433	

The findings of the parameters calculation are represented in some detail with analysis of 2007, which had the highest general canonical correlation with ordinal and multiple nominal optimal scaling levels (Table 1).

Direction through 1st. and 3rd. quadrant is set by following variables (KPI's): number of improvements NIm4, Fuel consumption FC3 (Explained Variance (EV) 100% \*), which are associated with higher values and the Correlation Coefficient (CC) 100\*, while the number of improvements NIm4 and Maritime throughput MT2 (EV 14.15%) are correlated with the CC 37.62. Maritime throughput MT2 is associated with lower levels with electricity consumption EC3 (the CC between MT2 and EC3 is 10.45). On the other hand are, the added value per employee AV1 (EV 96.82%) and revenue per unit RU1 (EV 58.98%), which are correlated with the CC of 53.91. All these variables are associated with higher values. Displayed variables (Figure 1) explain the increased fuel consumption in 2007 as well as maritime throughput, added value per employee and operating costs, compared to 2006.

#### Component Loadings



Figure 1 NCC Analysis 2007 (Ordinal and Multiple Nominal)

The direction through 2nd and 4th quadrant is set by variables (KPI's): Number of complaints on billing NC3 (EV 74.31%), variable operating costs VOC3 (EV 33.2%; NC3 and VOC3 are correlated with a CC of 49.67) and operating costs OC3\* (EV 25.47%; NC3 and OC3\* are correlated with a CC of 43.4) are associated with higher values.

On the other side are, the Operating Efficiency OE1 (ev 17.64%) and Land throughput LT 2 (ev 10.32%e; OE1 and LT2 are associated with CC equal to 13.49) which are associated with higher values. The variables in the Figure 1 are explaining the decline in the number of complaints, increase in operating efficiency and land throughput compared to 2006 (22,23,24]. The results of calculation in this case, are certainly more reliable due to the chosen optimal scaling level and calculated Fit. In this case, the relationships between the variables, taken into account in the calculation, are treated as a non-linear what is in practice more likely. In a similar way we analyzed the KPI's from the 2006 and 2008 as illustrated in Figure 2 and Figure 3 below. Variables (KPI's) have been arranged somehow differently than in 2007 (see also Table 1).

All three analyses show the correlation and explained variance of variables which varies from fair to very good. On the basis of analysis carried out, we conclude on the importance of the observed variables (KPI's) which are monitored in the frame of the EFQM model and narrower in the four perspectives of business performance (BSC). Namely the length of the vectors from the origin to the coordinates (Figure 1) of each variable indicates its explained

variance by all the other variables. The product between any two observed variables indicates the correlation between them [25]. For further in-depth analysis of the relationships between variables is recommended to perform analyses at the level of quarters of a year or even months.

### 5. Conclusions

With the increasing complexity of the business environment and actual global crisis, companies focuses more and more on managing the processes and employees who are involved with them. Holistic approach (i.e. EFQM model implementation) is the challenge to support development of the Integrated Management System in order to encourage nourishment of adopted values, processes exploitation, innovation, productivity, social responsibility and preservation of the environment.

While fostering exploitation of the resources and key processes, companies frequently integrate standards (i.e. ISO 22000, BS OHSAS 18001, BSC, and EMAS) into their management system. In the case of Luka Koper, d.d., standards and models enables basis for identification and implementation of the strategic projects like: managing land terminals which are linking Koper Bay with Central and Eastern Europe, boosting the volume of quality cargoes by introducing new capacities, becoming the driving force of development in railway cargo transport, contributing to the development of the passenger port in Koper; and providing sea protection in the whole of the Slovenian sea.

Many researches of the excellence model indicate the general favorable influence of the EFQM model implementation [3], [4], [5], [6], [7], [8], [9], [22]. Regarding to the ascertainments of the NCC analysis above, we confirmed the model employability and identified their relationships in sense of explained variance of the observed variables (KPI's) and their correlations. Analyses findings represent the confirmation of the successful business model harmonization which has opportunities for improvements too. In this paper we represented only a part of our research findings because research is still being performed. From the actual analysis we ascertained that implementation of the EFQM model fosters exploitation of the key business processes and all involved resources. With the application of a model for identification of the influential processes KPIs' which gives important contribution to the business results, company can perform its own diagnostic activities and focus on improvements of the key processes and consecutively on the results in a short and long-term.

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### Joint distance learning study programs - tools for development of entrepreneurship and upgrading of academic knowledge

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Harmonization of higher education in Serbia with the requirements of the Bologna Declaration requested and required daily attendance of students in lectures and exercises on the faculty. Therefore, the traditional way of study has become inaccessible for those who are not able to fully devote themselves exclusively, studying, because of different life commitments. Distance learning programs realized within internet studies have made possible for people who are not able to attend the lectures (employed persons, persons who live abroad, persons with handicap) in traditional (ex-catedra) way, to acquire and upgrade academic knowledge. This type of study allowed the adjustment of all obligations, working, family obligations, with time provided for learning. Internet students have the opportunity to apply their newly acquired knowledge in real business situations on their workplace and enables them to advance in their jobs. Purpose of this paper is to present current status of academic distance learning programs in higher educational system in Serbia, best practices in domain of internet studies and recommendations of possible cooperation between regional academic institutions through realization of joint (integrated) distance learning programs. Joint internet studies would provoke increase in quality of current employees and future employees, decrease operational costs of education and directly impact on regional development.

### Keywords

Distance learning programs, Internet studies, Regional Development

### **1** Introduction

In past years, studies in world universities are not linked solely to Amphitheatre and classrooms. Internet studies have become common practice, especially for those who want additional training to improve their career, and therefore, provide higher salaries. With such an ambition, a traditional way of studying is impossible.

This kind of study is a kind of a second chance to those who have in the past, for various reasons, rejected the idea of further education. It turns out that over the Internet, students who are employed and have families, sometimes have much better results and scores than traditional students. It can be said that the internet students are more motivated, and the reasons for this varies:

- Personal satisfaction
- Obtaining necessary academic qualification

Progress in the workplace and increase wages

Distance learning systems (or less DLS) could be defined as a combination of technologies that facilitate teaching and learning among persons not physically present in the same location. A DLS may include communications systems, presentation systems, and document sharing, for example. [1]

### 2. Higher education study programs in Serbia

In Serbia, before 2006, beside state universities, there were numerous private faculties and educational institutions providing educational services. In 2006 the Accreditation and quality assurance commission (CAQA) has been set up, by the National council of higher education to deal with accreditation, quality assurance of higher education institutions and evaluation of study programs. In that purpose National council of higher education approved Rules and Regulations on accreditation standards and procedures of higher education institutions and study programs. All study programs could be accredited in one of the following major scientific fields:

- DH (Behavioural-humanistic sciences)
- PM (Natural sciences and mathematics)
- TT (Technical- technological sciences)
- MD (Medical sciences)
- UM (Art)

After six cycles [2] of review, CAQA accredited:

- 344 bachelor (academic) study programs
- 296 master (academic) study programs
- 19 specialized (academic) master programs
- 13 integrated academic study programs
- 131 doctoral study programs
- 11 bachelor (professional) programs
- 8 professional master programs



Figure 1 Percentage of accredited capacities within defined scientific fields

Regarding the fact that research has been realized in January 2010, and presuming that all programs which are still in process within CAQA would be accredited, in Serbia 50490 places would be available within 16 universities and several higher schools.

Table 1 Number of accredited capacities and capacities in process of accreditation within scientific fields

Scientific field	Accredited and "in-process" capacities (number of students)
DH	29225
TT	13591
PM	3934
MD	3114
UM	968
IM [2]	108
Total	50940



Figure 2 Percentage of accredited capacities and capacities in the process of accreditation within defined scientific fields

### 2.1 DLS program offers in higher education

While almost every major university, either private or public, promote and present online study programs, according to CAQA official reports, only two universities have officially accredited DLS programs. Participation of this programs within capacities mentioned in table 1 equals 0,7%, and those program belong to the majority part of the technical and technological sciences.



Figure 3 Participation of DLS programs within number of accredited and in process of accreditation capacities

Due to the delay between the adoption and publication of decisions on accreditation of programs and institutions, the actual participation of DLS programs could rise up to figures of 2% of the total higher education offers.



Figure 4 DLS programs and scientific fields

### 3 Best practice: DLS programs at University Metropolitan

Since 2005, Faculty of Information Technology (founder of university Metropolitan) along with the traditional academic programs, provides distance learning programs in following fields:

- Technical-technological sciences
  - Information technologies (IT)
  - o Industrial (operations) management (OM)
- Behavioural-Humanistic sciences
  - Marketing management (MK)
  - o IT management (MITS)
  - Sports management (MUS)
- Art
- Graphic design (DSM)
- Interactive media design (DIM)

### 3.1 Methodology

At the University Metropolitan (or less UM) all distance learning courses are conducted in accordance with Bologna Declaration and the new Law on Higher Education.

Teaching in almost every case contains activities given in Figure 5, which is taking place in one week of the teaching semester which has 15 weeks [3]

Each week is characterized by the following activities:

- Lectures (multimedia presentations and lectures in pdf format)
- Demonstration exercises
- Individual exercises
- Discussions

During the semester student's activities are evaluated using the following approach (figures present maximum points per each activity): Tests (15): Homework (22,5), Project (25), Activities during classes (7,5), Written exam (30). [4]

Participants in DLS program are: teachers, system administrators and students.



Figure 5 Technological scenario of the e-learning system

### 3.2 Internet students: research and results

Research realized in January 2010 by student service of university Metropolitan , presented a total number of 514 internet students on undergraduate studies [5]:

- Age structure
   80% of internet students are older than 25
- Employment

90% of internet students are employed

Scientific fields Almost half of the internet students are studying IT and OM, 33% are studying at department of management and 19% is studying art.



Figure 5 Scientific fields within DLS programs

### 3.3 Promotional activities

The availability of internet study program is reflected in the opportunities that students living abroad via Internet gain necessary academic knowledge and skills at accredited institutions in the country where they were born, and most important in native language. One of activities of promotion campaign of University Metropolitan, aimed to connect diaspora and the motherland by granting scholarships for internet studies to people who live and work abroad.



Figure 6 Participation of students based in Serbia in total number

It is known that many people migrate for study in larger cities and in most cases remain in them. Despite the great migration, primarily in Belgrade as the most important university city, a small number of students from rural areas opt for this step and leave their place of residence.



Figure 7 Participation of students from 25 rural municipalities

With the aim of development of underdeveloped municipalities in Serbia, University Metropolitan carries out campaign of awarding 50 subsidies for DLS programs to prospective students from 25 municipalities with the lowest average income in Serbia.

### 4 Joint DLS programs

By connecting with foreign universities and exchanging teaching materials, students and professors would have the opportunity to explore ways of thinking and models of education from other countries. New experiences would provoke new ideas, better quality of lectures, regional professional practice and the finally possibility of better and more efficient employment of students.

One of the most important advantages for regional development, especially in case of ex Yugoslav countries, is the possibility of providing joint DLS programs in Serbian or Croatian language. This advantage would significantly decrease preparation and translation costs.

Of course, DLS programs which consist of lectures intended for online students, in this situation would play the role of the web portal where for exchange of lectures, assignments and exercises. Financial savings would be huge, because it would not be required to travel frequently and to reside in another state. On the other hand, the speed of information exchange would be incredibly large, and could be constant. All that would be taught could be

applied at home, while the information is still new and fresh. Technically, this would be easily feasible within current system applied at UM.

The assigned parameters (username and password) the professors of the Faculty through the site, access e learning system, and asked him his lectures, and administrators to control each entry. All lectures were immediately available to all students and teachers.

Post, update and control of the teaching material in electronic form would be played in real time or time with negligible rate of delay, which would affect all the lectures to be instantly available to all participants in the DLS programs.

### **5** Conclusion

The traditional programs require daily presence of students during lectures and exercises, while DLS programs are more flexible, and students could have the opportunity to harmonize studying with professional activities.

Joint DLS programs will have great importance in the future. Their role will be to decrease migration and in the same time financial costs of universities and student costs, to increase cooperation between academic institutions, and finally to have positive influence on regional development for both, academic and professional.

The usefulness of DLS programs is remarkable, and would be even greater and more important, if their use has spread and become an everyday necessity.

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### Development of Employees in Modern Companies

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Development of employees in modern companies is an activity that helps employees in its future development, change and creation of certain skills and behaviors that they require for daily achievement of clearly defined goals. A large number of companies in today's time believed that the basic cause of acquiring, maintaining and creating competitive advantage in the market development of employees through the development of intellectual capital.

This includes the development the applicable knowledge - in the first place to know what to do, and develop skills that will help them to know how to do it. In addition, it is necessary and understanding the whole process and a certain dose of creativity to the employees know why it works in a certain way. Basic focus development of employees in manufacturing enterprises related to learning and skills, their changes directly influence the creation of conditions that employees understand the connection and the reasons why something works and why. In this entire process is very important motivation for innovative thinking and continuous quality improvement. It is important to emphasize that during the crisis development of employees is crucial for the survival and further growth of the company.

### Keywords:

employees, knowledge, motivation, skills, innovation.

### 1. Introduction

The adaption of the company to the constant changes and trends in the environment, means a constant change of the employed in the same conditions and processes. In today's real conditions of business the life cycle of products is shorter and shorter, the technological changes are accelerated, also is the growing of competition on the global level, and on the other hand, the present knowledge becomes old. The answer to such problems can not be given by formal school education, which by its nature has a certain stability and cycle. For these reasons, we can say that the school system is only one pillar and base for further upgrades and expansion of other educational activities during life and worktime, which aims at adaptation of existing knowledge and skills to new work requirements. For these reasons, the development of employees is the basis of the flexibility of companies and a key lever in long-term development of enterprises. The management of the enterprise increasingly thinks that the development of employees is one of the most effective ways to achieve competitive advantage, the basic assumption of entering the competition and compete with competitors for the affection and confidence of consumers. This becomes not only a necessary condition, but also a prerequisite for any further development of enterprises and survival. So when we talk about the development primarily we think of activities that aim at expansion of the overall knowledge, development of the potential and the change of the values and culture. It

is considered that the development is primarily aimed at long-term plans, i.e., the acquisition of certain skills and knowledge necessary to overcome specific business tasks, and indicates the time dimension of the future.

### 2. The goals of employees development in modern enterprises

Development Goals define precisely what we want to achieve with that process, including preparation or changes arising after the whole process of development, and relate to better and more qualitative job performance of employees. A large number of enterprises in our country and in the world believes that the crucial importance of the competitive advantage is knowledge. Therefore, all these companies are investing huge funds and resources for the development of intellectual capital, they invest in knowledge. A large number of various researches shows that such companies invest annually from 1.5% to 3% of the total annual budget revenues, and even if you add the indirect costs of training, then the total amount of expenses exceeds 10% of total earnings. The answer to the question of why to invest is so very simple, if you want to be competitive in a constant course of events, it is necessary to invest in knowledge. These investments directly affect the creation of successful and unsuccessful companies.

The development of employees is very often confused with the concept of employees training. The development of employees refers to the creation of learning opportunities in order to help employees in their personal development. When we talk about development, access is very wide, because it does not apply to their work places where they carry out everyday work activities, but the mere way of approach and development of employees has far-reaching and future requirements of the job or career development.

Realizing the special importance of developing employees for modern enterprises, in reality, today's companies give out more and more funds for this activity with the belief that it is an investment which very quickly returns. It is estimated that companies which want to keep pace with changes should ensure that employees get of 2% of the total annual fund of work hours for development. The reasons for investing so much in the development of the modern organization are numerous:

- The accelerated development of technologies which causes rapid obsolescence of knowledge
- Increasing of the demands of consumers, who seek new solutions and new knowledge;
- Increasing of the competition on the global market stipulates the need for higher level skills of employees in order to make company survive;
- New technology and new way of doing business increase the complexity of work and require new skills (interpersonal, communicational, conflict management, team work, etc..)
- A growing gap between theory and practice, and the inability to provide the appropriate skills and knowledge on the labor market.

<sup>&</sup>lt;sup>1</sup> Bogićević.B., Human Resource Management, Faculty of Economics, 2003, Belgrade, pg.153.

# 3. The concept and definition of the employees development in modern enterprises

The development of employees can be defined as a clear program plan of the company to influence the improvement of the performance of employees in the course of performing their work assignments. Under development we can clearly define, that it is a set of activities that directly affect the change of the knowledge of employees, their skills, abilities, attitudes, opinions, working process, attitude to work, mode, etc.

Development of employees is a good tool that allows employees to acquire specific skills and behaviors that are crucial and very important to them in doing business with a standard level of performance.

The development of employees is an activity that helps employees in their daily work, change and creation of certain skills and behaviors that they require for daily achievement of clearly defined goals. A large number of companies in today's time believe that the basic cause of acquiring, maintaining and creating competitive advantage in the market is the development of employees through the development of intellectual capital. This includes the development of cognitive knowledge – in the first place to know what to do, and improve skills that will help them to know how to do it. In addition, it is necessary to understand the whole process and a certain dose of creativity so that the employees know why is that done in a certain way. Fundamental focus of development of employees in manufacturing companies relates to the acquisition of knowledge and skills, their changes which directly influence the creation of conditions that employees understand the connection and the reasons why something works and why. In this entire process motivation is very important for innovative thinking and continuous quality improvement.

Many companies today believe that the development gives competitive advantage in the market development of intellectual capital, which includes cognitive knowledge (to know what to do), how, and skills they need to improve creativity and motivation to understand the importance of the whole project.<sup>2</sup>

Here are some obvious possibilities of employees development application at work:

- Motivating of employees;
- Delegation;
- Troubleshooting:
- The creation of teams;
- Evaluation and assessment of employees;
- Planning and critical review;
- Work in a team;
- Development of employees;
- Planning;
- Management;
- Monitoring of performance;
- Efficiency.

The development process helps employees in the company to focus on acquiring knowledge and skill development, as well as the creation of such changes and conditions for employees

<sup>&</sup>lt;sup>2</sup> Quinn., JB, Andersen, P., Finkelstein, 1996., Leveragining intellect, Academy of Management Executive, pg. 39

in the company to understand the connections and the reasons why something works and to be motivated for innovation and constant improvement of the business.

The approach to the development of employees in manufacturing companies has experienced a significant transformation and correlates with changes in how to manage the enterprise. The first period, which presents Taylor's understanding of the company, features training for making capable of performing divided and simple work operations and directing to gaining speed and working skills. During this period the environment is stable and school system largely satisfied the need for higher levels of knowledge. In the second phase of the development of company, the development of employees focuses on problem solving and transfer of lessons learned into practice, there is a more systematic confirmation of development needs, development of more complex contents, which do not only include a working operation, but also social competence, and the establishment of developmental functions as an important function in company. The modern approach to the development of employees in the company is based on the activation of the very employees and managers in the realisation of the development process, and the contents are directed to a system of values, teamwork, communication and conceptual thinking. At the same time interactive methods are introduced and learning in various forms is becoming a normal and daily practice and commitment of every employee. Today companies, under the influence of high technology and competitive relationships on a global scale, have a changed attitude toward work processes, costs and resources, so that knowledge becomes a key resource, a training mode and survival.

The development of employees in manufacturing enterprises is determined by the following factors:

- The market principle of business enterprise requires constant adjustment to new conditions and flows, which means not only technological changes but also changes in the company, changes in product assortment and behavior. All these imply a high level of flexibility, that flexibility also means people who work in market-oriented company. The development in that way becomes a factor of adaptation and necessity, without which there is no change.
- Under the pressure of competition and the fussiness of customers, a market-oriented company is constantly faced with the problem of costs and problems of innovation. In order to solve these problems the knowledge becomes a key factor. Therefore, specific knowledge gains increasing importance in the direction of innovation and expansion of knowledge through flexible development programs during the job or related to the job.
- Development of functions in the company takes into account the objectives in terms of overcoming the deficit of knowledge, developing of skills needed to perform certain tasks and solve specific business problems and working.
- With development, working methods change. At a time when money and time become very important limiting factors, one can not gamble with activities that are not needed for companies, or which do not achieve specific goals. Understanding the role of participant development is also changing. These are no longer passive recipients of information but active participants in the process of exchange and creating new knowledge. To such conditions methodical concepts must be adapted, and also spatial conditions, which should encourage communication between participants and team work. For these reasons, development contents change. Navigation process in modern enterprises increases the complexity of business requirements, and development is not aimed at gaining additional knowledge and skills for specific job position, but the methodical entrepreneurial competence to solve problems. Autonomy, ability to work and professional expertise can be achieved only if the methods of knowledge development, skills and behavior are integrated into a single concept of team and project oriented development of employees in the company.

## 4. The importance of employees development processes in companies

Development of employees is becoming a very important element of the modern companies' success, both on global and domestic market. Today business conditions require the stronger need for leadership, knowledge, better employees, who are talented and highly educated. The companies with their ads and offers want to attract better workers, in order to have their focus on better quality and rapid change. Companies worldwide invest millions of euros, yens and dollars in various development programs to achieve competitive advantage in the market. The mere growth of investment in various developments shows us that companies are becoming aware that knowledge is a factor that creates the difference between successful and unsuccessful companies, whether it is about companies or employees within a company.

Development of employees in each company, regardless of size becomes very important activity in the function of human resource management, due to globalization, competitiveness, strengthening the need for leadership, growing knowledge, and attracting talented individuals. The whole world is investing digits in millions in development employees, only for reasons of domination in their markets.

Effective development must have clearly defined objectives, to be compliant with the identified needs, to plan and to ensure the implementation of experience and lessons learned. The best situation is when the development satisfies the needs of companies and employees.

The main goal of development is that to eliminate in the short term any elements that can affect the performance of employees.

The main results achieved by development in the company are the acquisition of new knowledge, new skills and developing abilities of employees.

When we speak of knowledge we have in mind the entire content of an object or phenomenon, and their provisions based on the truth. Knowledge is in direct conjunction with science, and it is often taken as its synonym. The aim of science is, with various theoretical and empirical research, to obtain objective and real truth.

As for skills, they refer to the long process of learning, while the capabilities and tendencies to something, form and are learned in the processes of education, and moral and cultural maturity of self-affirmation of the whole personality come from education and self-education. Skills are personality traits of which depends the difference in the successful performance of certain tasks. The first group consists of more intellectual or mental abilities, while the second group consists of psychomotor skills, the third of sensory abilities. When evaluating performance of employees we are directly related to the function of human resources. Scores of employees get, create a clear picture of whether they accomplish a certain standard and in what levels. Based on these results we can see very clearly that there is a change of behavior, attitudes and skills improvement. This method can be very good at checking the quality of development. In addition to all the important benefits of development employees, this factor in the development of employees is in direct function of the progress of employees. Through specific results after development, we get information that help us in the process of deciding on the transfer and promotion in the company, and at the same time the whole process affects the wage system. In addition to the abovementioned advantages of development, we can say that development has an important role in changing the culture of the company.

### 5. Conclusions

Development of employees in modern enterprises is becoming a very important element of success, both at the global and the domestic market. Conditions today require increasingly strong need for leadership, knowledge, better employees, who are talented and highly educated. Companies with their ads, and good offers want to attract better workers, in order to have focus on better quality and rapid change. Companies around the world are investing millions of euros, yens and dollars in various development programs to achieve competitive advantage in the market. The mere growth of investment in various development and training processes tells us that companies are becoming aware that knowledge is a factor that creates the difference between successful and unsuccesful companies, whether talking about companies or employees within a company.

Development of employees in any enterprise regardless of size becomes very important activity in the function of human resource management, because of the globalization, competitiveness, strengthening the need for leadership, the growing knowledge and attraction of the talented individuals. The whole world is investing millions of figures in the development of employees, only for reasons of domination in their markets.

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### Virtues of Entrepreneurs: Slovenian Youth Entrepreneurhip Attitude Study

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Over the last several decades, scholars have not been devoting appropriate attention to the attitudes of young people toward entrepreneurship. Especially underrepresented in the research literature are empirical studies on the impact of virtues of contemporary entrepreneurs on the success of their business activity. The starting point of the proposed paper will be the results of an empirical survey of 3147 secondary school students in Slovenia on the *businessman's virtues* that guide entrepreneurial behaviour in everyday business life. Factor analysis and structural equation modelling were used to analyse the data. The aim of this study is to determine whether *perceived entrepreneurial virtues affect entrepreneurial intentions*. Results show that perceived entrepreneurial virtues do indeed influence respondentexpressed intention to become an entrepreneur. The expected contribution of the proposed paper will be in offering a deeper understanding of the complexity of the entrepreneurial process. Implications and strategies for future research will be provided.

### Keywords:

Entrepreneurship, youth, virtues, intention, organisational culture, business ethics

### **1** Introduction

In ethics *virtue* (gr. areté, lat. virtus, slo. vrlina, ger. Die Tugend) is defined as a selective inclination of human will to act in accordance with the relevant criteria or rules. Interest in virtue has occurred in ethics very early. Thus, in the Hellenic period of Ancient history Socrates, Plato and Aristotle studied the phenomenon of virtues. Socrates in relation to the initial assumption of his ethical intellectualism, according to which "no one willingly does not conduct wrong" necessarily concluded that the right behaviour can only be based on knowledge. Hence, a virtue is knowledge i.e. the truth and morale is identical notion. If a virtue would not be known, then would not be anyone to teach a moral. Aristotle [1] in his famous *The Nicomachean Ethics* stated that the purpose of developing the virtues in human being through moral education is to direct and correct his actions, behaviour and performance driven by passion and affect. For him, the good life is only the life, which corresponds to usual virtues, such as, for example, justice, generosity, courage, equity, friendship, etc. The moral virtues Aristotle defined as reasonable or the *right measure* between too much and too little.

Within such worldview, the Western mankind has been given the goal i.e. the existence of internal purpose (*entelehia*) which is seen as a constant urge from lower to higher forms of perfection. The excellence and the need for it through permanent improvement in intellectual, professional and moral virtues became the ultimate goal of human existence. Man as a moral being will never be reconciled to their imperfect nature and the imperfectness of the world in which it resides. His thinking and acting in the modern history of Western civilization took place as the project of conscious managing of the world life through intellectual and moral

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improvement with the final aim of achieving universal excellence. At the beginning of the 20th century Max Weber put Protestant Ethics at the centre of capitalism, whose spirit explained as the ethics of responsibility of businesspeople and their communities. In this way Weber set the foundations of contemporary business ethics as a discipline that provides ground to reflect on the processes of business life from the standpoint of a reasonable separation of good from bad performance. By the beginning of the sixties of last century the moral issues associated with the business were studied mainly in theology and philosophy. During the sixties the interest in the social dimension of business was strengthening. This laid the foundation for the emergence of business ethics as a separate scientific and pedagogical science. In the eighties it was consolidated as an academic discipline that has become recognized in the community of practitioners. The nineties of the last century have brought the institutionalization of business ethics as a tool for self-regulation of business processes. Since the beginning of the 21st century business ethics directs its focus to the development of new organizational and global ethical culture. [2] Thus, in the discourse of modern business ethics, we obtain in-depth reflection on the relationship between ethics and economics, with regard to the moral base of business, the foundations of property, relationship between business and law and, finally, business morality as a part of the real business world. [3] The attention of the profession, especially in a period of accelerated globalization, was attached to the discovery and interpretation of the importance of the student's and manager's education at the field of business morality. [4] Dominant perspective of business ethics has become an individual, corporate and international aspect of business in order to achieve good governance and sustainable development. [5]

In such a defined discourse of the contemporary business ethics the key research question of the following study will be concentrated on the very concrete dilemma: What is the actual state of virtues in the young population of an EU country such as Slovenia which had experienced a different historical trajectory and economic system than Western nations before it underwent post-socialist transition in 1991 and joined the EU in 2004? Thus, our paper will deal with problems such as: How young people perceive entrepreneurial virtues in Slovenian business community?

The ethical framework for present study of entrepreneurial virtues was already laid down by Jelovac in his study on *Entrepreneurial culture and ethics*. [6] The list of the entrepreneurial virtues will be adopted from so called "organisational barometer", the research tool developed by Jelovac. [7] The leading hypothesis of our study will be as following: *perceived entrepreneurial virtues positively affect entrepreneurial intentions*.

### 2 Methodology

The study was conducted on 3147 Slovenia's secondary school students in winter 2008. [8] The sample included the final year students from 55 different schools with various educational programs. Exploratory and confirmatory factor analysis was conducted to explore and test the underlying factor structure of observed variables. Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy were used to determine whether the data are appropriate for factor analysis. The internal consistency of scales was assessed by using Cronbach's standardized alpha. To test the hypothesised theoretical model, structural equation modeling was performed using the ERLS (Elliptical reweighted last square) method in EQS 6.1. [9]

### **3 Results**

Mean values for the 22 virtues are presented in Table 1. Results show that *resourcefulness, industriousness, communicativeness, decisiveness and persistence* are the virtues that students believe play the most crucial role in the success of an entrepreneur.

Rank	ltem	Virtue	Mean score
1	V04	Resourcefulness	4,66
2	V02	Industriousness	4,65
3	V05	Communicativeness	4,61
4	V07	Decisiveness	4,59
5	V18	Persistence	4,56
6	V19	Dependability	4,45
7	V14	Diligence	4,43
8	V15	Seriousness	4,43
9	V08	Courage	4,39
10	V17	Creativity	4,30
11	V03	Cleverness	4,29
12	V20	Trustworthiness	4,25
13	V11	Practicality	4,22
14	V22	Loyalty	4,20
15	V10	Honesty	4,01
16	V06	Enthusiasm	4,00
17	V12	Fairness	3,93
18	V21	Ability to admit defeat	3,90
19	V16	Competitiveness	3,88
20	V13	Prudence	3,82
21	V01	Unscrupulousness	2,83
22	V09	Greed	2,47

**Table 1:** Entrepreneurial virtues – mean values

### 3.1 Exploratory and confirmatory factor analysis

#### Virtues

To determine the underlying factor structure, exploratory factor analysis was performed, using the maximum likelihood extraction method and Direct Oblimin rotation with Kaiser Normalization. Oblique rotation was selected because they allow correlated factors instead of maintaining independence between rotated factors. [10] Items that did not load on any factor (factor loadings greater than 0,30 were considered significant) and items that loaded significantly on more than 1 factor were dropped from further analysis. Thus, items V01, V09, V13, V016 and V21 were dropped.

Bartlett's test of sphericity was significant (chi-square of 16059,391; 120 degrees of freedom; sig. 0,0000), indicating overall significance of correlations within the correlation matrix. Kaiser-Meyer-Olkin measure of sampling adequacy had a value of 0,925, indicating the

appropriateness of the data for factor analysis. The resulting factor solution explains 49,05 % of variance. Results are presented in Table 2.

		Factor loadings		
ltem	Virtue	Factor 1	Factor 2	
V02	Industriousness	0,65		
V03	Cleverness	0,53		
V04	Resourcefulness	0,80		
V05	Communicativeness	0,63		
V06	Enthusiasm	0,35		
V07	Decisiveness	0,75		
V08	Courage	0,59		
V11	Practicality	0,43		
V14	Diligence	0,45		
V15	Seriousness	0,45		
V17	Creativity	0,54		
V19	Dependability	0,44		
V10	Honesty		-0,83	
V12	Fairness		-0,84	
V20	Trustworthiness		-0,55	
V22	Loyalty		-0,57	

Table 2: Factor loadings for exploratory factor analysis for entrepreneurial virtues

The first factor was named *Entrepreneur-pragmatic* and the second *Entrepreneur-altruist*. These two factors as specific types of entrepreneurs are explained in greater detail in the conclusions. Cronbach's standardized alpha values of 0,85 for factor 1 and 0,82 for factor 2 indicate a strong internal consistency.

Confirmatory factor analysis was conducted to compare the first-order one-factor structure with the first-order two-factor structure and second-order two-factor structure. In the first-order one-factor model, 17 items were modeled to load on one latent, unobserved factor. If this model was supported, it would suggest that one single factor is sufficient to explain the common variance of the 17 items. In the first-order two-factor model, the items were modeled to load on the factors established with the exploratory factor analysis. The two factors were modeled to correlate with one another. In the third model the correlation between the two factors was replaced by a common higher-order factor. The fit measures for the models are shown in Table 3.

Table 3: Fit measures	for	confirmatory	factor	analysis
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	Model fit indices								
	Chi - square	Degrees of freedom	NFI	NNFI	CFI	GFI	SRMR	RMSEA	
First-order one- factor model	3007.09	119	0,89	0,88	0,89	0,81	0,07	0,09	
First-order two- factor model	1502.05	118	0,95	0,94	0,95	0,90	0,06	0,06	
Second-order two-factor model	1502.10	117	0,95	0,94	0,95	0,90	0,06	0,06	T=1

Results indicate that the first-order two-factor structure shows statistically significant improvement over the first-order one-factor structure. Since the fit indices for the second-order two-factor structure are identical to the fit indices for the first-order two-factor structure, all second order factor loadings are statistically significant and the value of the target coefficient (the ratio of the chi-square of the first-order two-factor model to the chi-square of the second-order two-factor model) is close to 1, this supports the acceptance of the second-order two-factor structure.

#### **Entrepreneurial intention**

Factor analysis confirmed the appropriateness of one factor model for measuring students' intention to become entrepreneur. Bartlett's test of sphericity was significant (chi-square of 16059,391; 120 degrees of freedom; sig. 0,0000) and Kaiser-Meyer-Olkin measure of sampling adequacy had a value of 0,925. Cronbach's alpha had a value of 0,70, which is acceptable. All factor loadings were significant, so no item was dropped. Results are shown in Table 4.

ltem	Statement	Factor loading
	Do you wish to become an entrepreneur?	0,49
	Entrepreneurial profession is worthy of respect.	0,58
	I like to take opportunities to make money.	0,45
	I have discussed starting my own company with my friends.	0,49
	My parents would be proud of me, if I started my own company.	0,49

### 3.2 Testing the structural equation model

Structural equation modeling was conducted to test the proposed model. Table 5 shows that the resulting model goodness-of-fit indices indicate a good model fit. The values of normed-fit index (NFI), non-normed-fit index (NFI), goodness-of-fit index (GFI) and comparative-fit-index (CFI) higher than 0,90, the value of root mean square error of approximation (RMSEA) lower than 0,5 and the value of standardized root mean square residual (SRMR) lower than 0,8 indicate a good model fit.

Table 5: Goodness of fit indices	S
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Model fit indices							
Chi - square	Degrees of freedom	NFI	NNFI	CFI	GFI	SRMR	RMSEA
2207,606	227	0,94	0,94	0,95	0,90	0,06	0,06

Results indicate a relationship between perceived entrepreneurial virtues and entrepreneurial intention. Standardized coefficient is significant, positive and has a value of 0,52. This supports our hypothesis that perceived entrepreneurial virtues positively affect

entrepreneurial intentions. The model explains 14,1% of variance in entrepreneurial intentions.

### **4** Conclusions

There is no doubt about dilemma whether or not we should promote entrepreneurship and raise entrepreneurial intentions among population. The question that still presents a challenge, however, is: "How can we influence the formation of entrepreneurial intentions?" While it may be hard to imagine high school students as entrepreneurs, the fact remains that some crucial career choice decisions are taken in adolescence. [11] It is important that we realize that high school students are our future entrepreneurs.

The results of this study suggest that entrepreneurial intentions are influenced by the virtues that the students contribute to successful entrepreneurs, which carries an important implication. If we can influence students' perceived entrepreneurial virtues, we could raise their entrepreneurial intentions. One way to achieve this is through the process of formal in informal education in which, according to the results of our study from 2008 the teachers and types of programmes play the prominent role. Hence, we have good reasons for expectation that their development will improve the entrepreneurial intentions of young generations in future. The other way of raising and improving the appropriated entrepreneurial virtues is through the primary socialisation in family: our study shows that parents have the most powerful influence on the respondent's opinion (75% students included in survey estimated it as high).

The second important finding is the structure of virtues that was revealed with factor analysis. The *first* group of virtues could be associated with a type of entrepreneur already named entrepreneur-pragmatic. His important virtues are: industriousness, cleverness. resourcefulness, communicativeness, enthusiasm, decisiveness, courage, practicality, diligence, seriousness, creativity and dependability. *Pragmatic* is a type of entrepreneur who followed such a philosophy of business life at which acting (gr. pragma) is a priori to thinking; therefore, the decision as to the truth of a theory and moral value of conduct stems from its practical utility or benefits to business. This type of entrepreneur is most often found in so called entrepreneurship out of opportunities as well as in entrepreneurship out of necessity. The virtues in the second group are related to the specific type of entrepreneur named entrepreneur-altruist. His crucial virtues are: honesty, fairness, trustworthiness and loyalty. Altruist is a type of entrepreneur who lives and operates not only for himself but also for the others and/or for the common good; it is a way of thinking and behaviour, in contrast to egoism as a moral attitude, which takes into account needs and interests of other people and communities in everyday business life. This type of entrepreneur is dominant at the field of so called social entrepreneurship.

Virtues that were dropped from further analysis were unscrupulousness, greed, competitiveness, ability to admit defeat and prudence. Those virtues do not fit into any of our previous types. This is the problem; it remains as the task for future studies.

Future research should also focus on the factors that influence the creation of beliefs about entrepreneurial virtues. We should determine if gender, family background, prior entrepreneurial experience etc. and most importantly education play a role in how students perceive entrepreneurs. Another interesting venue of research would be to study the virtues that students believe they possess and compare the results to the findings of this study to determine, if the difference affects entrepreneurial intentions.

Finally, considering the limitations of this study, we should emphasise, that research was carried out on a very large sample of students (3147) and can therefore be considered representative for Slovenian high school population. However, this is not necessarily true for other business cultures and environments. We hope that the outcomes of our research will provoke the studies of other researchers on this topic in different countries.

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### Simulation – A Tool for Optimization of Some Problems in the Process of Enterprise Restructuring

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The restructuring of a company is a very complex process. Good restructuring will lead the company forward and to a higher level (or at least remain at the level of its competitors), while poorly planned restructuring can cause the collapse of itself. Therefore it is important to apply methodologies for company restructuring. From the many that exist, the COMPASS methodology has been selected in this paper. COMPASS is foreseen as an open methodology that can utilise various methods and tools in different stages of its implementation. The simulation is accepted as a tool in certain point of COMPASS, at which the success factors for improving the performance of the enterprise are already known. They were analyzed and later transmitted into the model, connected between each other and finally - simulated. The results of the simulation were reworked and later presented in scenarios of possible solutions. That is the basis for future analysis and decision making for the measures that need to be taken. This paper introduces a case when an enterprise has to make a strategic decision with the equipment. The simulation model that was created compares the performance of the most critical elements with the old and the new equipment.

### Keywords

COMPASS, Enterprise restructuring, Simulation, Scenario.

### 1. Introduction

The need for enterprise restructuring is becoming a continuous need for enterprises today because of the certain affects generated by the market globalization. In order to investigate the process of the enterprise restructuring and to build a certain model, a research project was initiated between the Fraunhofer Institut fuer Produktionstechnik und Automatisierung, Stuttgart, Germany and Faculty of Mechanical Engineering, University of Sts. Cyril and Methodius, Skopje, R. Macedonia [1]. The secondary goal of the project is also to help in the transfer of the know-how for enterprise management and enterprise restructuring from developed to non-developed countries [2]. The created model is called COMPASS (COmpany's Management Purpose ASSistance) [3]. Its name tries to show its main intention - to offer aid in the key decision making points in the complex process of enterprise restructuring.

The main intention of COMPASS is to generate the improvement actions, on the basis of the gaps in the enterprise strategy and actual performance. In other words, *the basic idea of COMPASS is to make a model of performance measurement, which will enable determination of the inconsistency of the importance and performance of all segments of the* 

enterprise and on that basis to generate quantified alternative and then optimal actions for overall improvement of the situation.

The basic prerequisite for COMPASS' functioning is its performance measurement system (PMS), Figure 1. PMS uses so called key elements of success - KEs. There are five KEs: time, quality, flexibility, costs and productivity. They represent the way the enterprise copes with the customer demands. They are additionally decomposed in their elements, called subkey elements of success - subKE (e.g. Time-Reliability, Flexibility-Product Mix, etc.). These subKEs have the needed broadness in the view (to represent one aspect of the whole enterprise) and they are concrete enough (they can be measured even with a single measure for the whole enterprise and are able to show the directions for further improvement). In total, the model contains 18 subKEs, which are practically the variables of the model.



Figure 1: The performance measurement (sub)model of COMPASS

Seven steps are foreseen for the implementation of COMPASS.

According to COMPASS, an I/P (Importance/Performance) matrix has been created for this case. The CFs are the subKEs that in the Gap field. Because of limitations in space, only the solution I/P matrix has been given at the end of this paper, Figure 3, with all CFs and their solutions comprised in one. Since the CFs are recognized, the next step is to define measures for them. They can be generated using Ishikawa diagram, relationship diagram, affinity diagram, Pareto analysis etc. After that, a list or a scheme of the possible success factors - SFs is created. These are actions or elements that will improve the performance of the CFs. Based on it, a SF or SFs are chosen in order to analyse the improvement they will generate.

### 2. Simulation methodology

The simulation model that is going to be described in the next chapter is formulated under a certain methodology. In many literatures there are different methodologies, steps for creating a simulation model, simulation study or simulation project. For more please see [4],[5],[6],[7]. In this paper the applied methodology (its steps) is given in Table 1.

Table 1: Overview analysis of the activities undertaken in the simulation process according the
steps in the adopted methodology

Step in the adopted methodology in this paper	Undertaken activities in scope of this model		
1. Setting goals of the simulation	To decide which problem (success factor) will be targeted in the simulation process (implementation of the initial 4 phases of COMPASS)		
2. Creating (concept) model	Describing the included elements and creating a general scheme how the model functions		
3. Data collection and analysis	Acquiring the historical data , their analysis and transformation for the model		
4. Programming	Transforming the ideas of the concept model, the historical data and the distributions using the simulation software iThink		
5. Verification	Creating a parallel simulation in Microsoft Excel in order to compare with the iThink model and determine its accuracy		
6. Validation	Crating a different kind of simulation in Microsoft Excel, which output data are compared with the results that are generated by the model in iThink		
7. Experimental design	Creating few models, different types from the original, where the assumptions are being tested. Additional sensitivity analysis has been conducted as well.		
8. Simulation functioning and analysis	Analysing the output data from the simulation and their presentation in various tables, graphs and finally as scenarios.		
9. Documenting and implementation	Suggestions from the modeller side and end of the simulation process		

### 3. Created simulation model for the selected success factor

After the first four phases in COMPASS were conducted, it is up to the simulation model and its results to help define the scenarios. The analysis of the company has been made, an overall I/P matrix has been established, a SF has been chosen and now it has to be analysed how it will influence the performance of the CFs.
The simulation starts with already defined success factor – acquiring a new machine. This simulation model will not present one general solution where all subKEs and all possible SFs will be included – this is almost impossible. Instead, here a model for a given company with its situation will be presented and this is more than enough to comprehend the improvements that can follow.

The model that was created is actually a synthesis of two models, very similar to each other. The first model represents a state of the company in case the old machine stays to work, and the other model represents a situation when the company buys a new machine. The main difference between the models is that in the model with the old machine (from now on referred to the first model) for some of the elements there have been already initial values, which have been cumulated as the machine worked, and in the model with the new machine (from now on referred to the second model) the same elements have initial value 0.

In the beginning, the first model was created, all of his elements were defined, the relationships have been tested etc. After the first model was verified and validated, the second model was constructed, with the needed alterations. It is more than obvious that the final model was constructed with numerous iterations, which is characteristic for the simulation process.

Any of the two models can function on its' own. Still, this type of modelling was accepted simply because of the fact that the goal was to make a comparative analysis of the two models.

The process of designing the model is according an adopted methodology. In Table 1 an overview of the activities that are undertaken in every step of the methodology is given.

In the following text, only selected steps of the simulation methodology will be further explained.

#### 3.1 Creating (concept) model

The initial phase in the concept modelling is the analysis of the current state and defining the elements of the model. From the analysis, a list from all elements was created/generated and it was decided which of the elements will be included or excluded.

From this list, a detailed table was created (Figure 2), only for the included parts in the model. In that table elements are described through the following attributes of the elements: name in the model, its full description, the formula, the initial value (for the old and the new machine), the range of values that element can have and the unit.

In order to make the comparison of the machines dependable only on the fact that it is an analysis of the old and the new machine, the other elements in the company that affect its daily work are not taken into account. This usually comes out from the fact that these elements are common for the both machines. For the flow of information and parts, a scheme was created of the logics of the simulation model. According to this (flow-chart like scheme) the steps in creating the model were defined.

#### 3.2 Collecting and analyzing data

This section analyses four elements used in the simulation. Two of them are processed in Mathcad<sup>®</sup> software; two of them in special software for determining distributions – ExpertFit<sup>®</sup>. The ExpertFit<sup>®</sup> software is used to determine the theoretical distributions with a great level of significance for a relatively short period of time, reduce the possibility of errors and doubts in the obtained data. Mathcad software is much more complex software. With it, it is also possible to determine the theoretical distributions, but more time is required (for learning the software and the real programming of all assumptions in determining the parameters of the

distribution). Mathcad<sup>®</sup> was used in this case when the theoretical distributions are not adequate, but the prediction of the mathematical dependence of the data.

	old machine	Unit				
Name of the element	new machine					
(Iomaa)	value range					
Order (number of parts) abs(round(NORMAL(282.63158,98.22408))*MONTECARLO(scrap_percentage)		Parts/ order				
<ul> <li>This element represent the number of parts that are ordered by the client. It's the same for the both machines. The number is being generated using the normal distribution with mean of 282,63158 and standard deviation 98,22408. The number is being rounded not to generate decimal values and in absolute values. The value is being multiplied with the MONTECARLO function from the software which determines the tempo of the orders arriving.</li> </ul>						
te	24					
	18	minutes/				
	10 ÷ 40	P				
• This is the value for the time needed in order to produce one single part. Because of the better performances of the new machine, that time is shorter regarding the old machine (mainly because of the shorter technologic and additional time). At the interface level there is a slider through which the value can be adjusted.						

#### Figure 2: Detailed description of the included elements in the model

#### 3.4 Model verification

For the verification, a simple version of the model was created in Microsoft Excel<sup>®</sup>. This model excludes the elements that evaluate the various costs in the model due to the fact that in those elements the possibility for making a mistake is very small. That is why a simpler model version was created and tested. Both models were then tested with the same few examples/inputs. At the end, a comparison of the results of both models was generated. Given that there are no deviations of the results obtained from the two models, one can conclude that a successful verification of the model has been made.

#### 3.5 Model validation

In this section, two tests to check the validity of the model were made. The first is a simple test of correlation and the second is the statistical validity of the model. Given the fact that it is a simulation that simulates a situation what will be in the future, proper validation should be done after 2 years, as it is a time frame which is being simulated. Therefore, the model created in Excel was used and the data there were compared with those from the simulation. Additionally, in this section the analysis for the number of replications needed was conducted (according to [2]). From the results that were obtained, it was concluded that only 5 replications are sufficient in order to obtain results which we can be sure enough to be representative in 95% of the cases.

#### 3.5 Experimental design

As in every simulation model, few assumptions were made. This model took in consideration only one type of produced parts and one type of handling the scrap (the produced scrap cannot be reused nor reworked). Making this model work for n types of different parts would

drastically increase the complexness of the model (for example if we assume a production of 5 different types, the number of connections in the model will increase for another 120; the number of elements will increase for another 60).

There are different tests that can be done to the model, with which it can be analysed (structure assessment, parameter assessment, extreme conditions, surprise behaviour and others), [6].

The sensitivity analysis is a way of experimenting with the model, but also a way of testing it. In the simulation there were some elements that are taken from historical data or assumptions. Using this analysis, the values (parameters) of certain element(s) were changed and the reaction of the model was tested [7]. In the given case, the number of shifts (1,2 and 3) were tested and it generated significant changes of the performance of the critical elements in the model.

#### 3.6 Simulation functioning and analysis

The simulation was set, verified, validated and now the data from it can be analyzed which is the reason why the simulation model was created. Table 2 shows the comparable values between the models.

Elements	Old machine	New machine	
Profit	54 684,7 m.v.	146 137 m.v.	
Income	397 720 m.v.	638 960 m.v.	
Good parts	29,07 per day	42,04 per day	
Scrap	676 213		
Missed out profit	170 597 m.v.	153 176 m.v.	
Costs	343 125 m.v.	492 943,34 m.v.	
Costs for maintenance	15 350,29 m.v.	10 268,304 m.v.	
Daily costs	305 475 m.v. 444 675 m		
Not admitted costs	52	46	
Stoppages	33 % per day	33 % per day 12 % per day	
Time-duration	5,24 days	3,50 days	
Productivity-equipment	85,75 %	95 %	
Costs-equipment	43 350,3 m.v.	50 268,31 m.v.	

Table 1:	Comparison o	of several e	lements in	the simulation.	between the t	wo models
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m.v. - monetary value

As it can be seen, the new machine generates more profit compared to the old one, mostly because the time of producing one part is shorter and it has fewer defects i.e. it has less stoppages in production. Therefore, the new machine can produce far more pieces per day and thus more profit per day (an assumption is that there is a continues demand for the product). In determining the duration of the series a big difference between the two models (5,24 vs. 3,40 days) can also be seen, where the advantage of not having so much stoppages during the day is obvious. The missed out profit (this refers to the revenue that the company is missing out when it cannot fulfil an order) in the model with the old machine is greater (but not a big difference) mostly because of the fact that it has rejected several orders from the model with the new machine (52 versus 46). Daily costs and equipment-costs are higher by new machine because of its higher payment fee for the worker(s), but

also because there are more working days (productivity- equipment is 95% compared to the old machine-85,75%).

In Figure 3, the I/P matrix for the all three subKEs is presented, with the old values and the values of the simulation- from the old machine and two new ones, with different characteristics. During the review and analysis, the importance of the subKEs has not changed, which is normal. Therefore, all values are set vertically in a line. Only the performance has changed depending on which success factor was implemented.

The performance of the TIME-duration when it comes to new machine has increased, appropriate to the performance of the machine. In the case of the old machine it even has a slight decrease in value, which is somehow expected- there was an increase registered in the percentage of scrap and increased stoppages affecting this subKE.



Figure 3: Importance/performance matrix for the solutions

In the case of the subKE PRODUCTIVITY-equipment, the second new machine has better results than the first. Maybe that is strange at the beginning, but first, it is a very small difference (97.25% versus 95%), and second, the new machine 2 has less refused orders from the first (41 versus 46). This leads to the fact that the new machine 2 has been used more, but that does not mean that profits increased. As a reminder, the second machine needs more time for producing a piece (22 minutes versus 18), so it will take more time to produce the same size of batch than the first machine.

The subKE COSTS-equipment was left to be analysed. In this case, although with unexpected start, but very interesting results regarding the improvement of the indicator were received. Namely, it was expected that the new machine 1 to have some kind of improvement over the initial value and in terms of the old machine, but that didn't happen because most of the values of the indicator come from paying the cost of the investment for the machine. Another part relates to the costs identified for the cost of regular maintenance of the machine and the cost of eliminating the defects in the machine. The first is quite larger in the new, expensive machine, and the second is greater among the old machine.

Another analysis that is performed in COMPASS was the creation of possible scenarios. At the end of COMPASS a set of scenarios have to be considered. They include all analyzed subKEs, given the improvements and the cost for a given scenario. From the analysis made after the simulation of the three models, the limit values for improvement are defined and further a prism was created. Each performance is backed-up with the cost of implementing one scenario. Based on this, the final decision has to be made.

## 4. Conclusions

In this paper, the results from the simulation model of one company situation have been presented. It is developed according the performance measurement system from COMPASS, and focuses on generating scenarios in order to improve the performance of selected indicators. The simulation model is a comparative solution of the two circumstances of one company- continuing to work with the old machine or acquiring a new machine.

The benefit of this kind of models is that the management can make decisions based on quantitative analysis, and not assumptions only. This kind of model can be used with any kind of equipment, but can also serve as an idea for different types of analysis performed at enterprise level.

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## Cultural Factors - Merger and Acquisition of Small and Large Companies in the Global Environment

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Successful corporations outside their home country must take into account the factor of culture, and respect the differences that they encounter in the beginning during, the negotiations, as well as later on in business cooperation. Since the early 1980s, the number of mergers and acquisitions business systems across the borders of the home country has increased significantly in the European and world scale. The risks of failure are particularly high in transactions across the borders of the home country where cultural differences are present, so the integration process is especially difficult. Therefore, it is necessary to develop tools that facilitate the integration of different cultures in transactions across the borders of the home country. This part of the research indicates that the approaches of intercultural management can contribute to successful business cooperation and development of business systems. The authors analyze the problems that are encountered in the integration of various business processes. In order to make an objective analysis of the possible impact of culture on the integration process, it is necessary to understand the specific features of international mergers and acquisitions.

#### Keywords

acquisition, companies, cultural, global environment merger

## 1. Introduction

Since the early 1980s, the number of mergers and acquisitions business systems beyond the home country framework has increased considerably in the European and global scale. The risks of failure are particularly high in transactions outside the home country, where cultural differences are present, so the integration process is there especially difficult. It is therefore necessary to develop tools that facilitate the integration of different cultures in transactions outside the home country. This part of the research shows how the approaches of intercultural management can contribute to a successful business cooperation and development of business systems. The authors analyze possible process of integration, possible problems that may occur in merging French companies and German companies due to the obvious cultural differences. To really be able to analyze the possible impact of culture on the integration process, it is necessary to understand the specifics of international mergers and acquisitions.

## 2. Mergers and Acquisitions and Globalization

Mergers and Acquisitions business systems can be defined as a strategic agreement between two or more independent companies that choose to share their resources (technology, manufacturing, sales, etc.) in order to achieve common goals. Integrated Enterprise should determine the allocation of shares between the former shareholders and management departments of the headquarters and that new entity. At the operational level, activities of the newly formed company are to be coordinated, which often requires reorganization. It must be emphasized that these organizational changes are more difficult when the merger involves companies from different countries. In fact, in transactions outside the home country, companies are faced with problems related to differences of corporate and national culture (8). Cultural differences can affect the interpretation of various nonverbal and verbal communication. In the process of merging the two companies, it is important to carry out these activities while focusing on the integration process and to clarify what they see as their cultural identities, at the outset. It is important to connect business systems based on the existence of a common project and then it is necessary to effectively manage human resources. It is therefore essential for the companies to understand the benefits of connection with the merger, so they can concentrate to together achieve the set goals. When it comes to human resource management, it is crucial to predict and define the necessary changes that will lead to a successful transaction. The process of merging the two business systems requires creation of mixed operational teams. Given the different interests of managers, communication plays an important role. Finally, it is to predict cultural change within the company and define the method and style of management tools. Creating a new corporate culture that integrates the positive aspects, ie. understanding and respect for cultural diversity helps to avoid conflicts. The integration process of companies on a global level is a sensitive process, especially when taking into account the different cultural backgrounds of the involved companies. Culture factor is sometimes seen as an obstacle to the success of mergers and acquisitions, but that cultural distance can improve the performance of business systems and present the new value criteria. That cultural differences encourage the increasing cultural awareness and better and more flexible approach to the realization of business activities, especially in the modern business environment where changes are constant. Effective management of cultural differences is one that can contributes to the favorable outcome of international mergers and acquisitions business systems. Numerous studies have pointed out that those companies that take into account the cultural differences have greatly improved the results of their operations.

# 3. The importance of intercultural management in terms of global business

Empirical research conducted by Hofstede on national and corporate cultures contributed to the development of intercultural management in the field of management (5,6). Intercultural management is different from the international management in the sense that intercultural management focuses on organizational behavior and human resources (1). Intercultural management strives to assess the impact of culture (national and organizational) on the perceptions, interpretations and actions of managers. Culture can be defined by the collective programming of the mind which distinguishes members of one community over another. This collective behavior is a system that is acquired during the process of socialization. National culture, which reflects the values, thoughts and behaviors within society, continues to play a primordial role in spite of the globalization process. In the area of governance, cultural system gives individuals cognitive abilities and specific approach to Proceedings of

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solving problems. Therefore, associates from other countries are likely to find different solutions when they face the same problems. Research conducted in intercultural management tends to focus on the study of interactions of managers from different systems. This research focuses on "critical incidents", that appear due to cultural differences. These incidents are produced in the process of communication in situations where teamwork is expected and in which the expectations and behavior of managers diverge and lead to intercultural conflict. Intercultural management plays an important role in the international business activities, where business partners from several countries are placed to be members of a same team. Today, however, it is expected to have a team approach in realization of business activities, regardless of cultural background of managers, where due to wrong interpretations of verbal and nonverbal communication may be conflicting and lead to misunderstanding. This underestimation of cultural factors is still present in the international business scene. On the other hand, a strategic approach based on the concept of divergence takes into account the cultural plurality and the stability of individual systems. In international mergers and acquisitions business systems, convergence versus divergence is mainly related to three areas: organization, corporate culture, and management of human resources(7). Question of motivation of employees is one of the issues linked to global business management that has been arising and becoming more important in recent years. Previous complexes of motivating systems, motivating techniques and strategies have become insufficiently flexible, so there is a need to develop new ones that will, with their versatility, lead to high motivation and satisfaction of the employees, and will achieve successful business.

Regardless of everyday challenges and problems, rising number of corporations in global level finds itself in the conditions of higher macroeconomic stability than in past. Namely, corporations that have emerged as smaller, usually family corporations, have often grown into enterprises with higher number of employees. Even though stock shocks and global crisis affect the everyday business, leaders of those corporations must also handle the question of motivation of employees to pass the motivation that has contributed to the success of corporation to them.

With that in mind, each leader is faced with the challenge of finding the right solution that would represent the best encouragement for the employees. That solution depends on things such as nature of business, structure of the workforce and competition in the market of human resources or the level of salaries that the enterprise can offer, but with the conditions of globalization and cultural differences.

Question of motivation is highly present throughout the world, so especially in developed countries, special attention is dedicated to that problem and a lot of research is done in light of that. According to the results gained from a number of companies in last few years, 23% of surveyed people was unmotivated and considered that they were "switched off" at work (14). Analysis showed that the lack of motivation happens when there is a lack of constructive dialogue and open communication between employees and leaders who are not familiar with the positions of their employees and when employees do not understand what is expected from them in the workplace due to different cultural. Numerous research pointed out that unmotivated staff is absent from work more often and that they are less attached to their employers and the company. Due to that lack of motivation of employees, globally looking, companies lose 360 billion USD per year. In accordance with outlined research in the goal of better motivation, it is necessary to improve already mentioned factors that cause lack of motivation (7).

Having that in mind, it can be concluded that new corporations have deep and meaningful implications to the HRM practice and cause large changes by placing emphasis on people, good communication among employees, motivation of employees and management of their potentials. Trust in capability of employees is especially emphasized, particularly believing in Proceedings of

the fact that "strength of the company lies in the capabilities of its employees", who should be additionally motivated in order to achieve desired results.

In addition to all outlined factors that should be respected in business, importance of culture must not be forgotten. Cultural differences among people in one country, with aspects of different national, ethnic, racist, and religious origin, define the character of working population of that country. For a successful communication and business in general, awareness about cultural differences is extremely important, so that communication barriers can be overcome successfully.

Despite the fact that majority of motivating factors appear in the results from the countries in which research has been performed, there is still a significant difference in their importance for managers from different cultures. That represents is a clear signal to international corporations that inflexible politics of human resources that hasn't been adapted to specific cultures, will not allow managers to successfully motivate each employee individually. Therefore, research indicates that there are different values among different cultures and thus, each international corporation must be aware of them. Different needs and expectations of the employees in different countries require human resources managers to implement the policies that are flexible enough to respond to local specifications and to satisfy personal expectations in higher level. As a result of a continued search to establish key interventions there is a need to refine broad categorizations of the job, the business and the cultural environment. There is a need to look more closely at "psycho-cultural" (personal wellbeing) and "socio-cultural" (intercultural interaction) orientations and dimensions. There is a need to examine such interventions in combination and from the perspective of different respondents. This may lead to a more informed understanding as to which are the key interventions and, assist in focusing the attention of cross-border business decision makers to important human resource management investment decisions.

It is important to acknowledge that different cross-border managers are likely to react in different ways as different circumstances are placed before them. Hence it is equally important to understand elements that may influence adjustment, such as age, gender, industry group, manager type and respondent cultural background and experience, and which may impact on the ultimate success of any adjustment intervention(s). Within this context language skills have long been questioned as to their necessity for cross-border managers. From a pragmatic perspective, not having ability with the host language may lead to serious problems associated with failure to appropriately adapt to a host culture. This may in turn result in failure to win a business contract in the first place. Apart from not being condescend with negotiation practices and requirements, who one's business colleagues are, and the potential for not achieving the best outcome, in emphasizing the potential impact of foreign language skills suggests: fluency in foreign languages can be an enormous advantage ... personality and business acumen are even more important than knowledge of foreign languages. Flair without languages is useful; languages without flair are useless.

Each element that direct individual behaviour can create significant "psycho-cultural" and "socio-cultural" difficulties and hence may lead to significant dysfunctional behaviours, e.g. depression or withdrawal or both, with the significant potential for long-term career and business involvement problems. The behavioural choices made by cross-border managers have become key elements in understanding "personal wellbeing" and "personal interaction" necessary to assist effective adjustment.

The following analysis will focus on a single approach for managing cultural differences. The authors collected the data conducted in longitudinal integration research, which resulted from the merger of French companies and German companies. Empirical studies are essentially based on secondary data collected after the creation of new companies of the two cultures. Monitoring data extends from 2007 to 2009. year (3). The data collected covered the annual reports of the merger of French and German companies, internal documents and articles published in French and German Business Press (daily newspapers such as Les Echos and Frankfurter Allgemeine Zeitung, weekly and monthly magazines such as L'Expansion Die Uirtschaftsuoche). Because of strategic importance to both countries joining, the way of forming new groups were conducted and presented in great detail. In addition to secondary data analysis, the results were presented of interviews that were conducted with 16 French and German managers in different locations in France and Germany. Interviewed managers were directly involved in the integration of their business systems. Due to confidentiality, it was necessary that their names were not listed. The interviewed managers were asked to describe the process of integration that is intercultural, to describe the situation as detailed as possible, and to include information about the context and the main actors. What are the difficulties? What are benefits? What are the possible explanations? In order to achieve the larger objective, the same events were presented by the other actors involved. It is important to emphasize that it is very difficult to get access to primary data, mainly because of conflict that occurs during and after the integration process. In considering the possible methodology for studying the dynamics of the strategy, the authors emphasize the value of secondary methods, especially adapted to post-hoc analysis. The advantage of secondary method is less observer bias. However, if the analysis ie. research mainly relies on secondary data has several shortcomings that will probably limit the contribution of empirical studies. In fact, the collected data may reflect only partly to the business realities and some information may be misinterpreted, for example in the case of business journalists in the press. Despite these shortcomings, the collected information allows to better understand the main aspects of the integration process. The results showed how the managers in the process of integration and merger of several measures managed the cultural differences between partners. These measures are related to (1) organization (structure, flow chart), (2) corporate culture, and (3) human resources (collaboration and teamwork, leadership, training and careers). Respect for ethnic balance and responsibility has led to a significant transfer of employees. Faced with corporate cultures that have significant differences, the managers of the newly formed company, recommended a policy of human resources that was aimed at building joint business spirit. It usually includes adoption of English as the official language and corporate culture is based on the spirit of teamwork. It is advisable to separate the large number of people who need to work on the harmonization and integration of human resources. Recruitment of new labor force contributes to building a new corporate culture. Managers who have experience in working in these companies, mergers and acquisitions of different cultures, "consider cultural diversity as a distinct advantage of the new merged company. As a result, several working teams are employees of different nationalities. Cultural diversity is a source: creative, original ideas. The way it should be noted that in order to facilitate the integration process, recommended changes in organization structure, with a "mono-cultural" teams in the bi-or tri-cultural" teams. In line with these changes during the implementation of business it is implied that it is possible that members of multucultural teams face some problems that must be quickly addressed. The first problem is that only the team members socialize with members of their culture: the Germans with their colleagues from Germany, French

managers with their colleagues from France. The above situation has led to delays in communication and implementation of business activities. The analysis of this situation has pointed out that the delay arises due to different perceptions and interpretations of the concept of cooperation and teamwork. For German engineers, the concept of cooperation involves teamwork, in order to achieve a common goal, while for French engineers, the same term means that the goal should be reached by working on an individual basis. One German manager said: "Our concept is that each team member actively contributes to the realization of goals and therefore bears responsibility." The French manager has expressed a different opinion: "In our team are highly qualified engineers who know what they do, they create innovative ideas. If you ask too much coherence and harmony in the team, we lose the creativity. Any exchange of information does not require too much time, the same applies to the consensus of all members of the team. We can focus on our goal, and a team leader is there to make decisions." As a result, team work will vary depending on whether they are members of the German or French group. In the mixed team, the French will have a tendency to feel closed due to their lack of freedom of action while the Germans, by contrast, will remain with the idea that their French partners are individualistic and unpredictable. Only a systematic explanation of cultural differences enables overcoming the obstacles that will inevitably cause friction between the logic of competition (France) and the logic of cooperation (Germany). Origin of the two concepts is based on socialization, and more specifically on the education system, which will be explained in detail in the paper but when it comes to the practice of Japan. Germans learn of the importance of team work, so that each team member contributes to the achievement of equal outcomes. This need for homogenization and democratization is present at all levels of German society. Motivation is intrinsic orientation (Gemeinschaft = community). Frequent use of the German prefix "myth" (meaning "with") shows the importance of cooperation in the German culture: the group is called "Mitglied" employee " fund employees, "collaboration" Mitarbeit, who - management "Mitbestimmung". On the other hand, the French educational system puts the emphasis on intellectual superiority, individual achievement and competitiveness. Similarly, the French and German concepts of leadership show a few differences. For these reasons very important concepts are knowledge, understanding and respect for cultural differences in human resource management in modern business conditions.

## Conclusion

Changes in the environment require adequate adjustments and changes, as well economic organizations. Global companies are becoming less and less related to specific areas as they spread their operations around the world, and as they co-ordinate resources and activities where it is most appropriate and where technology allows a flexible interaction. Successful corporations outside the home country must respect the cultural factor, and respect diversity that is first encountered in the course of negotiations and later in business cooperation. Today, there are project teams whose members are members of different cultures and then it is necessary for a manager to apply such a strategy of motivation that will direct all members of the project team towards the goal. It is clear that the motivation is importany for employees in home country, but it is a lot simpler than motivating employees outside your home country, where employees have to adapt not only to the new corporation, but also to successfully integrate and accept the dictates of the new culture, and different types of business. Globalization emphasizes the increasing differentiation of cultural values and standards that should be considered in the first step of successful cooperation, when a seemingly simple business is put in a cultural context, those become more complex and the complications grow exponentially. The role of culture today is a critical element for

successful business on a global scale. For successful business on the international stage is very important to hae a business strategy and preparation for cultural diversity, which are the conditions for the competitivness and survival in foreign markets. If companies want to achieve the benefits of expansion in the international business arena, they must achieve a high level of agreement between the integrated strategy, the selected model of organizational structure and organize adequate preparation of its employees. Today, all companies, regardless of their size, are under the influence of forces acting in the international environment, and thus their management should very carefully assess the advantages and disadvantages of alternative strategies. When company appears in the international market, it faces the forces acting in the environment and international business area. Complications grow if they have merger or acquisition and the companies that are culturally different and must apply appropriate management. Globally, the aim is to point to the importance of strategy as a variable combination of business moves that will enable the company to establish profitable relationships with the environment and develop competitive advantage in a given market, as well as adequate preparation for cultural diversity as a critical variable for the effective realization of desired goals.

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## The SMEs Establishment and Development Funding Instruments

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One of the crucial limitations for the SMEs establishment and development, certainly are difficulties in providing their funding sources. In this work, some particular kinds of the SMEs funding instruments will be analyzed, with special reference to Serbia.

To create the financial services suitable set which would improve the best the establishment and development of SMEs, it is necessary to know all specifics of these enterprises and their needs. Depending on needs, some enterprise can use micro loan, short-term loan, long-term loan, leasing or guarantees ensured by guaranteed fund.

In order to funding approach make easier, all strengths have to be directed to the early stadium funding where a special role play guarantees and micro loans.

Except of formal funding institutions, alternative funding sources, such as suppliers' loans, venture capital, business angels and variety of state forms of help, have a big importance for SMEs.

Taking into account a relatively short period of the entrepreneurship tradition in Serbia and high level of uncertainties which facing SMEs, the problem of the risk management is a crucial reason of the funding institutions refrain in giving more longterm support to this economy segment.

An insufficient information problem obstructs these enterprises funding and information obtained by SMEs is less sophisticated and not so structured and valid like information gained by big companies. This is the main reason for banks not to give their services to the sector of SMEs readily, although they can be very profitable for the funding institutions, under the condition of having a constant and reliable access to different loan products.

Bearing in mind all difficulties mentioned above, the goal of this work is the SMEs possible funding instruments to be indicated and opportunities and funding problems that follow these enterprises to be pointed, with an emphasis on Serbia.

#### Keywords:

funding institutions, funding instruments, risk, SMES

## 1. Introduction

The SMEs developing and growing is one of the most important conditions for the economic growth running. For economy growth and developing, there is the SMS sector to be needed, whose improvement is possible, among other things, if an adequate financing support and a healthy banking system exist.

Limited approach to required financing resources for the beginning, survival and developing are considered as a challenge which small enterprises and entrepreneurs with different needs at different levels of the enterprise developing are faced with.

In transition countries, there is a lack of financing assets to be underlined as a one of the biggest obstacles when some enterprise is being establishing and extending. Although SMEs Proceedings of International Conference for Entrepreneurship, Innovation and

Entrepreneurship, Innovation Regional Development ICEIRD 2010 are considered as a very important target group for banking sector in developed countries in situation of still undeveloped competition on financial market, most of banks are not significantly interested in this sector financing, especially those ones which are in an initial phase of developing. In ensuring the financing assets needed, the biggest problems have those entrepreneurs who are at the beginning of their business and micro-loans are related to the most acceptable way of financing support for the enterprise starting and developing.

## 2. The SMEs financing specificity

For economy growth and developing, it is very important for the SMEs sector to be developed and the SMEs developing is possible to be brought to reality if an adequate financing support and a healthy banking system exist. Despite the SMEs obvious importance, banks and other funding institutions don't provide them an adequate treatment, especially when lending. In the most part of the world, small business are considered as a risk because of a very high percentage of coming down. Lack of an adequate documentation makes harder getting the clear picture on funding situation and potential success of such a business. The transaction costs of lending to the small enterprises and entrepreneurs are quite high in correlation with the amount of lending which mostly makes such a lending to be unprofitable. It is not surprising that most commercial banks, state and private, are much more found of dealing business with bigger trade companies than with small manufacturing companies.

One of the SMEs crucial limiting in comparison with a big ones is, at the first place in difficult access to the funding. Big enterprises can reach the loan much easier, mostly have larger potential for internal funding and, very often are given with a number of tax relieves which is not the case with the SMEs. The enterprise growth is grounded on investments and they have to be founded. For small enterprises, the funding area can be considered as "a narrow throat" which is obstructing their timely and sufficient growth. For short-time-loans there are no bigger obstacles. The problem is to be appeared while funding in long terms. Practically, there are only big enterprises that have an approach to the organized market. Taking the last into consideration, it's become clear that self-founding is something much more important for small enterprises. However, there are large enterprises to have an advantage here as well, though certain individual situations are significantly different. In general, possibilities of self-funding in the SMEs can be accepted as less favorable than it is a case with big ones [1].

Then, the problem of an initial capital funding for starting some company is to be appeared. Women are in worse position to reach capital because they start service business more often where, even costs of establishing are lower, banks earn less money while giving lower loans. Some banks, when realized that bigger and bigger number of enterprises owned by women are producing a lucrative market, have responded to the demand and have established some special lending programs for women and minorities having their present business.

The approach to funding assets is partly interfered by the lack of the credit methodology for the small enterprise funding as well as by expensive administrative procedures. This is the main reason for banking sector not to be found of servicing micro and small enterprises although their can be able to pay real interest rates and to be very profitable for institutions funding under condition of having a constant and reliable approach to different credit products.

However, despite of the mentioned limits, an attention is getting to be more and more paid to the SMEs interests in banks and other funding institutions business policies. It is confirmed by the fact that there are special organizational units to be formed in large number of banks and they are specialized in business with SMEs while, in order to ensure required funding assets, there are donor - ways of support to be forced through the credit lines. An advice-giving support and banking staff training for estimation of entrepreneurs credit demands is going to have positive implications to this sector's affirmation as an important target group of banking institutions.

## 3. The SMEs funding instruments

As already has been said in the previous part of this work, the biggest problems in ensuring required funding assets have entrepreneurs who are at the start of their business and exactly *micro-credits* represents the most suitable shape of funding support for the enterprise start and developing. Credit assets of banks and other funding institutions in Serbia are very modest. There are short-term loans to be dominated, interest rates are too high and procedures of obtaining loans are very long and expensive.

During the last 10 years, an attention is getting to be more and more focused to the microfunding. These initiatives have showed that lending to this sector, in fact, is not more risk than lending to any other group if the right procedures and approaches have been used.

There are three characteristic to be noticeable when granting micro-loans:

- micro-loans are related to very small amounts which are too expensive for banks to set them in their portfolio of credit services;
- they are intended for start up companies and entrepreneurs projects not more than three years old, for which is required a minimal initial capital that is not available in commercial banks because of high risk;
- they are mostly directed by institutions for small enterprises developing, not commercial banks.

The first and the second characteristics are the reasons for micro-credit institutions not to be any kind of competition to commercial banks. In contrary, they have a complementary function. With a tend of growth and developing, one day these clients are going to be bank clients. In Serbia, this mode of lending is still in its early stage of developing. Micro-funding means the lending of a very small amount of money to individuals or to groups for very short period of time. Although there are several exceptions, most of more successful micro-funding institutions are reached the rate of more than 90% loans returned. There is a very interesting data according to women are mostly those ones who receives micro-loans. Small loans offered to women have a big social and developing influence and women – entrepreneurs appreciate their approach to the credit paying off the credit more regular than men.

There are plenty of examples of successful micro-funding. One of them is an example of Spanish organization WWB. Since banks are the only institutions which are allowed to grant loans in Spain, WWB (Women's World Banking, non-profit organization funded only from donations and subventions) has made an agreement with 5 banks for giving financial services for WWB clients [2]. WWB helps women-entrepreneurs in building their business plans. WWB doesn't have any lending activity, it only assists their clients in making their application for lending in bank. WWB designs credit schemes for its target groups which then are implemented by traditional bank that means great support to women and overcomes all barriers traditionally present for women entrepreneurs.

As according to rules, bankers are always interested in faster turnover so granting *short-term credit* is very often rooted in it. The main goal of these credits is a satisfaction of current needs for capital. Credit for procurement of raw material, working capital and similar are granted mainly to enterprises which have a good credit rating. Due to it, free cash can be used in other purposes. The enterprise which is on the start up level ensures the credit for (permanent) current assets in the same time when ensures the credit for fixed assets with the fact that they are to be used after the buildings and montage equipment are finished. The enterprise which has some lifetime behind itself also can applied for the credit for permanent current assets because of production increased or because all current assets has spent in investments.

Long term investments are an important condition of the economic growth and developing dynamic. *Long term bank credits* which are to be granted from sub-balance of long-term sources are intended to funding of permanent investment into enterprise business. The long

term credits make satisfied the entrepreneur's permanent need for funding assets. Usually, they are granted to the period of time longer than one year and provide entrepreneur to invest into fixed assets (equipment, buildings, transport assets) and into developing. Long-term credits are usually paid off from realized profit. All the countries which are in transition towards market economy, including Serbia, have problems in ensuring efficient mechanism for long-term funding of the SMEs sectors because of lack of private investment assets, inadequate legal framework (collateral, coercive debt collection), banking sector that is on the start of developing and being experienced in the sense of granting loans and donations to the SMEs sector, inadequate business information that would bringing investment decision make easier.

*Financial leasing* can significantly improve the SMEs and entrepreneurs developing by funding equipment and vehicle supplying. Leasing is connected to the term of renting and certainly represents one, more specific method of the international collaboration in reproduction funding. In conditions when all investment goods have become technically extremely complicated and very expensive, leasing has become more and more important. Every delaying the decision on investment meant lag in relation to competition and funding by credit meant finding a creditor who is very expensive, of course [3]. To the entrepreneurs and enterprises, leasing gives an opportunity to modern their equipment and, in that way, to become more modern and efficient. It is especially suitable for the SMEs as well as for the new, just established enterprises which very often cannot count on other sources of funding. Just because of that, in developed countries there are different measures to support leasing, as an important method of encouraging investment and entrepreneurship in general.

The main adventure of leasing engagement is that the user of leasing has an opportunity, in short period of time and without own capital, to get all needed equipment required for working and to use it as it is his own property which will bring him a profit. The advantage is also when there is a need for the subject of leasing in limited time, which is especially favorable nowadays when technologies are getting overcome very fast i.e. is in unstoppable progress. The main lack of leasing is in the fact that the interest rate is usually higher in comparison with banking credits. However, leasing is very interesting source of assets, especially for small enterprises and for enterprises with little possibilities for invested assets to be refunded but with big chances for development. The Law on Financial Leasing is on of the most important new laws which fill a big gap in this sector funding in Serbia.

One of instruments used in order for making easier the SMEs approach to financial assets are *guarantee schemes*. Under these schemes, there is a guarantee to be considered and given to the financiers for some certain remuneration for covering the risk. The goal of credit guarantees is risk division. These schemes are intended to the entrepreneurs who have a healthy projects, capable to survive, but they can't offer a suitable deposit for getting the loan. In different countries, these schemes have been being noticed for longer period of time. European Commission supports several measures that make easier the SMEs approach to funding assets. There are two main types of guarantee schemes which show certain similarity:

- Assets for the loan guarantee usually are regional or national authority's public assets. They are those ones who ensure guarantees directly to small enterprises or indirectly through guarantee funds.
- Mutual guarantee association, established by small enterprises, business association and similar, sometimes in collaboration with banks. By common grouping, as cooperative, mutual guarantee associations, they are able to negotiate on loan conditions and very often they are in the position to ensure a professional business support to their clients.

A venture capital is intended for the enterprise capital to be stronger and gives some advantages which make the venture capital to be qualified for the banking credit.

Experiences with the venture capital are different. The venture capital instrument is considered very often like unsuitable for micro and small enterprises.

The venture capital "feeds" enterprises in their early stages, usually when the new product has been launched. Private investments are the most important permanent capital for new and growing small enterprises. Some data show that more than 30% of capital in small enterprises is origin from that source [4].

Investments of so called "business angels" are very rarely. They are individuals who want to be included in funding small but high-risk projects. In this, they are partly encouraged with high profits and partly with the wish of being included in job. The venture capital can replace but it can also supplement the banking capital, proprietary permanent capital as well as the state support in the new products appearance, introduction of new technologies, high technology and new employment appearance, and especially in job which is being increased.

As a source of funding the enterprise which is being developed, the venture capital is still playing a secondary role but it may be an important alternative to the present lack of banking credits and other funding sources. In the Republic of Serbia, there isn't still the General Law to be existed which would regulate the investment funds establishing, which means that financial instruments like funds of the venture capital, business angels or similar, also don't exist.

Very important source for small enterprises are forms of *state aid*. They are becoming more and more important especially for entrepreneurship, because states with those forms of aid tend to keep and save the entrepreneurship tradition in rough and competitive fighting. That is the reason because of which they direct relatively little money to growing enterprises, and if they direct, it is mainly directed to those parts of growing enterprises connected to technology developed and parts which carry certain technological and competitive advantages in international competition. The forms of state aids are usually expressed in different funds of developing and research character, and very often they are organized at regional and local level.

### 4. The SMEs funding in Serbia

The main feature of the banking sector in Serbia is a law level of capital and unfavorable approach to funds. It has been estimated that more than 80% of commercial banks funds is obtained from short-time sources, which requires bank's credit policy at the same ground.

A situation of domestic commercial banks with the foreign capital is more favorable if seen from the aspect of their assets sources quality but they are also mainly oriented to the physical persons crediting or big enterprises crediting and that is the reason which explains why they have not managed to provide more significant influence on improving conditions and possibilities of the SMEs.

Taking into consideration the general conditions of economy on the domestic market, as the main problem which the SMEs and entrepreneurs are faced with is, on the first place, chronic lack of free financial funds. Although the total value of granting credits to those companies is kept growing, an individual enterprise is faced with obstacles in ensuring the loan needed for the business. Namely, the lack of credibility is related and connected to small firms by bankers which make problems to entrepreneurs and enterprises in proving the quality of their proposals. Since the small enterprises have smaller formal financial reports, they often don't have enough required documentation to confirm their credibility and to enable a realistic conception on financial risk to the persons who are charged to grant the loan. On that way, the approach to credits is limited even if the SMEs managed to respond in right way to all bank's demands.

In domestic conditions, banks credit funds and funds of other financial organizations are very modest, short-term credits are dominated, interest rates are very high and procedures of granting loans are very long and expensive. The situation is more unfavourable for the entrepreneurs rightly from the reason that banks and financial institutions require from the loan user to have the

status of the legal person, so the entrepreneurs (who have recently obtained the status of the legal person) are deprived in the start even to show themselves as potential users of credit funds.

The lack of long-term sources, unregulated legal regulation, unreadiness of the SMEs to collaborate with banks, unreliable financial reports and credit history, lack of good projects represent just a part of limits in the SMEs funding. Banks recognize their interest very often in short-term crediting, in big companies crediting and in unrediness to share the risk with small enterprises. But, as a main problem in collaboration between banks and this sector of economy it appears to be the lack of adequate methodology for estimating the credit risk and credit capability.

Leading limits in the SMEs credit capability marking in Serbia are the following:

#### 1. Unreliability of financial reports

A big number of small enterprises, especially entrepreneurs, lead their business on the cash ground so any of attempts to verify their financial result is made difficult. On this base, the long-term support of banks to small enterprises which miss adequate prove on financial capability will fail. Quality Business plan has a crucial importance, especially its financial part.

2. Unreliability of data on the client market position

Unreliable data on the client market position are considered as a big limit in credit risk estimation because it is very difficult to determine sensibility to changes in surrounding. It is difficult to mark the market position (still in very unstable surrounding) of clients because of absence of adequate bases on data/institutions that are easy to reach.

#### 3. The SMEs management

The owners, very often the managers too are not ready for total collaboration with banks because of more reasons. It is obvious to notice an attitude of distrust towards the banks, unacceptance of banks in the role of the partner in the same job with the client, suspicion that data on business will be told to competition part, incomprehension that making the real picture on business will potentially improve the enterprise position for getting loan, as well as the right analyze of business can be useful to client as well.

Above mentioned limits result with wrong communication and bank inability to view the real position of the enterprise. This problem can be overcome by the entrepreneurs continued education and by developing partnerships with them.

In order to ensure all financial assets required for this sector, there are some initiatives to be actualized for establishing the private investment funds, activities of Guarantee Fund and donor support through credit lines with technical support for staff training for estimation of the entrepreneurs credit demands [5]. Investment needs of this sector in Serbia are very high. A part of assets can be covered from the establisher's personal capital and the rest can be ensured from external sources (domestic and foreign banks, leasing companies, investment and developing funds, state institutions and foreign investments).

## 5. Conclusion

The SMEs are very often counted as a one of main factors of every economy developing, but there is a necessity to ensure conditions for this potential to be used. The support to these enterprises in the area of funding is very important part of incentive policy for the SMEs in all countries where the developing of this part of economy is considered as very important. The SMEs sector in business policies of many banks is determined as a strategic target group. But, despite the obvious importance of the small enterprises, their treatment by banks and other financial institutions is not appropriate, especially in the part of lending.

The EU countries have recognized the importance of micro-funding and they encourage its developing in order to ensure different modalities of funding support, and all in purpose of creating new working places and bigger employment, however, in our country regulatory difficulties have blocked the micro-funding support to appear.

The main goal of short-term credits is the entrepreneur's present needs for capital to be satisfied. As a rule, bankers are interested in invested assets refunding as fast as possible, so it is more

common for them to grant short-term credits in comparison of long-term ones, which are needed for funding of entrepreneur's developing needs.

So, the rest of funding services like guarantees, leasing, venture capital, business angels- widely expanded in developed countries, in domestic conditions are only in their infancy.

In order to make easier for the small enterprises to approach to funds, all strengths have to be directed towards the early stage funding, where a special role have guarantees and micro-loans.

The approach to the funds is partly interfered by the absence of credit methodology for the SMEs funding and by expensive administrative procedures. This is the main reason for banking systems usually not to serve very gladly the SMEs sector although they can be very profitable, under condition to have a constant and reliable access to different credit products. An advice-giving support and bank staff trainings for estimation of the entrepreneur's credit demands will have positive implications to the affirmation of this sector as a very important target group of banking institutions.

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# Windows Mobile Platform for Economic Analysis of Ecological Routing Agricultural Production Method

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Modern information technology found its place in agricultural production. This paper was presented to the mobile application to highlight the numerous advantages of ecological methods of production compared to conventional production, and the form and environmental conditions of production do not lead to reduction of the economic results of farms which we determine by solving the system of equations and graphs. The main reason for achieving economic results is the realization of significantly better sales price (the price increased 100%), and price differences increased buying up environmentally derived products will be sufficient to cover the increased costs of production and compensation accrued lower yield and environmental protection.

#### Keywords:

agricultural production, information technology, ecological production, the mobile platform

## 1. Introduction

Numerous advantages of organic production according to the transition to this type of production usually does not lead to reduced economic results ie the usual conventional production. The reason for achieving favorable economic results focused on organic production is to achieve a much more favorable buying up and selling price obtained for such products.

Retail prices of organic products compared to prices realized conventional production would be increased by an average of over 100%

Example: In the Netherlands potatoes 114%, 125% wheat, milk 26% ...

According to sources with the same results in the Netherlands show that the difference of sale price of organic products would be sufficient to cover the increased costs of production in accrued compensation of lower yield.

Increased cash income of organic production compared to the normal mode of production seen in the production amounted to 16% of wheat, seed potatoes 46% ... Realization price of organic products on the market of developed countries is certainly the result of high purchasing power, of consumers, but still not achieved commensurate supply of products of organic origin.

## 2. Materia and Methods of Work

However, in addition to increasing the representation of a faster increase of organic production is still pose numerous questions and problems for its further development both in developed and in other parts of the world and their relationship.

Among the many issues important to the economic justification is given and answer the following questions:

1. Whether the achieved level of organic products will be able to compensate for lost benefits created by reducing the volume of production?

2. Does the level of demand obtained organic products will be able to provide the appropriate level of profit agricultural producers or will be faster for her to divert organic mode of production will be necessary incentive measures of agricultural policy, additional subsidies, etc. ..?

To achieve economic results as the conventional mode of production, farmers would organically derived products needed to realize the higher selling prices. Low selling prices of agricultural products can be achieved by the same amount of margin, as the cover of the conventional production and present the following equation:

$$P_1c_1 - VT_1 = MP_1$$
  
 $P_2c_2 - VT_2 = MP_1$ 

P<sub>1</sub> - amount of product and yield conditions of conventional production

 $\mathsf{P}_2$  - amount of product yield and the conditions of organic production

 $c_1$  - price of products in terms of conventional methods of production

 $c_{\rm 2}$  - price of products in terms of organic methods of production

 $VT_1$  - extreme direct variable costs of conventional methods of production

VT<sub>2</sub> - direct variable costs of extreme organic methods of production

MP<sub>1</sub> - margin coverage in terms of conventional methods of production.

Applying these patterns to prepare calculations, determined the lowest selling price, according to the manufacturer should implement their products.

Based on the calculations, consisting, at the level of variable costs for individual lines of production during the transition from conventional to organic production method are determined by the lowest selling prices of products.

According to these data yields some crops in terms of organic methods of production are reduced in the amount of 8% in alfalfa to over 30% in some crops (wheat, corn, sunflower). The consequences of reduced yield is certainly due to the exclusion of chemicals and fertilizers for conventional production, without the use of pesticides, weed and the like.

Here are managed from the assumption that the nourishing elements to be compensated from pure manure and risks of damage to biological agents relieve crop rotation.

The calculation assumed that the prices of final products in terms of field of conventional methods of production are equal.

In this way, determine the lowest cost in terms of organic production methods on the basis of which will achieve the same gain as in terms of conventional methods of production.

These prices can be determined by solving equations and graph as shown in Figure 1, 2 and 3  $\,$ 







Figure 3

Increasing production and reducing the intensity-based reduction and the use of chemicals for the production of a significant measure for the protection of the environment to eliminate the harmful consequences of environmental pollution and the point of its destruction. From the standpoint of ecological measures of agricultural policy in the countries of the Union may be considered acceptable as a result of changes in agricultural policy can be expected significantly increase the organization of organic production and thus bids obtained organic products on the world market.

To this was stimulating the production of the manufacturer should take appropriate measures in agricultural policy. This process of diverting agricultural producers to organic production method it will be a radical change in agricultural policy in order osetnog reduce yield and production volume in a short period of time.

Diverting conventional to organic production could be realistic to expect market disruption in relation to supply and demand of organic products from the organized production and thus the level of prices of products thus obtained.

## 3. Conclusion

The conventional way of production is based on the compulsory application of chemicals - pesticides and fertilizers in the developed part of the world are seeking alternative ways of production, which will significantly reduce pollution and environmental destruction.

Organic production is therefore looking more and complex as the economic and biologicalecological perspective.

The performance of organic methods of production on the farm starts from the following important assumptions specified in the law on organic agriculture. Research opportunities based on organic methods of agricultural production in our country are still insufficient. Therefore, in determining the conditions used organic methods of production standards for organic-based agricultural production from European Union (adopted by the International Federation of Organic Agriculture Movement - IFOAM) and the provisions of the law on organic agriculture in Serbia, adopted in 2001-2005.

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# A Proposed Framework of Regional Innovation System: The case of the Kharkiv Region in Eastern Ukraine

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Regional Innovation System (RIS) model of economic growth, seeks to promote increased interaction across the government, business and academia. The importance of RIS stems from the increasing interaction of regional actors on the outcome of the innovation process. This paper proposes a framework of regional innovation system for the Kharkiv region in the Eastern Ukraine. A thorough theoretical analysis was conducted to apply the most appropriate scientific approach to the study. Qualitative research approach was applied to cover the purpose of the study and answer the research questions raised. Interviews and documentation review were carried out using research questions based on previous studies. It is concluded that the main components of the regional innovation system in the investigated region are knowledge application and exploitation subsystem, knowledge generation and diffusion subsystem. The major stakeholders of regional innovation system (academic universities; research institutes; public organizations; regional state administration; non-governmental agencies and private firms) and specific component of regional innovation system (knowledge support and promotion subsystem) are identified in the Kharkiv region. The specific paper contributes to the knowledge in region by providing a proposed framework for the Kharkiv region.

#### Keywords:

Regional Innovation System, Regional Innovation Development, Regional Competitiveness, Regional Systems of Innovation, Governmental and Regional Policies

#### 1. Introduction

Regions are increasingly seen as essential parts of the global society [1]; innovation evolved as part of sustainable development [2] has become a driver of the competitiveness within the regions [3]. The concept of Regional Innovation System (RIS) has been the central goal of the European technology and innovation policy. This concept is considered to contribute to the Lisbon strategy by enhancing European regional competitiveness (RC) [4].

RISs have been successfully implemented in regions of the EU [5], [6], [7], [8], USA and Canada [9], [10], Taiwan and Japan [11]. Research in Central and Eastern Europe suggests

the establishment of RIS on the network organizers and close linkages between the actors that lead business in the region [12], [13].

The Eastern Ukraine has one of the densest industrial concentrations in the world and is also homeland of numerous scientific and research institutions [14], [15]. In particular, the Kharkiv region is one of the leading industrial, educational and scientific centres in a whole country [16]. However, some attempts to establish regional innovation environment in the Eastern Ukraine have failed [17], [18]. This provides an opportunity to analyze the current situation in the region and to compare with other regional development studies. This poses challenges and it is important to propose a framework of RIS for the Kharkiv region in the Eastern Ukraine that would be useful to decision-makers in developing appropriate regional innovation policies.

The paper is organised as follows: The next section begins by reviewing some of the key theoretical issues relating to regional innovation systems. This is followed by the methodology used and analysis of the study. The final section presents the proposed framework for the Kharkiv region and concludes with some key recommendations.

## 2. Frameworks of Regional Innovation Systems

One of the core ideas of the RIS approach is that different innovative businesses that function within regional networks, cooperate with consumers, suppliers, rivals, and interplay also with many research institutions, technology centres, innovation support agencies, venture capitalists, local and regional government representatives [19], [20], [21]. The literature suggests that RIS possesses two sides: the supply side and the demand side [22], [23], [24]. The supply side includes institutional sources of knowledge generation and institutions accountable for the preparation of qualified labour. The demand side incorporates the productive systems, companies that apply the scientific output of the supply side [25].

Andersson and Karlsson studied RISs in small and medium-sized regions of the UK and posited that the core of RIS formulated companies within the regional cluster is surrounded by supporting and additional organizations [26]. The main components of RIS are institutions, infrastructure, incentives (illustrated in Figure 1 - adopted from Andersson and Karlsson, 2004).



Figure 1 Complete RIS (Adopted from Andersson and Karlsson, 2004)

The rationale behind a "Complete RIS" is to capture synergies from the university-industrygovernment relationship. Different types of the institutions play the role of normative structures. The main task of these institutions is to support the cooperation between the actors and to facilitate knowledge exchange [27]. Etzkowitz and Leyesdorff mentioned the Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development

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university-industry-government relationship as the "Triple Helix" and stated that it forms "knowledge infrastructure in terms of overlapping institutional spheres, with each taking the role of the other with hybrid organizations emerging at the interface" (p. 115) [28].

Cook and Memedovic investigated the regional innovation system-building processes in Europe and stressed that firms of RIS possess sizable opportunities to access or test knowledge that has been generated within the specific geographic area or outside of it. Regional Innovation Development (RID) plays an essential role for the successful development of RIS in a region [29]. Moreover, a later study across European regions by Cook and Memedovic highlighted that RIS consists of two subsystems: Knowledge Application and Exploitation System (KAES) and Knowledge Generation and Diffusion System (KGDS). KAES includes mainly companies and KGDS incorporates public and private research institutions, universities, technology transfer agencies (illustrated in Figure 2 - adopted from Cook and Memedovic, 2006) [30].



Figure 2 RIS: A Schematic Illustration (Adopted from Cook and Memedovic, 2006)

However, several authors consider two potential dangers regarding the development of RIS: weak research institutes with poor cooperation prospects and integration of core elements of the system [31], [32], [33].

Similar work in Grodno region in Byelorussia suggests that RIS can be described as a composition of interrelated subsystems facilitating access to various resources and services to the economic players. The author asserts that RIS has a multilevel character and that it should be regarded as a process of interconnected subsystems increasing access to different resources and activities to all economic players of RIS (illustrated in Figure 3 - adopted from Opekun, 2006) [34].



Figure 3 RIS (Adopted from Opekun, 2006)

The author proposed that RIS approach enables the augmentation of the spheres of promotion and stimulation of regional innovation processes as a composition of the nest subsystems: production-technologies; finance; services; science; human resources; information; expert consultations; and management, incorporating the sphere of their interplay. Nevertheless, Oughton and Morgan argue that nowadays a lot of regions are victims of "the regional innovation paradox" due to the lack of integration between the two sides of RIS: the supply side and the demand side [35], [36]. Several authors assert that the framework of RIS shapes the learning process in a region [37], [38], [39]. Therefore, a policy approach which connects major actors and influences both sides of RIS should be developed in order to solve the "regional innovation paradox" [40].

## 3. Methodology

#### 3.1. Research Purpose and Objectives of the Study

The purpose of this paper is to propose a RIS framework for the Kharkiv region in the Eastern Ukraine. The objective of the present paper is to develop a framework of RIS for the Kharkiv region in the Eastern Ukraine. The research process included the following steps: state-of-the-art literature review, taxonomy of literature, setting the objective of the study and research questions, research design (preparation for data collection, data collection, and limitations), data analysis, reliability and validity of the study, development of a framework of RIS. The main research question was - What kind of RIS framework is needed in order to develop the framework of RIS for the Kharkiv region in the Eastern Ukraine? Our research questions can de specified: What are the major components of RIS? What functions do RIS perform? Who are the main stakeholders of RIS? What role could intellectual capital play in converting knowledge and intangible assets into innovation? How RIS can contribute to regional development?

#### 3.2. Study Design

The research framework of RIS that covers the purpose and research questions of the study was adopted from Cook and Memedovic [41]. A qualitative exploratory research approach was adopted. Based on a literature review the data of this research were collected through a number of in-depth case studies. Unstructured interviews and documentation review were used in order to collect qualitative data. In addition, semi-structured face-to-face interviews were held with key personnel within the organisations and triangulated with additional available information, such as governmental reports and governmental websites. Research questions which were in line with the study objectives have been answered by the interviewees during the interviews. Within-case analysis was used in the present study for analysis of qualitative data and content analysis was used for the quantitative data. Two governmental organisations, three universities, and two private firms of the Kharkiv region participated in the study.

## 4. Analysis of the Study

#### 4.1. The Region: Facts of Regional Innovation Development

During the 2007 the turnout of industrial goods increased by 8,1 per cent against 2006 in the Kharkiv region. The productivity growth was reached in seven general branches that formed

73 per cent of the total turnout. In fact, more than a half of regional companies and firms (53 per cent) have improved their turnout [42]. The amount of the industrial firms of the Kharkiv region that were engaged in the innovation activities is 9, 6 per cent in 2007. Regional enterprises have developed 175 innovative products including 74 items of innovative machines, equipment, and devices in 2007 [43]. The majority of the innovative products are the products of machine building branch of industry (64 per cent) and the products of the equipment building branch of industry (19 per cent) [44].

# 4.2. Description of the Knowledge Application and Exploitation Subsystem (KAES) of the Kharkiv Region

The KAES of the Kharkiv region includes 11,700 SMEs and 604 large firms employing 244,200 people in the Kharkiv region. The region can be decomposed into three major industrial zones: Central, Eastern and Southern [45]. First, the Central zone includes Kharkivskiy district and the neighboring districts. It is characterised by the high level of industry applomeration and specialisation. This zone is Ukraine's state-of-the-art center of energy industries, transport, electromechanical and agriculture mechanical engineering. Second, the Eastern zone, is located around the town of Kupyansk. Mechanical engineering is the dominating industry in this zone. Third, the Southern zone, is characterised by large natural gas deposits such as Krestishchenske, Shebelynske, Yefremovske and others. The cities of this zone are mainly focused on chemical industry, construction materials production and mechanical engineering. Cement and roofing slates production plant of Balakiya is one of the biggest in Europe [46]. Regarding the structure of material production, the largest shares belong to metal building and machine building (33, 5 per cent of the total regional industrial production), power industry (22, 2 per cent), fuel industry (14, 5 per cent), food production industry (18 per cent), materials construction industry (3,1 per cent), and light industry (0,9 per cent) [47].

# 4.3. The Knowledge Generation and Diffusion Subsystem (KGDS) of the Kharkiv Region

KGDS of the Kharkiv region includes nine business centres, three business support organisations, three public research organisations, and fourteen academic universities with 36,000 specialists and around 15 research centres with 30 Full Members and Corresponding Members of The National Academy of Sciences, with 9,000 Doctors of Philosophy, and 1,496 Doctors of Sciences. Fifty six per cent of R&D centres of Ukraine are located in the Kharkiv region . Then, around 56 per cent of fixed assets for research and technological activities (by their value in the state) are located in the Kharkiv region, in particular 15 per cent of equipment for scientific experiments. In fact, ten per cent of the total R&D projects of Ukraine are executed in the Kharkiv region. It is on the first place among the regions of Ukraine and on the second place on the national level after the city of Kyiv with regard to scientific capacity [48[, [49]. Therefore, intellectual capital could be considered as one of the core drivers of the economic value creation, competitiveness and profitability in the investigated region.

#### 4.4. The Stakeholders

The major stakeholders of RIS model of the Kharkiv region are academic universities, research institutes, public research organizations, governmental organizations, non-governmental agencies and private firms. If we categorize the stakeholders of RIS model of the Kharkiv region the main groups that derive will be universities, research institutions, business incubators / firms, and governmental and regional agencies. As indicated by Morgan "recognizing of RIS

stakeholders becomes complicated because they do not take one form in reality" (p.561) [50]. While there are only several regions which can be considered true RISs [51] in general, more studies will be required to define what forms RIS, who are its major stakeholders, and what constitute its core functions as a system [52].

# 5. The Proposed Framework of Regional Innovation System for the Kharkiv Region

Previous attempts to develop a regional innovation environment in the Kharkiv region has failed due to lack of financial support from the regional administration [53]. Considering that, it seems appropriate to include the knowledge support and promotion subsystem (KSPS) in the proposed framework of RIS for the Kharkiv region. This subsystem could regulate the target-program financing mechanisms focused on realization of innovation and regional development priorities in accordance with legislation of Ukraine. The KSPS includes public financial funds of the regional administration (KOSA). The proposed framework of RIS for the Kharkiv region includes three subsystems: KAES, KGDS and KSPS with systemic connections between sources of knowledge production, firms of large and small sizes, and regional administration (see Figure 4). It will perform five major functions. Firstly, it will organise the interaction between scientific, research and innovation enterprises, institutions and firms, and state authorities. Secondly, it will provide scientific and other support for innovation development in the region. Thirdly, it will provide information and consulting services for firms. Fourthly, it will regulate the target-program financing mechanisms focused on realization of innovation and regional development priorities in accordance with the legislation of Ukraine. Last, but not least, it will establish regional innovation infrastructure. In short, it could positively influence the regional innovation activities and innovation knowledge utility in the investigated region. Consequently, RDC, RIC could be formed and overall RC of the Kharkiv region may be increased.

In terms of future policy directions, it appears that research performers believe that 'creating better networks that link companies with universities and other R&D performing organisations' together with 'making more R&D finance available to companies enabling them to become involved further in R&D and knowledge related activities' should form the core policy issues. Significant importance is also attached to the creation of start up companies, attraction of high value foreign investment and an improved system of business support and advice. This result shows the increasing awareness of research performers of the need to address corporate requirements through stronger links between companies and R&D performing organizations. There are some implications and opportunities for academia, research, business and government to develop collaborative links. Primarily, an explicit regional innovation policy has to be compiled to assist the development of reactive economic networks from one side and of proactive research institutes from another side. The next step is the enhancement of clustering support policies related to research and development (R&D) activities among R&D researchers and targeted business sectors; this will strengthen the role of intermediaries in the cluster building process. Also, the creation of the new technological firms should be considered as a means to support the introduction of new ideas and innovation processes into the marketplace through new or already existing firms. New areas need to be identified in between traditional sectors where innovation can flourish, capitalizing in new technologies and shifting to new activities. Finally, a culture of innovation should be fostered throughout the whole region. Cultural changes toward innovation and entrepreneurship should be promoted, especially in the community of young generation of scientists.

Regional socioeconomic and cultural environment



Figure 4 The Proposed Framework of RIS for the Kharkiv region (built on the Framework of RIS by Cook and Memedovic, 2006)

### 6. Conclusions

In terms of practical implications this study contributes to the knowledge in region by providing a framework for the development of a regional innovation system. In this study we have proposed a framework of regional innovation system for the Kharkiv region in the Eastern Ukraine. The present study revealed some important findings, but is not free of methodological limitations. Firstly, a relatively small sample of respondents was used and this rendered impossible the use of more sophisticated statistical analysis. By clarifying the limitations of this paper, we suggest directions for future research. It would be interesting to carry out a survey of universities, research laboratories and research centres in the region, collecting data on knowledge assets, knowledge flows and interaction with relevant organisations and regional business. The specific research in that area could help to examine data in knowledge stock within the organisations and their competitiveness in order to benchmark the importance and effectiveness of various factors. In addition, the analysis of data on knowledge transfer would assess how knowledge is transferred by the research organisations to the regional economy. Furthermore, it would examine the barriers faced by the organisations in terms of transferring knowledge to firms in the region and their perceptions of barriers faced by firms with respect to acquiring or creating knowledge. Finally, their opinion about what should form the core policy for the development of R&D in the region could be examined in order to draw further conclusions. This research is part of a larger study examining/gathering data on knowledge assets, knowledge flows and interaction with support organisations in the manufacturing and services sectors, including sectors that are commonly identified as "knowledge-based". Moreover, it would be interesting to carry out similar studies in less favoured regions of the Eastern Ukraine in order to compare with the present investigation.

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## Support to SMEs Trough the Introduction of Voucher System of Training and Consultancy Services: A Case Of The Herzegovina Region

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The small and medium enterprises, employing almost 70% of the total number of employees which clearly shows the great importance of small and medium enterprises, in Bosnia and Herzegovina small and medium enterprises should be the backbone of development or out of economic crisis, and the generator of new employment and development of the country.

However, the rate of the newly bankrupt companies is extremely high, and in terms of the global economic crisis it is even more pronounced. According to the results of the conducted research in the United States as a fundamental reason for the bankruptcy highlights the lack of knowledge of entrepreneurs and management.

Entrepreneurs and enterprises in Herzegovina, where they are confronted with certain problems often do not seek appropriate help because they do not have the financial resources to pay for this help or think that it is too expensive. Also in business there is a certain distrust of professionals and companies who offer different types consulting and professional services, without having to have to be specially trained and certified.

Based on analysis that showed the current situation in the consulting market and the needs of SMEs for consultations and certain types of training and the need for a unique database of consultants Regional Economic Development Association for Herzegovina (REDAH) has developed a system that includes consultants as accredited provider in the region of Herzegovina.

REDAH provides support to small and medium-sized enterprises through the provision of subsidies to entrepreneurs for counseling by trained and accredited consultants. In addition to consulting, REDAH also provides other support to existing and future entrepreneurs - through information, training and managing the implementation of business ideas.

The research, which will be presented in this paper will show is it and to what extent the voucher system of training and consultancy services help companies in addressing and overcoming their poroblems, ie. survival and development of small and medium enterprises and whether this system has helped in building the confidence of entrepreneurs in the consultants and companies that deal with training and consulting services.

#### Keywords:

voucher, training, consulting, small and medium enterprises, support

## 1. Introduction

In the developed market economies but also in those economies in transition, a wave of small start-up companies is coming into existence on a daily basis. A relative share of small companies has been steadily increasing in the total number of companies, in the same way as the share of small and medium-sized companies in the total number of companies in the European Union, with the similar statistics in the USA and other developed contries, and it revolves around 99.7%, 92.30% of which are micro enterprises, 6.53 % small enterprises and 0.95 % middle-sized enterprises. As for the total number of employees, those employed with small and medium-sized companies take up 69.73%, with 39.39% of micro enterprises employees, 17.37 % in small enterprises and 12.96 % in middle-sized companies; as for Bosnia and Herzegovina, small and medium-sized companies should be the backbone of development or better to say a way-out of the economic crisis and new jobs and country development generator.

The analysis of the life cycle of the newly established companies showed that on average 87% of all newly formed companies survive its first year, 68% survive at least three years, and 55% survive 5 years in operation.[2]

These indicators demonstrate that the bankruptcy rate of the newly formed companies is extremely high, which is even more pronounced at the time of global economic crisis. According to the results of analysis made in the USA, the basic reason for bankruptcy was said to be a lack of knowledge with entrepreneurs and management. The needs of entrepreneurs and management for new and additional knowledge is felt at the company's inception phase, i.e. when launching the business enterprise, as well as during the business operations themselves.

When faced with a particular problem, Herzegovina-based entrepreneurs and companies very often fail to seek adequate assistance either because they do not have sufficient assets to cover the costs of such an assistance, or they think such an assistance is too expensive. Also, the entrepreneurs felt some sort of mistrust in experts companies that used to offer different kinds of consultancy or professional services without being properly trained or certified to do so.

As a result of the analysis that reflected the current situation in the consultancy market, as well as the needs of SMEs for consultancy and specific kinds of trainings, and also the need for a single database of consultants, REDAH has developed a system that includes certified consultants as service providers in the Herzegovina Region.[3]

REDAH also offers its support to small and medium-sized companies in providing the entrepreneurs with the subsidized consultancies provided by trained and certified consultants. Along with consultancy, other types of assistance are offered to the existing and future entrepreners - through information dissemination, trainings and guidance to business idea implementation.

## 2. Research Methodology

### 2.1. Establishment of hypothesis

A great number of small and medium-sized companies going bankrupt indicate that the entrepreneurs, when launching the business enterprise and in the course of operation, face problems they are not capable of resolving, which is even more pronounced at the time of global economic downturn and heavy struggles for market survival. At the both launching phase of their business enterprise and during its implementation, when faced with a

particular problem, Herzegovina-based entrepreneurs and companies very often fail to seek adequate assistance either because they do not have sufficient assets to cover the costs of such an assistance, or they think such an assistance is too expensive. Also, the entrepreneurs felt some sort of mistrust in experts companies that used to offer different kinds of consultancy or professional services without being properly trained or certified to do so.

The specified problem determined the goals set in this research, mainly to come to understanding of the level of interest of the consultants as service providers (both individuals and companies) as well as individuals and companies as beneficiaries of this kind of services, whether the beneficiaries managed to resolve the problems they faced in their business operation, i.e. survival and development of small and medium-sized companies thanks to professional assistance rendered by the consultants and REDAH. Also, the goal of this research was to find out if this system (voucher scheme) helped build the trust of the enterpreneurs in consustants and companies offering trainings and consultancies.

The problem and goals set in this research also predetermined the hypothesis set with regard to this research, namely:

- 1. Beneficiaries based in Herzegovina Region managed to resolve their business problems for which they sought assistance from consulstants engaged via REDAH;
- **2.** Voucher system helped build the trust between the consultants as service providers and companies as service beneficiaries, as well as the consultancy market development in the Herzegovina Region.

#### 2.2. Scope of research and methods of data collection

This paper research covered 76 entrepreneurs who used and finished using the assistance services through voucher scheme, as well as 27 certified consultants as service providers. The polling questionnaire was filled out and returned by 22 of 76 companies, which makes up 30% of the total number of companies who used the services, and 17 of 27 consultants, which makes up 63% of those engaged to implement the voucher scheme. The research was carried out in the Herzegovina Region the most beneficiaries are coming from, but also the other parts of BiH the service providers were coming from, given the fact that the service providers were not restricted to the region of Herzegovina. The research was carried out in March 2010 by way of the original polling questionnaire. This research also used the existing voucher scheme project implementation data in the Herzegovina Region available in the REDAH database.

#### 2.3. Model of data processing

Polling questionnaire for service providers included four questions the responses to which were classified by intensity from 1 to 5 (Likert scale) and for service beneficiaries, the questionnaire included only two questions, the responses to which were also classified by intensity from 1 to 5. Polling questionnaires also included other questions as required by REDAH, which were not used for the purpose of this paper.
#### 3. Research Results

### 3.1. Basic information on the voucher scheme training and consultancy implementation in the Herzegovina Region

In March 2008, REDAH launched the implementation of its project "Voucher training and consultancy schemes for business entities". The project value was 249,800.00 EUR.

This project was financed by the Spanish International Cooperation Agency - AECD with the main goal of enhancing the competitiveness of small and medium-sized companies in the Herzegovina Region by subsidizing entrepreneurs through system of consultations offered by trained and certified consultants. In addition to consultancy, the project also provides for other forms of assistance to the existing and future entrepreneurs - through information dissemination, trainings and guidance to the business ideas implementation. The voucher scheme includes two types of subsidies:

- 100% subsidy for consultancies to the start-up companies (registered over the past two years),
- 50% subsidy for consultancies to the existing companies (being in business for more than two years from the date of registration).

Maximum subsidy amounted to 1,500 EUR.

Having in mind the general mistrust in consultancy services, REDAH wanted to set up a single database of certified consultants and consultancy firms through the "Voucher scheme of training and consultancy for business entities" project.

At the inception phase a system of procedures and rules was developed for all participants in the project, within the detailed documents developed by REDAH, Operation manual for the Voucher scheme project, Consultant Certification Guidelines, as well as the Code of Conduct and operation of consultants/service providers.

What followed was the publishing of the Public Call for engagement of the consultants/service providers in the process of consultants certification, which was open by the end of last year. Following the public call, the education and competency evaluation of the applying consultants was done by the Expert Commission composed of the renowned BiH and foreign university professors.

The regional consultancy market situation analysis launched in mid 2008 showed the need for consultancy market. This research included two groups of organizations, namely 22 municipalities of the Herzegovina Region and relevant business-focused institutions like Federal Ministry of Development, Entrepreneurship and Handicraft, Chamber of Commerce and associations and centers for entrepreneurship and employment.

This research was designed to survey the situation of small and medium-sized business, the problems faced by the entrepreneurs, consultancy market in the region and implementation of trainings for business people and their needs within the muncipalities.

The analytical study for SMEs and potential entrepreneurs was designed in late 2008 and early 2009. This analysis also included the information available with all relevant institutions and stakeholders in the Herzegovina Region like cantons, municipalities, statistics agencies, employment bureaus, high-education institutions, as well as more than 200 existing and potential entrepreneurs. The research reflected the start-up companies' ideas, knowledge and skills required for successful establishment of a company and the level of development of business activities of the companies. The findings of the analysis revealed which trainings the entrepreneurs and business entities needed most, and acting in line with these findings, REDAH organized sets of trainings in the fields the business entities showed the greatest interest in and need for.

The trainings organized as workshops covered the representatives of more than 70 small and medium-sized companies.

Based on the analysis that reflected the current situation in the consultancy market and the needs of SMEs for consultations and specific types of trainings as well as the need for a single database of consultants/service providers, REDAH developed a system that included the training and certification of consultants/service providers for business entities in the Herzegovina Region.

A public call was published to consultants (natural and legal persons) which was answered by 84 potential consultants/service providers, or 33 natural persons and 49 legal persons.

Following the training session, consultants/service providers sat the exams where they were tested for specific knowledge in the field of consultancy they applied for, as well as in their understanding of the Voucher scheme and its procedures, the role of consultants in relation to the beneficiaries, as well as the Code of Conduct and work in day-to-day consultancy service provision.

When implementing the Voucher scheme, due to quite a demanding system, specific activities, wide range of actions as well as detailed and precise procedures, REDAH designed a software for detailed monitoring of all voucher issued projects.

Voucher scheme software monitors all activities, trainings, vouchers issued as well as financial flows and it contains all information on the beneficiaries and service providers. It is connected to the online database and by using the interface of the www.ric.redah.ba portal, it presents the database of all certified consultants/service providers.

#### 3.2. Data of certified service providers

The total of 84 potential consultants/service providers responded to the public call, 33 of which are natural persons and 49 legal persons.

The total of 50 consultants/service providers, which makes up 60% of the total number of applicants, passed the exames and got certified.

The structure of the certified consultants include 15 individuals (natural persons), which makes up 30% of the total number of certified consultants, whereas the remaining 35 are legal persons or companies, which makes up 70% of the total number.

45% of the candidates-consultants have gone through the certification process as natural persons, whereas the companies dealing with the consultancy have been much more successful since 76% of them were successfully certified.

The method of certification made it possible for individuals and companies coming from other regions of Bosnia and Herzegovina to get certified as service providers, which resulted in 40% of the certified individuals outside the Herzegovina Region, with 49% of the legal persons coming from regions other than Herzegovina who got certified.

There is a total of 20 fields of consultancy services the certified consultants/service providers applied and got certified for, the fields that could help the beneficiaries, the region-based business entities. They include: Graphic Design; Marketing Planning and Research; SME Management and Organization; Business Planning; Human Resources Management and Development; Sales and Procurement Management; Technological Support (ICT); Accounting and Financial Consultancy; Taxation Consultancy; Sales and Sales Management; Quality Management; Legal Consultancy; Making Investment Plans; Manufacturing-Technological Consultancy (Wood Processing); Introduction of New Technology - CAD Design; Web Design; Internet Marketing and Consulting; Product Development; Architect Design Services; Labor and Fire Safety.

#### 3.3. Data of beneficiaries

On March 30, 2009, the Public call was announced to grant subsidies to business entities in the Herzegovina Region. The call remained open until February 30, 2009.

The subsequent public call for granting subsidies to the beneficiaries, Herzegovina Region-based business entities was opened in August 2009 and will remain open till the end of 2010. The total budget secured for subsidy grant in the framework of these two calls amounts to 100,000.00 EUR.

In addition to the aforesaid amount, the similar amount was covered by the beneficiaries who had their services partly subsidized and partly paid by themselves.

113 companies applied for vouchers by the end of March 2010, and REDAH carried out the diagnostic procedure with the company representatives (being adequately trained for) so that 87 vouchers have been issued so far.

Out of 87 vouchers issued, 76 of them utilized, i.e. implemented the voucher, finished the consultations and brought the required and approved service to an end, thereby resolving the issue they were engaged for.

The total of 27 consultants (out of 50 consultants successfully certified during the project) worked on and successfully carried out the consultancies or solved the issues the beneficiaries were faced with in those 76 projects.

18 of the total number of companies are small companies (21%), i.e. they employ 10-50 staff members and have a turnover up to 2 million EUR, 69 (79%) are micro companies i.e. they employ less than 10 people and have the turnover of up to 400,000 EUR, 23 of which (26%) are handicraft companies. The following fields of activities have been subsidized: manufacturing 55%, services 32%, agriculture 9% and tourism 4%.

Out of the total number of companies granted a voucher, 51 (59%) are start-up companies, whereas 36 (41%) are the existing companies.

These companies received a direct assistance needed and required for proper operations and achieving their goals with regard to total sales, strategic planning, finding new clients, fostering all company's functions as well as strategic profiling and organization.

#### 3.4. Details of the service implementation results and the level of satisfaction

The companies who used the consultants' services through voucher system were first asked if and to what extent they managed to resolve the problem they engaged the consultant for. The research showed that 36% of the beneficiaries managed to fully resolve the problem they engaged the consultant for, 50% of them resolved a great deal of the problem, whereas 14% of them partly resolved the problem.



Figure 1 Level of resolution of the problem the consultants were engaged for

The second question in the poling questionnaire was aimed at finding an answer on beneficiary' satisfaction with the service rendered in view of professionalism, attitude toward the client, responsibility etc, which showed that 77% of the beneficiaries were fully satisfied with the service rendered, 18% of them were considerably satisfied, whereas 5% of them were partly satisfied.

### 3.5. Research findings with regard to enhancing the consultancy market building trust between service providers and service beneficiaries

In order to find out whether and to what extent the voucher system helped build the beneficiaries' trust in service providers, and consultancy market development, two questions were asked to service providers and two questions to service beneficiaries.

In addition to problem solving and satisfaction with the service which are also focused on building trust between service providers and beneficiaries, the service beneficiaries were asked if now, once the service is rendered, they are more confident in external experts' ability to help them resolve the issues. 55% of the beneficiaries responded that now they are fully confident the external experts could help them resolve the problems, 36% of them have more trust than before, whereas 9% of them have the same opinion as before. No company thought the external experts or consultants cannot help them at all, or could help them even less than before.

The following question on trust building between beneficiaries and service providers was if the beneficiaries planned to engage some of the consultants through REDAH or independently if need be in the future. The research findings show that 68% of the beneficiaries would certainly engage a consultant in the future if they need to do so, whereas 32% of them responded they would probably engage a consultant again.

However, to get the full picture on whether the system helped build the trust between consultants as service providers and companies-beneficiaries, as well as the consultancy market development in the Herzegovina Region, two questions were asked to service providers too.

They were firts asked if and to what extent they were contracted again by the company they helped resolve its problem as part of their engagement through REDAH. 12% of the consultants got the full-time consultancy status with the clients whom they helped resolve the problem, whereas 41% of them were engaged again more than once or a number of times. However, there is a great number of those who were never (12%) or almost never (29%) engaged again by those whom they helped resolve the problems.

The question was aimed at getting a comprehensive answer on development of the consultancy market and benefits enjoyed by the certified consultants as a result of their certification and the fact they are included in the REDAH's list.

The question was focused on whether the number of beneficiaries increased following the certification and what was the result of holding the certified consultant license. 24% of the consultants who rendered services subsidized by REDAH has a considerably greater or outstandingly greater number of clients, 35% of them have a partly increased number of clients, whereas 41% of them have minimum or no increase in number of clients to be attributed to the fact of certification or inclusion into the REDAH's list.



Figure 2 Increase in number of beneficiaries as a result of certification

#### 4. Conclusion

In the framework of the Voucher scheme project and business entity consultancy implementation, and based on the research findings, REDAH conducted trainings for entrepreneurs in the areas detected in the analysis as those needed by the entrepreneurs. The sets of trainings were attended by 70 entrepreneurs.

The total of 84 potential consultants/service providers responded to the public call, 33 of which are natural persons and 49 legal persons. 50 consultants were successfully certified, 15 of them natural persons and 35 legal persons, which shows a strong interest existing on the part of the service providers.

113 companies applied for support and consultancies, out of which 87 got the vouchers and the chance to use this support following the review made by the REDAH experts, and 76 of them have fully implemented the activities they asked the support for. The total amount of assets spent for subsidizing consultancy services through voucher system is 100,000 EUR, and the maximum amount of subsidy was 3,000 KM (around 1,500 EUR).

The research findings showed that 86% of the beneficiaries fully or mostly resolved the problem they engaged the consultant for, whereas 14% of the companies partly resolved their problem. Also, 95% of the beneficiaries are fully or mostly satisfied with the service rendered. In this view, we can conclude that the hypothesis H - 1: "Beneficiaries based in Herzegovina Region managed to resolve their business problems for which they sought assistance from consultants engaged via REDAH" was hereby well substantiated.

The research also showed that 91% of the beneficiaries, once the service is carried out, demonstrated absolute trust or considerably greater trust than before, and that they are convinced the consultants can help them resolve the problems of their companies, and all beneficiaries are sure they would certainly or most probably engage a consultant again, when in need to do so.

Also, 53% of the consultants who provided services in this project were engaged again by the same companies to solve some other problems and offer specific consultancy services, and 59% of the consultants partly, considerably or largely increased a number of their clients once they got certified and included in the list of certified REDAH's consultants. In this view, we can conclude that the hypothesis H - 2 "Voucher system helped build the trust between the consultants as service providers and companies as service beneficiaries, as well as the consultancy market development in the Herzegovina Region" was hereby well substantiated too.

The prevailing opinion is that these kinds of incentives and subsidies, particularly for the start-up companies should be continued along with finding other sources of finances and incentives from the state to enable the entrepreneurs and companies facing problems to seek and get adequate professional assistance, without having to suffer much of a financial burden.

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# Development potential of NUTS 2 regions in the European Union

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Regions belong to basic component of European Union's economics. The Union spends on enhancement of socio-economic level of regions a lot of financial resources. About one third of Union's budget is determined for the regional policy. For implementation of the regional policy the regions on the level NUTS 2 are important. There are 271 NUTS 2 regions in all 27 member countries of the EU. The article is focused on evaluating of the present position of European NUTS 2 regions in the relation to dynamism of their development. For the purpose of this analysis the authors chose several indicators which are focused especially on such socio-economic characteristics considered to be the key indicators of qualitative development and competitiveness of regions. On the basis of the created synthesis it is possible to accept conclusions relevant to position and development of European regions in general as well as to development of individual NUTS 2 regions.

#### Keywords

**ICEIRD 2010** 

Analysis, economic level, evaluation, NUTS 2 regions, regional gross domestic product

#### 1. Introduction

Among particular regions there are big differences in their socio-economic development. In economic theory these differences are called regional disparities. The term "regional disparity" can be defined as differentness or inequality of characteristics, effects or processes that are clearly territorially located. [1] The basic question that arises in this context is if regional disparities tend to increase or rather decrease. In other words, if there is a tendency towards convergence or rather divergence. However, for viewing the regional disparities also the time period in which convergences or divergences arise is important. The convergent theories usually work with longer time periods that the divergent ones. [2] Nevertheless, according to some authors the theories considering spatial development as divergent are predominating. [1] Besides the time point of view the size of the disparities is important too. The existence of certain differences is desirable and necessary because it stimulates economic and social development. But enormous regional disparities have no stimulating effects and they have serious social and political consequences and so they are more often considered to be a negative phenomenon. [2]

The European Union, especially its policy of economic and social cohesion, deals with the differences among regions as well. The article 158 of the Treaty on European Union says that "in order to strengthen its economic and social cohesion, the Community is to aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas" [3]. The cohesion policy should contribute to the increase of the growth, competitiveness and Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development

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employment. [4] How should higher competitiveness be reached? Contemporary theories concerned with factors of competitiveness in developed countries connect their competitive advantage primarily with conditions for development of innovations in businesses. A higher level of innovations also brings a higher added value of products and therefore a higher growth of the living standard. [5] Particularly in the last several decades it has been widely acknowledged that regions are an important element in the transformation to the knowledge society and that they are also a significant driving force for economic growth based on research, technologies and innovations. [6]

While the cohesion policy focuses primarily on reducing the regional disparities (mainly through the support of infrastructure, innovations and knowledge society), the policy of research, development and innovations focuses on creating the conditions that will help regions to reach the knowledge economics. Up-to-date innovation systems leave the linear concept of innovations, where the research and development have to be at the beginning of the innovation process, and convert to interactive concepts of innovations. These new concepts say that innovations are results of interactions among individual participants of the innovation process and new knowledge (research and development) can enter into this process during any of its phases. [7] However, research and development are still important sources of information for launching (especially technical) innovations, and that is why we pay big attention to them in this article.

Research, development and innovations are parts of the priorities of the new strategy Europe 2020 which should replace the Lisbon Strategy for Growth and Jobs from 2000. The new strategy defines five main goals which member states of EU will have to focus on. These goals involve the increase in the investments in research and development, the increase in the employment rate of population aged 20–64, the achievement of the selected climate targets, the decrease in the share of early school leavers and the decrease of the number of people threatened by poverty. In order to meet the above mentioned goals the members of the EU have to accept joint action in such areas as innovations, youth, digital agenda, efficient use of resources, industrial policy, skills and jobs or platform against poverty. [8]

The increase in employment and competitiveness is also closely connected with 'high-tech sector'. High-tech sector is considered to be the key factor for the economic and productivity growth. It is closely related to innovations and it leads to larger market share, creation of new product markets and more efficient use of resources.[9] In accordance with methodology of OECD and Eurostat the individual branches of industry have been divided on the basis of R&D expenditures, added value and total amount of turnovers to four categories: high-tech, medium high-tech, medium low-tech and low-tech manufacturing sector. Services have also been classified in a similar way. The indicators of technology and knowledge-intensive sectors are used not only for the evaluation of the competitiveness of states and regions but also for the evaluation of the utilization of research and development results (or rather the utilization of new knowledge). For the above mentioned reasons we also focus on employment in high-tech and medium high-tech manufacturing sectors and knowledge-intensive services in this article.

#### 2. Methodology of evaluation

The aim of this article is to assess the economic performance of 271 regions on the level NUTS 2 in member states of the EU (EU-27). For similar comparisons the indicator of gross domestic product (per capita) is usually used, alternatively this indicator can be complemented by other characteristics. The evaluation presented in this study is based on the synthesis of selected available indicators (excluding GDP) which can be considered the key prerequisites for or aspects of the economic level of the regions and which according to authors emphasize the principles of knowledge economy. (Therefore the indicators have

qualitative dimension to a considerable extent.) The source of the data is Eurostat [10]. The selected indicators are the following:

- disposable household income (The wealth of households creates the base of regional development and it is a result of prosperity of economic entities.)
- unemployment rate (It is a structural indicator that indirectly corresponds with the economic level of the region.)
- expenditures on research and development (As they are related to GDP, it is a common indicator used for comparisons.)
- employment in research and development (It complements the previous indicator. The share of employment in this sector is the indicator of knowledge economy development.)
- employment in knowledge-intensive services
- employment in high and medium high-technology manufacturing sector (Together with the indicator of employment in knowledge-intensive services it expresses the orientation of economy to perspective and growing sectors with high added value.)

These selected indicators can be characterized by this way:

• Expenditures on research and development

This indicator expresses the total annual expenditures on research and development as a percentage of the gross domestic product (GERD). The expenditures include expenditures of the government, businesses, higher education institutions and private non-profit organizations.

• Employment in research and development

The indicator expresses the percentage of the employees in research and development visà-vis the total employment. Such employees include both researchers themselves and other employees (technical and economic staff and others) of research institutions.

• Employment in knowledge-intensive services

The indicator of the employment in knowledge-intensive services expresses the proportion of employment in these fields to the total employment. The NACE (rev. 1.1) fields which are among the knowledge-intensive services are fields with codes 61, 62, 64, 65, 66, 67, 70, 71, 72, 73, 74, 80, 85 and 92. These are for example water, air and space transport; telecommunications; financial services; activities concerning real estates and computer technology; machinery, equipment and product renting; research and development; education; health and social care; veterinary activities; and recreation, cultural and sporting activities. [11]

• Employment in high and medium-high technology manufacturing sector

The data shows the employment in high and medium-high technology manufacturing sectors as a share of total employment. The NACE (rev. 1.1) fields which are among the high or medium-high technology manufacturing sectors are fields with codes 30, 32, 33 or 24, 29, 31, 34, and 35. These are for example the manufacture of pharmaceuticals and chemicals, office machinery and computers, television and communication equipment, aircraft and spacecraft, electrical machinery, motor vehicles or transport equipment. [11]

• Unemployment rate

The International Labour Organization (and the Eurostat methodology [12]) defines an unemployed worker as someone who is older than 15, actively seeking work and able to start a job immediately or within 14 days. The unemployment rate is generally the most available indicator, as it is followed closely by all member states. Its static values, and their changes, are interesting not only for research but they are also important for the implementation of an economic policy.

• Disposable household income

Eurostat statistics differentiate between two kinds of income – the primary and the disposable income. The disposable income was chosen for the analysis as it more suitably expresses the real purchasing power of the population. The disposable income includes all incomes after taxation and deduction of insurance fees, further it includes accepted social transfers. [13]

We considered adding several other indicators to this analysis (e.g. households with access to the internet at home or students in tertiary education) but these indicators had to be excluded in the end because of non-availability of needed data in all regions.

The above mentioned indicators have been included in the evaluation. Within the framework of the analysis values of each indicator have been divided into five groups (highly above-average, above-average, average, below-average, highly below-average). Consequently, the synthesis has been carried out. The value of the composite indicator of the j-region  $(E_j)$  is determined according to this formula:

 $E_{j} = \frac{\sum_{i=1}^{6} w_{i} \cdot F_{i}}{\sum_{i=1}^{6} w_{i}}$ , where w<sub>i</sub> is weight of the i-indicator (the weight has been set for each

indicator) and  $F_i$  is value of the i-indicator (1–5).

The evaluation is carried out both as static, when data for 2006 were used, and dynamic, when the change (index) between 1999 an 2006 is calculated. On this basis it is possible to divide the regions in accordance with their economic development as well as their development trends.

Another important contribution of this article is the linking of the evaluation based on the synthesis of the above mentioned indicators with the values of regional GDP per capita. Besides the elementary calculation of the correlation coefficient it is possible to present the relation of the composite indicator (that which is – as has been said above – based on the qualitative characteristics compatible with knowledge economics) to the economic performance expressed through GDP per capita. Therefore, the regions can be divided according to their economic performance as well as the core of its essence. For the purpose of this comparison all values of indicators on the level NUTS 2 were expressed as percentages of the EU27 average value. Subsequently, the composite indicator  $E_j$  is calculated for each region NUTS2 (in %), where  $F_i$  is the value of the i-indicator in %.

#### 3. Results

In accordance with the methodology the data for all NUTS2 regions in the EU27 have been found out. If some data were not available, this fact has been taken into consideration within the calculation of the composite indicator ( $E_j$ ). After calculating this indicator for each region, it was possible to compare:

- the position of the individual regions in the context of the static values of the composite indicator (2006) and the dynamic values (change between 2006 and 2000),
- the relationship between the values of the composite indicator and regional GDP (both of them were used as a percentage of EU27 average in 2006).

### 3.1 Static and dynamic value of the composite indicator of the economic level of the regions

On the basis of the above mentioned comparison it is possible to divide the regions into four categories according to their situation (see figure 1):

- developed regions with a positive developmental trend (the value of the static indicator is between 1.0 and 3.0, the value of the dynamic indicator is between 1.0 and 3.0) – 60 regions,
- developed regions with a negative developmental trend (the value of the static indicator is between 1.0 and 3.0, the value of the dynamic indicator is between 3.1 and 5.0) – 56 regions,
- underdeveloped regions with a positive developmental trend (the value of the static indicator is between 3.1 and 5.0, the value of the dynamic indicator is between 1.0 and 3.0) – 106 regions,
- underdeveloped regions with a negative developmental trend (the value of the static indicator is between 3.1 and 5.0, the value of the dynamic indicator is between 3.1 and 5.0) 37 regions.





Source: Eurostat (data), the authors' research (methodology and calculation)

### 3.2 The relationship between the values of the composite indicator and regional GDP

The correlation analysis confirmed quite a close connection between these two indicators. The correlation coefficient for all regions is 0.73, after elimination of two regions with extreme values (Inner London and Luxembourg) it is even 0.78.

On the basis of the comparison it is possible to divide the regions into four categories according to the essence of their economic level (see figure 2):

- developed regions with characteristics compatible with knowledge economics (GDP > 100 % and dynamic indicator also > 100 %) 115 regions,
- developed regions without characteristics compatible with knowledge economics (GDP > 100 % and dynamic indicator < 100 %) 28 regions,</li>
- underdeveloped regions with characteristics compatible with knowledge economics (GDP < 100 % and dynamic indicator > 100 %) – 10 regions,
- underdeveloped regions without characteristics compatible with knowledge economics (GDP < 100 % and dynamic indicator also < 100 %) – 114 regions.</li>



Figure 2 The relationship between the values of the composite indicator and regional GDP (2006)

Note: For better lucidity the regions of Inner London (129.4 %, 382.9 %) and Luxembourg (125.4 %, 305.6 %) were removed from the figure.

Source: Eurostat (data), the authors' research (methodology and calculation)

#### 4 Conclusions

The presented study confirmed the existence of considerable differences in the economic level of NUTS2 regions. It was proved that some regions are in the situation which cannot be called positive from the perspective of the composite indicator. At the same time, it is possible to say that some of them have the right developmental trend.

As regards the evaluation of the relationship between the economic level of regions (expressed by GDP) and the composite indicator (characteristics of knowledge economics) the calculations proved their close connection.

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# Searching for growth potential through intrapreneurship introduction: the case of financial firm

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In the paper the intrapreneurship introduction as possible growth strategy in a financial firm is investigated. The principal ways of intrapreneurship implementation options in financial firm are discussed firstly. Further on we introduced four factors which are of crucial importance for implementation and out of them; human resource factor was chosen to be measured. In the research it was explored which type of employees express higher level of entrepreneurialism. The hypotheses postulate that employees from mobile sales force would be more appropriate intrapreneurs than employees working in the offices, mainly back office, called stationary sales force. The hypothesis was confirmed. Cluster analysis was utilized and two groups of employees was a result. Therefore it can be concluded that employees from "mobile" team are expected to be more appropriate for taking over franchise as intrapreneur.

#### Keywords

Entrepreneurship, financial corporation, growth strategy, human resources, intrapreneurship.

#### 1. Introduction

The entrepreneurial organisation is defined [1] as one that proactively seeks to grow and is not constrained by the resources currently under its control. Organisations are recognizing a strong need for intrapreneurship, largely as a result of rapidly growing, new and sophisticated competitors, a sense of distrust of traditional management, and an exodus of many of the best employees, who are leaving the organisation in order to start their own companies. The modern organisation is therefore seeking avenues for developing in-house entrepreneurship; as to do otherwise will result in stagnation, loss of personnel and decline. Organisations are therefore being encouraged to develop the intrapreneurial spirit within the organisational boundaries, thus allowing for an atmosphere of innovation to prosper. This new corporate revolution represents an appreciation for and a desire to develop intrapreneurs within the corporate structure.

Conditions in the global business environment demand that established firms adopt entrepreneurial strategies [2] as a path to success. For example, "entrepreneurial strategies suggest ways to revitalize existing organizations and make them more innovative" [3] and "entrepreneurial strategies allow people to be innovative, creative, and responsible for decisions that they make" [4]. By pursuing entrepreneurial strategies, firms place themselves in positions to regularly and systematically recognize and exploit entrepreneurial opportunities. In 1985 Pinchot [5] coined the term 'intrapreneurship', short for *intra*-corporate entre*preneurship*, which describes the practice of entrepreneurship within organisations. Intrapreneurship is increasingly becoming a term used in the business world to describe organisations that are willing to pursue opportunities, initiate actions, and emphasise new, innovative products or services.

Corporate entrepreneurship can also be defined as [6] "the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or Proceedings of International Conference for Entrepreneurship Innovation and

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 instigate renewal or innovation within that organization." Intrapreneur is a person within a large corporation who takes direct responsibility for turning an idea into a profitable finished product through assertive risk-taking and innovation [7].

This paper goes on as follow. After the introduction a literature survey is presented in order to set up and justify the proposed hypothesis to be confirmed or rejected. After a brief presentation of sampling and justification of methodology, results are extensively discussed in order to set up a framework for final conclusions and implications of this particular study.

#### 2. Literature overview

The trend towards network organizations represents a major opportunity for the corporate entrepreneurship movement. First, network organizations provide many of the preconditions that are necessary for corporate entrepreneurs to thrive: a license to build relationships laterally, horizontally and with external parties, as a means of getting things done; a reasonable level of discretion to pursue an idea before having to justify it; and a greater openness in head office to new ideas. Second, and more relevant for this paper, the network organization provides a ready metaphor for understanding the sorts of roles that corporate entrepreneurs can take [8].

Entrepreneurial culture needs to be implemented to existing companies, and is an essential part of existence or growth on new and changing markets. Modern companies need to stimulate employees with innovative and intrapreneurial skills and give them an opportunity to realize their ideas on their workplace. Intrapreneurship is stimulating organizations for learning and is increasing its human and intellectual capital [9]. Recently there has been a growing interest in the use of corporate entrepreneurship as a means for corporations to enhance the innovative abilities of their employees and, at the same time, increase corporate success through the creation of the new corporate ventures [10].

A financial service firm operating in several countries of CE Europe region faces a challenge of redefining its growth strategy. The main distribution channel is a number of small retail shops called "Financial spots". An option of franchising these shops is put on forward; however, a certain level of entrepreneurial spirit is expected from future franchisees. In order to recognize entrepreneurial potential from existing middle managers, a research project was proposed to benchmark the individuals against the "prototype". The main objective of the study was to examine which employees of the targeted company seemed to be more appropriate to take over the management on new, independent and self-standing outlets (possibly franchises) of the Financial Points. This is the first a research attempts within the target financial firm. However, several research studies have been conducted in the past in different sectors, including financial services [11]. These represent a sound theoretical base for the design of the present research.

#### 2.1 Research hypothesis

On literature basis, subjective experience on the field of the researchers and some anecdotic research from knowing companies' employees, encouraged by some previous research results in the same company [12] the main hypothesis was pointed out.

H1: People working for »mobile team« would come out as more suitable to become future leaders and managers of new retailing set-ups of the main company. That means that they express higher level of self-initiative, creativity, leadership skills, motivation for setting up new business, self-efficacy and entrepreneurial and managerial skills.

#### 3 Methodology and sampling

A financial service firm operating in several countries of CE Europe region faces a challenge of redefining its growth strategy. The main distribution channel is a number of small retail shops called "Financial spots". An option of franchising these shops is put on forward; however, a

certain level of entrepreneurial spirit is expected from future franchisees. In order to recognize entrepreneurial potential from existing sales force, operating from the Financial spots, a research project was proposed to benchmark the individuals against the "prototype corporate entrepreneur".

A qualitative study was conducted with senior management of the financial firm in order to clarify growing objectives of the firm and expectations of the study. A questionnaire was designed in order to assess mostly entrepreneurial characteristics and ambitions of the targeted individuals. About 100 individuals from the current sales force were invited to fill in the questionnaire at a corporate event where everybody participated, so 94 % response rate was achieved. Responses were analyzed with standardized tools of multivariate statistic t-test, clustering and  $\chi^2$ -test analyses. Following we are presenting results of cluster analysis.

#### **4 Results**

For the purpose of searching for entrepreneurs and administrators we ran cluster analysis on variables describing entrepreneurial characteristics of an individual. Cluster analysis is utilized to design several groups of respondents. For the purpose of this research QUICKCLUSTER program from SPSS statistical software package was used. This was the non-hierarchical method which automatically proposes number of clusters while the significance of differences on variables in table 1 where checked with Leven's statistics and ANOVA test. The results of the cluster analysis are collected in the table 1.

Table 1 Cluster analysis

	Cluster		Total sample		ANOVA	
	Entrepr eneurs N=74	Admini strators N=20	Mean	Standard deviation	F	Sign.
I can achieve my own and company's goals even	4,35	<u>3,90</u>	4,26	0,66	8,05	0,006
I don't get instructions from managers. I am always looking for innovative approaches, in order to achieve goals faster and easier.	4,46	<u>3,70</u>	4,30	0,75	19,62	0,000
It is better to take an action and fail that not taking action at all.	4,59	<u>4,05</u>	4,48	0,58	16,04	0,000
I am willing to start my venture and take responsibilities for success and failure	4,73	<u>2,85</u>	4,33	0,98	154,42	0,000
If I get an opportunity to be franchisee and open a Financial point subsidiary, I would take this	4,09	<u>2,60</u>	3,77	1,17	35,32	0,000
opportunity immediately. If I get an opportunity to be franchisee and open a Financial point subsidiary, I would take this responsibility immediately (employees, finance, sales)	3,92	<u>2,40</u>	3,60	1,31	26,88	0,000
I enjoy field-working on and in direct marketing.	4.54	2.75	4.16	1.02	100.68	0.000
I prefer to work 8 hours on field than working in	4,20	2,35	3,81	1,17	68,27	0,000
I have many suggestions how to improve company performance (innovation etc.)	3,73	3,15	3,61	0,82	8,52	0,004
I am trying to implement my ideas about	4,00	<u>3,25</u>	3,84	0,74	19,52	0,000
Improving company performance. I have high understanding of products that I am selling.	4,50	<u>4,10</u>	4,41	0,56	8,81	0,004
When talking / advising to client, I always give my best.	4,64	<u>4,25</u>	4,55	0,58	7,43	0,008

I am participating on sufficient number of	4,18	3,60	4,05	0,96	6,04	0,016
trainings/seminars to be able to perform my job						
well.	4.00			0.00	o 4 <b>5</b>	0 00 <b>-</b>
Company is offering me enough trainings /	4,39	<u>3,70</u>	4,24	0,98	8,47	0,005
seminars to be able to perform my job well.	4.1.5	2.45	4.00	0.04	10.10	0.001
My colleagues often ask me for advice as I have a	4,15	<u>3,45</u>	4,00	0,84	12,12	0,001
lot of knowledge.	120	2 00	4.07	0.02	01.40	0.000
I nave leadership abilities.	4,36	<u>3,00</u>	4,07	0,82	81,40	0,000
My employees estimate me as good leader.	4,16	<u>3,05</u>	3,92	0,96	27,50	0,000
Desire for success – higher performance	4,38	3,00	4,09	0,98	46,33	0,000
Independence – working for yourself	3,64	<u>2,42</u>	3,38	1,12	23,95	0,000
Authority, power – to be a leader	4,34	<u>2,95</u>	4,04	1,04	40,14	0,000
Money- higher income	2,82	2,93	2,85	1,11	0,16	0,692
Career – better future in own venture	3,91	<u>2,35</u>	3,57	1,20	36,93	0,00
Status, prestige-progressing on social scale	4,47	<u>3,35</u>	4,23	0,97	27,27	0,00
Flexible schedule	4,24	<u>2,50</u>	3,87	1,03	89,87	0,00
In my home town, there are good possibilities to	4,15	<u>2,15</u>	3,73	1,18	92,52	0,00
start a venture.						
I am planning to establish my own company in	4,41	<u>3,05</u>	4,12	0,93	52,60	0,00
three years.	1.0.6					
I have skills and competences to start a business.	1,96	<u>3,10</u>	2,20	1,17	17,90	0,00
Fear of failure could stop me from starting a new	3,75	3,25	3,65	0,86	5,76	0,02
business.	4.00	• • • •			4.00	0.00
Your energy level	4,28	3,90	4,20	0,70	4,98	0,03
Var116	4,55	<u>3,45</u>	4,32	0,71	64,83	0,00
Desire for success	4,18	<u>3,10</u>	3,95	0,85	34,79	0,00
Risk taking	4,41	<u>3,65</u>	4,24	0,73	20,47	0,00
Creativity	4,41	<u>3,70</u>	4,26	0,76	15,66	0,00
Need of social life	4,36	<u>3,35</u>	4,15	0,83	31,28	0,00
Money	3,45	<u>2,70</u>	3,29	0,94	11,41	0,00
Uncertainty tolerance	4,51	4,25	4,45	0,62	2,79	0,10
Good relationships with co-workers	4,36	4,05	4,30	0,64	3,98	0,05
Self-esteem	3,72	<u>2,60</u>	3,48	0,96	27,41	0,00
Need for power	4,04	4,30	4,10	0,79	1,71	0,19
Competitiveness	3,81	3,10	3,66	0,87	11,59	0,00
Initiative	4,20	<u>3,05</u>	3,96	0,82	47,05	0,00
Persistence	4,62	4,00	4,49	0,62	19,34	0,00
Adaptability, flexibility	4,49	4,04	4,40	0,63	9,11	0,00
Innovativeness	4,14	3,10	3,91	0,90	26,55	0,00
Leadership	4,26	2,90	3,97	0,85	70,31	0,00
I am good at estimating costs for starting business	3,86	3,05	3,69	0,87	16,14	0,00
venture.						
I am good at preparing financial plan for starting	3,75	2,85	3,56	0,97	15,85	0,00
business venture.						
I am good at collecting information for starting	3,84	2,90	3,64	0,89	21,29	0,00
business venture.						
I am good at estimating sales amount for starting	3,68	2,65	3,46	0,81	34,04	0,00
business venture.						
As entrepreneur I would perform well in HRM	4,22	<u>3,10</u>	3,98	0,78	49,66	0,00
department.						
As entrepreneur I would perform well in marketing and sales department.	4,18	<u>2,85</u>	3,89	0,87	58,84	0,00

There is a need to point out that values of ANOVA test presented in table 1 are exclusively used for describing purposes only because particular clusters are computed so that the differences between clusters are as big as possible. The degrees of statistical significance therefore cannot

be interpreted as a confirmation of hypothesis validity but, only as description or confirmation of utilisability of the chosen statistical method for classification of employees in two expected groups.

The test of variance homogeneity or Leven statistics tests the null-hypothesis of equality of variance of different variables. It shows relatively high value on five variables which points out a possibility of existence of certain number of latent variables. The possibility of heteroscedasticy would make sense to test with Box M-test which would probably lead to the consequence that for future research would demand a re-definition of the variable matrix.

For the purpose of the interpretation the values of responses which are equal of are greater than half of the standard deviation away from the mean value are underlined [13]. Thus it can be stated that both clusters do have certain characteristics. However, majority of significant characteristics or meanings do prove that administrators are far away from their feeling to be entrepreneurs. On the other head we should be aware that these revealed characteristics are the consequence of the unbalanced samples. This is the reason why they do not deserve further discussion in this paper.

As shown in the table 1, the entrepreneurial employees are more inclined to goal fulfilment and search for new approaches. They wish to take over full responsibility to accomplish all given tasks. They like to work with customers and are ready to invest a lot of energy into customers' relationships. They seek all the time for improvements and use a great deal of innovativeness and creativity. They express a clear interest to open and lead an outlet of the financial point. All the differences in mean value between mobile and fixed network participants are statistically significant at 5 % confidence interval which contributes to the confirmation of the hypothesis.

The mobile entrepreneurs cluster employees in all aspects express higher level of leadership skills, which are expressed in higher level of respect against co-workers, self-esteem for managerial abilities and opinion of subordinates about their own leadership abilities. All mean differences are statistically significant at the 5 % confidence interval which contributes to the confirmation of the proposed hypothesis.

People from the entrepreneurial cluster in most cases express higher level of motivation for entrepreneurship. They are more confident into ability of better utilization of their abilities, they express higher level of appreciation for independency and flexible working hours, opportunity to be a leader they have higher desire for better earnings and see better options for their careers development and opportunity to climb their social ladder. On the other side, "entrepreneurs" feel less the fear of failure and regard themselves more competent to run their own business. In their environment they are alert for more business opportunities. All the differences in means are statistically significant at least at the 5 % confidence interval, which leads to the conclusion that the hypothesis may be entirely confirmed from this viewpoint.

Employees of the entrepreneurial cluster highly appreciate almost all self-efficacy elements like their level of energy, need for achievements, readiness to take risks, creativity and innovativeness, social skills and good relationships with their co-workers. They are more self-conscious, competitive, persistent but flexible. All the differences in means are statistically significant at least at the 5 % confidence interval, which leads to the conclusion that the hypothesis may be entirely confirmed from this viewpoint.

Employees from the entrepreneurial cluster are more self conscious regarding the ability to evaluate costs, preparation of financial plans, collecting information and ability to forecast the quantity of business activity. Higher as their colleagues from the administrative support they evaluate their own abilities to be successful in managing human resources and marketing, once they will serve in their own company, which is evident from the table 5. All mean values are statistically significant at least at the 5 % confidence interval which means that hypothesis can be confirmed.

Specifically, (1) the positive relationship between managerial support and entrepreneurial action is more positive for senior and middle level managers than it is for lower- (first) level managers, and (2) the positive relationship between work discretion and entrepreneurial action is more positive for senior and middle level managers than it is for first-level managers. These findings

suggest that managerial level provides a structural ability to "make more of" organizational factors that support entrepreneurial action.

In the table two the classification of employees into the mobile and stationary team is presented. It comes out that the great majority of the mobile team is in the entrepreneurial cluster, while the greatest proportion of the stationary support is in the administrative cluster. We tested the relative distribution frequencies, which even proved the statistically significant differences ( $\chi^2 = 8,61$ ; DF = 2;  $\alpha = 0,013$ ) which shows are very good fit between the two times two sub-samples entrepreneurs/administrators and mobile/stationary team members. Thus, we can confirm the hypothesis that the employees of the mobile network are more appropriate to become intrapreneurs than employees in the stationary network.

	Cluster 1		Cluster 2		Total		
	Entrepreneurs		Administ	rators			
	Ν	%	Ν	%	Ν	%	
Mobile team	59	67,05	4	4,55	63	71,59	
Stacionary team	8	9,09	12	13,64	20	22,73	
Other	3	3,41	2	2,27	5	5,68	
Total	70	79,55	18	20,45	88	100,00	

#### Table 2 Classification of employees into clusters

#### **Conclusions and implications**

The main objective of the study was to examine which employees of the targeted company seemed to be more appropriate to take over the management on new, independent and self-standing outlets (possibly franchises) of the Financial Points.

The main hypothesis pointed out was that people working for so called »mobile network« would come out as more suitable to become leaders and managers of these new retailing set-ups of the main company. The set of questions might have been split into five sub-areas in which following influencing factors were examined: self-initiative and creativity, leadership, motivation, self-efficacy and finally entrepreneurial and managerial skills. Results show that people who are through the clusters analysis classified into the entrepreneurial cluster overcome their colleagues in the administrative cluster in almost all the variables examined. Secondly, the chi-square test proves a very good fit between the compared samples with division of self expressed mobile and stationary team and computed adminisistrative and entrepreneurial clusters. Results proved the hypotheses confirmed. It may be concluded, that employees working for the mobile network are indeed more appropriate choice once the new outlets are whether staffed or franchised.

The management of the company should put more emphasis to the examined entrepreneurial factors once they make decisions to which the leadership of the new intrapreneurial ventures will be trusted. Those candidates who seem to be closest match to the profile of so called »ideal prototype of the intrapreneur« should enjoy certain advantage over the other candidates. From the research point of view an applied tool will be developed in order to assess particular candidates to become new venture vehicles. The tool will be operated within the context of the development of a sustainable human resource function with the longer term objective to indentify gaps between the desired and available personal characteristics and knowledge and skills of the future candidates. Thus, the proposed tool will enable the human resource department in the company to systematically design education and training plans but, also individual coaching and tutoring sessions and applied other methods with the main objective to overcome the identified individual gaps and catalyze long term personal development of the candidates according to the needs of the company in the field of the corporate entrepreneurship as the main growing strategy of the firm.

From the viewpoint of possible future research a more in-depth analysis of the intrapreneurship factors and indicators is possible. There is, however, one main and from several previous pieces of research known pitfall of such studies: only entrepreneurial intensions are measured which would definitely not all come true if a longitudinal research would be possible in which one would examine also the ratio of those respondents who clearly expressed the intention and interest for the entrepreneurial path within the existing company and, once formally enabled within the system, actually fulfil these intentions. One special challenge for the researchers would also be to replicate the research methodology on another sample of the similar company. Several iterations of such research would on the long run definitely increase the reliability of the proposed assessment tool for future candidates for intrapreneurs in different companies not only in the financial service sector but also other industries.

There are two levels of implications. On the first level, the study will be able to give very concrete recommendations for the designers of the forthcoming new strategy of the firm. It will draw a picture of the ideal corporate entrepreneur, a role model with several characteristics which will be expected from potential new franchisees – corporate entrepreneurs. On the second level, a tool which would be possible to adapt for the cases of other firms will be developed with possible applications for consulting purposes. On the third level, several needs for specialized training programs in the field of corporate entrepreneurship will evolve from the study.

The value of the study is at least in two points. One is that it appears to be one of the first studies in the country and in the region examining the conditions and possibilities of introducing corporate entrepreneurship as a strategic approach in the financial sector. This will contribute to higher level of understanding of corporate entrepreneurship in the country and region. A very practical value of the study will be the possibility to design an easy-adaptive consulting tool for possible replication of the introduction of the corporate entrepreneurship process into another company.

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### Programme for the Application of New Technologies – A Tool for Technology Transfer and Regional Development

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Scence, technology and innovation are now key to improving economic performance and social well beeing of one country Many countries have adopted measures that directly or indirectly facilitate technology transfer. If governments want to obtain the benefits from this transformation tehy have to put the right policies in place and to sharpen their policy tools to facilitate that process. The subject of this paper is analysis of the specific regional governmet's tool for application of new technologies in enterprises in AP Vojvodina with the aim of realizing a more dynamic economic development of the province and setting up new production capacities based on the application of new technologies. In the first part of the paper, the fundamental conceptual issues about technology transfer and public policy will be mantioned. In the second part the main characteristics of the AP Vojvodina`s economy as well as it's direction of further development will be presented. In the third part of the paper, the objectives, description and the scope of the Programme for co financing plants for the application of new technologies in AP Vojvodina will be presented as the the specific case study. Whereas the strategic goal of our country is increase of its competitiveness and accession to the European Union, the necessity for future research of such case studies will be discussed.

#### 1. Introduction

Science, technology and innovation are now key to improving economic performance and social well beeing of one country. Many countries have adopted measures that facilitate technology transfer. The subject of this paper is analysis of the specific regional government's tool for application of new technologies in enterprises in Autonomous Province of Vojvodina (APV) with the aim of realizing a more dynamic economic development of the province and setting up new production capacities based on the application of new technologies. After the introduction, the fundamental conceptual issues about technology transfer and public policy are mantioned. In the next part the main characteristics of the AP Vojvodina's economy as well as it's direction of further development are presented. Strategy of Scientific and Technological Development of Vojvodina is presented herafter as the basis for the Programme for co-financing plants for the application of new technologies in AP Vojvodina that is explained in the fifth part. In the conclusions, the effects of this specific regional governmet's tool for application of new technologies in enterprises in APV and necessity for future research are discussed.

#### 2. Technology transfer and public policy

Science, technology and innovation are now key to improving economic performance and social well beeing of one country. Many countries have adopted measures that directly or indirectly facilitate technology transfer. If governments want to obtain the benefits from this

transformation they have to put the right policies in place and to sharpen their policy tools to facilitate that process.

There are many different definitions of technology and technology transfer in the literature. Technology transfer is usually defined as a [1] process for conceiving of a new application for an existing technology. It is also defined as a process for converting research into economic development. The term technology transfer is also used to mean licensing intellectual property to a manufacturer for making new product, or reducing an idea to practice in a prototype, or even the process of recording concepts of technology know-how in a professional paper or patent application. People use the verb transfer to mean moving from one point to another. Successful technology transfer means that it is necessary to a broad view of technology to mean not only machines and equipment, but also the skills, abilities, knowledge, systems and processes necessary to make things happen. Thus technologies are meant to be total systems that include know-how, procedures, goods and services, as well as organizational and operational measures. The most common view of the technology is [2] "a tool", and then discussions proceed as to just what type of tool qualifies as technology. Sahal is one of the few theorists who have written about alternative concepts of technology. He refers to technology as [3, 4] "configurations", observing that the transfer object, the "technology", must rely on a subjectively determined but specifiable set of processes and products. Simply focusing on the product is not sufficient to the study of transfer and diffusion of technology. It is not merely the product that is transferred but also knowledge of its use and application. According to the World Intellectual Property Organization (WIPO) technology is defined as the systematic knowledge for product manufacture and service provision in industry, farming and commercial fields, and knowledge is reflected in inventions, utility models, designs, and in data forms.

The policy process could be explained as [5] the process of how interested political actors interact within political institutions to produce, implement, evaluate and revise public policies. Most public policies set priorities among competing interests. [6] One of the best places to look for the "win-win" policy has been states' technology-based economic development programs. Technology-based economic development programs are generally quite popular, there has always been some dissent about the programs and their effects. There are often sharp splits between those who are enthusiastic advocates and those who criticize these programs. In order to analyze one "sui generis" regional technology based economic development program the case study of Programme for the co-funding of the plants for application of new technology in industry in Autonomous Province of Vojvodina is presented.

#### 3. Main characteristic of AP Vojvodina's economy and development

In order to analyze the Programme for the co-funding of the plants for application of new technology of the Government of APV it is necessary to be aware of the state of the arts of APV economy and level of the development of the Province in the time when it was launched.

The APV is a form of territorial autonomy in the Republic of Serbia. It is situated in the northern part of Serbia and covers an area of 21.506 square kilometers, approximately one quarter of Serbia. The statute is the highest legal act of the Province, which organizes the authorities and organs of the APV.

Similar to the other Eastern European Countries, Serbia, and APV, as its integral part, is currently facing a deep recession and financial crisis. Transition period from 2001 have been characterized by carrying out of numerous reforms with various levels of completion, establishment of macroeconomic stability, restructuring of large companies, privatization process of entrepreneurs and beginning of joining the European Union with rapid and numerous legal adjustments in all economic and social spheres. It is also necessary to have in mind changes in the world economy such as: dominant mass production and a new

production process based on knowledge, high-tech solutions, information communication inputs, infrastructure and services.

According the study "Integrated Regional Development Programme of AP Vojvodina updated ex post analyses of the economy AP Vojvodina" [7] macroeconomic trends in the Province in the period from 2001 to 2005 were characterized by establishing stability and sustained and stable economic development. Liberalization of domestic and foreign trade and restructuring of banking sector have been achieved, a privatization of companies was being carried out, and the market reform is in progress. It is estimated that GDP in AP Vojvodina in the period 2001-2005 was rising at the average annual rate of about 5%. An insufficient extent of gross investments in capital assets is characteristic for the AP of Vojvodina. A relative stability of rates has been achieved in the last 5 years of transition. After the structural reforms brought about in the period of 2001-2005, the banking system is recovering and the restructuring of the banking sector is coming to a final stage. The labor market in the AP is characterized by high level of unemployment, high level of concealed unemployment and insufficient workforce mobility. There are 18,380 enterprises doing business in APV (according to annual reports in 2005). There are mostly private enterprises (16,206) among which micro enterprises prevail (79.7%), small enterprises participate with 17.2%, medium-size enterprises with 2.5%, and large enterprises with 0.7%. In the total number of enterprises, great enterprises participate with only 1%, but they greatly determine the financial results of the enterprises and cooperatives of APV. Industry and trade generate the greatest part of the total revenue (79.8%). The importance of the processing industry is unquestionable, although within its framework there are significant differences among the branches. Concerning the regional development of APV, [7] regional aspects (economic and social, demographic, infrastructural) indicate problems. Regional disproportions in APV are further deepened due to demographic emptying of border municipalities, irrational deployment of industry, growth of unemployment, absence of institutional framework for equal regional development and amounting social problems. The differences mainly refer to differences between urban centers and other municipalities. Due to unequal allocation of economic resources, regional disproportions are gaining on intensity. State incentives providing the financing of the regional development programmes, are made through Republic Development Fund and Development Fund of APV.

### 4. Strategy of Scientific and Technological Development of Vojvodina

One of the measures of the "Integrated Regional Development Programme of AP Vojvodina" (IRDP) accepted by the Government of AP Vojvodina, with the aim to support the socioeconomic development process of the Province, was the New Technologies Transfer Support Scheme (BNT). Its objectives were: creating strategic document concerning Basic Directions of the Technological development of AP Vojvodina; developing capacities for new technologies transfer and development; creating pilot programs for implementation new technologies in small and medium enterprises (SME) and public institutions; financial support to SMEs and institutions in new technologies implementation and implementation of the Provincial Information System on new technologies. In accordance with that measure, the Government of APV adopted Strategy of Scientific and Technological Development of Vojvodina [8].

The document contains basic trends of technological development of the APV by fields: Computing, communications and automatised systems; Biotechnology and food production; Energy efficiency and renewable energy sources; Ecology and chemical engineering; New technologies in medicine and pharmacy and Nuclear technologies and new materials. Specific objectives of the strategic document are: analysis of the present state of technological development of the APV in accordance with the European competitiveness

index; assessment of target groups, possibility of creating job opportunities, stimulating local and regional development, potential for preventing a brain drain, possibility of developing a spirit of entrepreneurship; analysis of policy in SME sector; identification of potential for development and application of innovations in the APV and local communities; proposal of strategic trends of technological development of APV; pilot project draft in target sectors, in accordance with strategic trends of technological development and application of innovations in SME sector.

### 5. Programme for co-financing plants for the application of new technologies

Within the realization of the Strategy of Scientific and Technological Development of Vojvodina, the Government of APV launched a new Programme for co-financing plants for the application of new technologies.

#### Description

The implementation of this programme is in the competence of the Provincial Secretariat for Science and Technological Development and the funds were provided by the APV budget. Allocation of funds is realized through a Public call that is announced each year. The enterprises registered at the territory of the Republic of Serbia that plan to initiate new facilities at the territory of the APV are entitled to the Public announcement. Evaluation and review of relevant data on received applications is done by the Commission from The Provincial Secretary for Science and Technological Development, Provincial Secretary for Economy and the Provincial Secretary for Environmental Protection and Sustainable Development.

The criteria for assessing the requests are: character of the new product in terms of competitiveness; evaluation of the technology uptodatenss; number of new workers; the amount of the own invested funds; share percentage of the own investment funds; possibility of product placement; elements of importance for the conservation and improvement of environment; competence and solvency of an economic society; importance for the development of the local environment and elaboration evaluation.

The Provincial Secretary for Science and Technological Development makes a decision on the implementation of co-financing, based on the Commission's proposal, and monitors the implementation of co-financing through written reports and financial reports submitted by the funds beneficiaries.

The Secretariat co-finances the opening of the facilities and pilot production applying new technologies up to the amount of 49% of the investment worth.

Co-financing may encompass the following expenses: preparation of the complete investment-technical documentation; building of new premises; procurement of new machines; procurement of auxiliary material; salaries for newly-employed workers etc.

When making a decision the priority is given to: new products that significantly increase the competitiveness of the APV economy at foreign markets; projects that considerably increase the number of newly-employed workers; economic societies that invest higher percentage of their own funds; economic societies that will initiate their facilities in economic underdeveloped municipalities at the territory of APV; projects of particular significance for promoting environmental protection.

The enterprise that receives the funds is obliged to return the amount of funds donated by the Secretariat during a period from one to five years as donations to health institutions, social care institutions, schools and other institutions that are determined as priority by the

Government of APV. Donations to the specified institutions may be implemented in the form of goods from primary production or other goods of the appropriate worth for the needs of the institutions to whom the donation was sent, where the worth of the goods should correspond to the amount of funds that the economic society received from the Secretariat. Were the funds to be approved to launch new facilities on the territory of an undeveloped or underdeveloped municipality in Vojvodina, the amount of funds that are to be returned might be reduced by the amount of annual income for 50% of new employees, while the amount specified may not be greater than 30% of the total funds approved. The Directorate for Stock Reserves of the APV is responsible for the implementation of the returning funds as

#### Aims

The main goal that Provincial Government would like to achieve by this Programme is realization of more dynamic economic development of the Province. Concerning the existing regional disproportions, the aim is to achieve more equal development by giving priority in supporting the plants that should be set up in the less developed municipalities. In the aim of solving of the unemployment problem, the priority in co-financing is given to the plants which will employ more workers (the minimum is 20 new workers). The Programme also put emphasize in the environment protection and sustainable development by putting it as one of the most important evaluation criteria in the co-financing decision making process.

#### Scope and Effects

donations process.

A total of 86 plants have been co-financed during the period from 2006 to 2009. Total investment was 106.341.950 EUR. Government of APV invested 24.636.987 EUR and the value of investment of private capital was 81.704.963 EUR. The number of co-financed plants and the amount of invested funds per year are shown in Figure 1. It is also important to note that significant cooperation between the plants and scientific institutions from APV has been achieved. The cooperation with over 15 scientific institutions from the Province, in all fields of technology, has been achieved so far.



Figure 1 Number of co-financed plants, and the amount of invested funds by Secretariat per year

The opened plants fall into the followint technology areas: environmental protection (EP), food production (FP), products based on new materials (PNM), renewable energy sources (RES), electrical and mechanical industry (EMI) and biotechnology (BT). The number of cofinanced plants per technology area are shown in Figure 2. Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010



Figure 2 Number of co-financed plants per technology area

The 2533 new jobs were provided through this Programme. The Figure 3 provides an overview of the cost of one job in relation to the field of technology and the amount of APV Government's participation. The most expensive job is obtained in the biotechnology field (57.000 EUR) while the most inexpensive one is in the renewable energy sector (30.000 EUR). Besides, more than 20.000 new jobs were created potentially through the cooperation between the granted SME's and their partners.



Figure 3 Cost of one job (in EUR) in relation to the field of technology and the amount of APV Government's participation

New plants are started up in almost all municipalities in the Province (in 41 out of 45 municipalities) and the largest number of them is located in the less developed ones. Allocation of plants per municipalities and number of plants by the fields are shown in Figure 4.



Figure 4 Allocation per municipalities and number of plants by the fields

Analyses showed that the most attractive industries regarding the Programme are: food production and biotechnology, production based on new materials and production based on the renewable energy sources. The common thing in all production fields is "process automatization" by using information and communication technology. The Programme showed several advantages such as enhancing technology level of the SME's and increasing the employment rate. Besides, it contributed to the more balanced regional development of the Province. However, in some cases high-tech micro enterprises couldn't reach precondition of minimal number of new employees. The advantages and weaknesses of the Programme are shown in Table 1.

Table T Auvantages and weaknesses					
Advantages	Weaknesses				
<ul> <li>Enhancing the technology level</li> <li>Increasing the employment rate</li> <li>More equal regional development</li> <li>Support to development of small and medium enterprises sector (financial support, return in goods, marketing)</li> </ul>	<ul> <li>High technology vs. number of employees</li> <li>Micro enterprises excluded because of the social component (at least 20 new workers)</li> </ul>				

Tahlo 1 Advantages and weaknesses

#### 6. Conclusions

Technology based economic programs often receive considerable attention due to many reasons. They are generally quite popular especially if one's agenda for state policy includes economic growth, expanded revenues, successful business star-ups and full utilization of the scientific and technological resources of the state. [6] Most states have two quite different and rarely joined economic agendas, one economic development the other economic-social. From the standpoint of economic development: new companies, high paying jobs, wealth creation, and technology based economic programs often do a lot with a little. But few such programs even address the economic social agenda: income inequality, poverty, racial and class divide. [6] Evidence suggests that state economic development programs often succeed in creating wealth but have only modest effects impact on job creation and unemployment patterns.

Judging from the number of new technology plants whose realization come out of APV Government programme as active participation of researchers, the leading position occupy the plants from the areas of biotechnology, food industry, and production based on new materials and renewable energy sources. In all this the highest responsibility lies just on researchers, whose creative efforts, being in line with the Strategy of Technological Development of the Republic and Province, are supposed to ensure the necessary dynamics of the development in this area. Further realization of the strategy will be to a great extent limited by the existing state of the infrastructural elements. Because of that it is necessary to establish priorities and aspects of medium/term strategy of revitalization and construction road network, water supply and protection, as well as design the energy balance with a significant participation of renewable energy sources.

However, there were some dilemmas about the Programme. Does high technology has priority on the number of new employees. In some cases high/tech micro enterprises with 5 to 10 employees couldn't reach the precondition of minimum 20 new employees and were excluded from the Programme. Besides, due to low mobility of skilled working force, it was difficult to set up new plant in the undeveloped regions of the Province. From the presented effects of the Programme for co financing plants for the application of new technologies could be concluded that it tackled the technology level, economic and social issues in the Province in a positive way, even in the time of the deep economic crisis. But many evidences of its real effectiveness are still missing. Due to a short period of application it was not possible to do its evaluation yet. If the real effectiveness and sustainability of the programme want to be achieved it should be the next step in its development.

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# Valorisation of Academic R&D: The INTERVALUE Platform

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This paper presents an organizational framework and a methodology toolkit that tackles one of the major hurdles of economic development in South East Europe (SEE), the missing link of the innovation triple helix: the valorisation of research performed in the region's universities and research centres. SEE region is lagging behind in terms of innovation even though it includes many active research centres and university labs, producing results that cannot find their way to the market. The concept of a deficit in R&D expenditure has recently served as a crucial focusing device for research and innovation policy in the EU. Relevant studies assume that R&D support mechanisms must strengthen the R&D take-up by creating critical system links oriented to market-driven R&D efforts. Support actions for strengthening this interaction are limited by low-level accessibility of R&D results by enterprises, due to internalities of research effort; weak knowledge transfer mechanisms; communication barriers between academia and industry; failure to meet a critical mass of R&D results due to isolation and lack of cooperation. Based on the work performed within the INTERVALUE project (funded by the SEE Territorial Cooperation Program), a methodology and a web-based toolset has been developed that allows innovation intermediaries (such as knowledge transfer offices within Universities) to identify potentially marketable R&D and provide valorisation plans that could lead to market commercialisation of R&D. The toolset guides IP valorisation agreements based on detailed examination of each R&D result with regard to its technical feasibility, IP protection, market potential, and investment/ funding opportunities.

#### Keywords

Valorisation of R&D; academic technology transfer; web-based research valorisation.

#### 1. Valorisation of academic R&D

Universities have become innovation ecosystems of major importance. The shift towards knowledge-based development, the increasing importance of science and technology in sustaining innovation and competitiveness, the limitless growth that knowledge can generate, make universities more sensitive to the valorisation of their intellectual capital and the generated intellectual property deriving from their research activity. The valorisation of academic R&D and

the generated IP is the key process in the creation of university-based innovation ecosystems. Complementing learning, research and innovation gave birth to university-based innovation ecosystems, which rely on institutions of research-industry intermediation, liaison offices and triple helix alliances, while the campuses host new research and science parks. University cities encourage strongly this orientation and contribute financially to the development of infrastructure that helps creating such university-based innovation ecosystems. Public policies in many regions provide support to universities for creating infrastructure and institutions that encourage the embrace of innovation, growth and job creation.

The commercialisation of university research outcomes (an equivalent term for academic R&D valorisation) has become an important issue in both literatures of university reform and innovation development. Especially in the literature of innovation, a strong interest on university R&D, which is considered as a major and unexploited deposit of innovation, is observed. EU statistics document also the shift of technology transfer towards academic research. This is due, on the one hand, to the fact that about 40% of the global R&D effort takes place within university labs and public R&D centres [1], and on the other hand, to the fact that university R&D is a source of radical innovations generated from breakthroughs in science and technology. Innovations in two major sectors of our time, information and communication and biotech industries have started and have been continuously fed by academic R&D and science-based novel products.

Arguments about the characteristics of the bond between academic R&D and innovation abound in the literature. The transition from a linear model towards systemic and open models [2, 3, 4] and triple-helix collaboration [5] are among the most known.

From an operational point of view however, it is important to underline the difference between contractual or formal procedures of valorisation, such as research contracts, patents license, «buy-sell» transactions between academic institutions and companies, and collaborative or emerging relationships between universities and firms [6]. In the former case, valorisation is seen as a process resulting from a contract between technology supply and demand, where suppliers and users of technology operate independently and the gap between them is bridged by a licensing contract. In the latter, valorisation of academic R&D relies on interdependences, interactions and interactive learning between different bodies, arising from collaboration networks and collective learning processes. This collective sharing and transfer of knowledge among the actors involved in the process constitutes the basis of territorial systems of innovation and localised interactive learning processes [7].

Another meaningful distinction is made with respect to the policies that shape this relationship. Goldfarb and Henrekson [8] identify two central policy models, bottom-up vs. top-down policies of university intellectual property commercialisation, which are formed by incentives for universities to commercialise their research and by governments directly creating mechanisms that facilitate commercialisation. In the former case, which is common in US universities, intellectual property from R&D is awarded to universities. The Bayh-Dole Act adopted in 1980 allowed universities to appropriate the property rights resulting from university research that was funded by federal grants. This encouraged universities to create hundreds of technology transfer offices, which cover expenses associated with marketing, patenting, and license negotiation. The organised promotion of IP and the availability of funds for this purpose make commercialisation more likely when IP rights belong to universities.

In the second case, which is common in Sweden and many EU countries, IP rights stemming from R&D are awarded (fully or partly) to the inventor. A result of faculty ownership of property rights is that universities have little incentive in technology transfer, which discourages the systematic pursuit of research valorisation. This barrier, combined with constraints in the entrepreneurial activity of academics, leads to very low level of research commercialisation. "In a system that discourages faculty involvement with industry beyond consulting and where the property rights rest with the researcher, there is a lower likelihood that the commercial benefits of academic research will be reaped." [8, page 647].

There are a few research valorisation / commercialisation mechanisms. At the end of a research project most usual commercialisation is (1) post-research contractual agreements to pursue

research further, (2) consulting assignments during the product development phase, (3) technology licensing to allow use of research for commercial purpose, and (4) equity in spinoffs creation. However, barriers to the post-research commercialisation phase are numerous, due to many and diverse factors: low-level accessibility of R&D outcomes by enterprises due to internalities of research effort; weak knowledge transfer mechanisms; weak commercialisation incentives; communication barriers and language gaps between academia and industry; failure to meet a critical mass of R&D results due to isolation and lack of cooperation.

Most of them, however, are related to the existence or not of institutions that undertake valorisation systematically. Research on entrepreneurial universities indicates that most academics naively presume that a discovery will somehow automatically produce financial rewards [11]. On the contrary the existence of dedicated institutions, such as university technology transfer, liaison, and marketing offices can multiply substantially the level of research valorisation: "we are witnessing a phenomenon wherein universities that are reactive in technology transfer will respond to the rare entrepreneurs and faculty members who wish to "pull" inventions or technologies out of the institution. As these institutions become proactive, their mix of licenses becomes more balanced as more out-of-state deals appear with larger, established licensees" [12].

#### 2. The INTERVALUE project concept

The "Inter-regional cooperation for valorisation of research results - INTERVALUE" project is based on the above consideration about academic R&D and its significant role to innovation. Furthermore, the project takes into account that the South East European region is lagging behind in terms of innovation even though it includes many active research centres, producing results that cannot find their way to the market. Recognizing the reality of the small market of each one of the national entities in the region, as well as the nature of scientific research that transcends borders, INTERVALUE is aiming to use the concepts of trans-national cooperation and networking in order to overcome the region's innovation deficit by valorising the existing academic potential. INTERVALUE aims to bridge the gap between R&D creators, producers, financiers and marketers by creating a trans-national mechanism that facilitates the valorisation of research results. Trans-nationality is emphasized since the various stakeholders of R&D valorisation (researchers, financiers, producers and marketers) could come from one country and there will be interaction between researchers and transfer of experience between stakeholders in different countries. The overall objective of INTERVALUE is to set up a mechanism covering most of the SEE area, which allows sharing and dissemination of key technologies and helps to establish supply chains between the R&D institutions and the business sector. The project follows an integrated approach for strengthening the linkages among university R&D, industries, and public or private funding schemes through the involvement of experts in the evaluation and valorisation of R&D results. INTERVALUE adopts a bottom-up approach that allows interesting research to reach its market potential through a process of selection and promotion to relevant audiences. It creates a SEEwide Repository of potentially exploitable R&D outcomes by building local research exploitation communities and by working with selected researchers and laboratories. An Experts' pool and database is created that utilises a four-way assessment toolset, to facilitate the valorisation of research results. The toolset is created to be used by innovation intermediaries (such as knowledge transfer offices within Universities) to identify potentially marketable R&D and to generate valorisation plans that could lead R&D outcomes to the market. The toolset allows the formulation of valorisation and promotions plan based on the detailed examination of each R&D result with regard to (1) technical feasibility, (2) IP protection, (3) market potential, and (4) investment and funding opportunities.

The *Technical Feasibility* aspect of the toolset focuses on the technical maturity of the research result in relation to its deployment as a product or a service that can be commercially exploited. The expert team is asked to cooperate with the research team in order to explore the following features of the research result: Has the result being tested and at which level? Is it tested as a Prototype, a Pilot Application or an Alpha/BETA testing? What were the results of this testing and

based on them what further testing is needed to be done? What would be a realistic time frame for these further tests and what are the costs associated with them? To what extent does the research team have technical resources for supporting the production of a new product (in terms of human resources, knowledge, hardware, etc.)? What are the technical issues that need to be tackled for full deployment of the product or service? What additional technical resources are needed for the production of this new product? What are the materials, tools, technologies and staff effort that are necessary for full deployment (full scale production) of the product or service? At the end of the Technical Feasibility assessment exercise, the assessment team is able to produce a clear picture of the technical issues that need to be tackled in order to be able to bring the research result to the market.

The *Scientific Relevance* aspect of the toolset is concerned with the scientific and Intellectual Property futures of the research result. Here the expert team attempts to position the research result in terms of trends in contemporary and future research and to define possible ways to further expand this research. The following issues are being examined: How does the result fit with the state of the art in its scientific field? What is the problem/ need/ knowledge gap that the research result is responding to? How was it addressed before and what is the approach that makes the result unique and valuable? What is the potential for further research? What is the potential of the research result for synergy with other research areas either in the same or in a different discipline? What is the proposed method of IPR-protection (patent, license, trademark etc.)? What are the steps that need to be taken in order to secure the IPR-protection and what are the associated costs? What is the expected impact of the research results exploitation? Based on the above, the expert team is able to assess the scientific maturity of the research result, the optimum way to secure its IPR and the potential for further research either on the same direction that was followed up till now or in pursue of other relevant research objectives.

The *Market Potential* aspect of the toolset explores the market (existing or potential) of the new product or service that can be developed based on a research result. This part of the toolset will utilize input from the Technical Feasibility and Scientific Relevance parts and use market analysis techniques in order to determine: What is the Unique Sales Proposition of the potential product? Is this a Technology-driven innovation or a Market-driven innovation? What would be the added value for end-users? Would this added value be based on higher quality or better technical characteristics? What is the target market for the product? Can this market go beyond the national level to a European or even global market? Will the product or service address existing demand or future/ hidden (latent) demand? Are there any existing or potential strategic partnerships that can be used for the market and what competitive advantages will the introduction of the new product ensue? Will the potential products be marketed to regulated or open markets? And finally what is the estimation of the cost of the new product, the expected sales volume and the expected market share? By answering these questions the expert team formulates the seed of a market analysis that could yield in the future a market plan for the product/ service.

The *Investment and Funding Potential* draws on the suggestions of all the previous parts of the toolset (Technical Feasibility, Scientific Relevance, Market Potential) in order to develop a summary version of a cost/ benefit analysis that includes reference to projected Costs (fixed costs, personnel costs, other running costs, marketing costs), expected Sales Volume and Revenues for a 3-5 years period. It also includes an evaluation of the financial Risks associated with further investment in the research result's exploitation. Finally, the expert team having assessed the level of investment required to develop the research result, is providing an assessment of suitable funding sources i.e. EU finding, national/ regional funding, private funding (VC, banks, sponsors) etc. The end result of the investment analysis is a basic version of a business plan for a new product/ service.

The four-way assessment based on the toolset provides different insights to different stakeholders in the exercise. For the research team: Regardless of the decision to proceed with potential exploitation of the research result (either through licensing, patenting, creation of a spin-off etc), the research team will have at its disposal a valuable road map that defines the basic parameters

of commercial exploitation and provides expert insight that could be used for further development. For potential financiers: The exercise provides a clear picture of the potential for commercial exploitation and an initial estimation of the costs, risks and revenues that are to be expected.

Overall, INTERVALUE is building a transnational innovation supply chain in the SEE region based on academic research, which combines a *Repository* of promising R&D, a pool of *Valorisation* plans, and follow-up processes for research dissemination, promotion, *exploitation agreements*, and funding.

#### 3. The INTERVALUE platform

The above described processes of collection, elaboration of detailed valorisation plans, and commercialisation of research are guided and supported by a digital space, the INTERVALUE Platform. It is a meta-repository of R&D results and a collaborative web-space facilitating the interaction between researchers, companies and experts, and supporting innovation by academic research.

The Platform has three principal components (Figure 1):

- The Repository space: Research teams and technology providers from universities and research and technological institutions submit research outcomes that can lead to new products, production processes and services.
- The Valorisation space: A network of experts helps researchers to create valorisation plans for their R&D results covering technical feasibility, IP protection, market potential and funding potential, along the perspectives discussed in the previous section.
- The IP Agreements space: Research outcomes and valorisation plans are promoted to selected markets and brokerage events in view of achieving different forms of commercialisation agreement: new contracts, licenses, or equity. Online learning roadmaps, newsletters, models of IP agreements, and pilot applications create a learning environment guiding IP commercialisation.



**Figure 1.** INTERVALUE Platform: Repository – Valorisation – IP Agreements

The Platform was developed along Web 2.0 principles in view of facilitating the creation of content by multiple users. The WordPress MU or multi-user (http://mu.wordpress.org) was used as basic content management system, which was customised according to the needs of the project concept. The multi-user WordPress is ideal for cases that run multiple content applications or in cases of multiple users hosting services. The development of the Platform followed also the principles of the service-oriented architecture (SOA), in terms of reuse, granularity, modularity, composability, componentization and interoperability, and services identification categorization, delivery, and monitoring and tracking.

Each component of the Platform was organised along a three-tier architecture: (1) The presentation tier, which is the topmost level of the application and displays information related to such services as browsing merchandise, purchasing, and shopping cart contents. (2) The applications tier, which controls an application's functionality by performing detailed processing. (3) The data tier, which consists of databases in which information is stored and retrieved. This tier keeps data neutral and independent from application servers or business logic. Giving data its own tier also improves scalability and performance.



Figure 2. Architecture of the Platform

The components of the INTERVALUE Platform, presented on Figure 2, together with the work of experts and the participation of users create an intelligent space for efficient R&D valorisation.

- The collective action of users, in the first place, uploads content on the Platform along a predefined template (T0) for R&D description. At the beginning of the project, universities from the SEE region feed with R&D data, but as the Platform is open, it is expected that other universities will follow in the collective gathering and upload of research.
- Then, individual experts create the valorisation plans along four other predefined templates (T1, T2, T3, and T4). Four methodologies and a learning roadmap assist these reports on technical feasibility, IP protection, potential market analysis, and funding opportunities investigation. The cooperative work of experts is disseminated in brokerage events and communicated via newsletters.

 The Platform assists all these procedures: the repository of R&D in the beginning, the drafting of valorisation plans according to the four templates, the dissemination of information. An IPR agreement space facilitates different forms of commercialisation agreements, from new research contracts to equity in new business creation. A series of intelligent tools and collective intelligence algorithms bring additional content to users, in terms of visualisation, popularity of entries, similar content, and web analytics. Thus the Platform offers an organisational and methodological framework for the valorisation and commercialisation of IP.

Users, experts, and the Platform set in motion a collaborative system, which combines the individual capabilities of experts in drafting valorisation plans, the collaborative work of a large number of users for content creation, and the data storing, retrieval, and analysis of the web applications. It is a system having all the fundamental characteristics of an intelligent community [12].

#### 4. Barriers in the valorisation of academic R&D

Academic R&D is often regarded as a "world of its own" impenetrable by society and most importantly by the people that could make use of it at a commercial level: the financiers, the marketers etc. This is particularly true in the European context. According to an EC communication: "Compared to North America, the average university in Europe generates far fewer inventions and patents. This is largely due to a less systematic and professional management of knowledge and intellectual property by European universities. Moreover, efficient knowledge transfer in European research institutions is hindered by a range of factors, including: cultural differences between the business and science communities; lack of incentives; legal barriers; and fragmented markets for knowledge and technology" [9]

The process of transforming academic research into marketable products or services, involves three kinds of actors:

- Researchers themselves (usually a research team that has some kind of strong or loose affiliation with a University or research institution.)
- Funds and capital providers (banks, VCs, or plain businessmen)
- Intermediaries (academia industry liaison offices, consultants, lawyers, technology brokers, technology transfer specialists, innovation professionals)

For each of the above actors, certain obstacles are identified and need to be dealt with.

At the level of the researchers the main obstacles are: Lack of understanding of the business environment; a tendency to either overestimate or underestimate the commercial potential of research; a sense of insecurity regarding relations with capital providers; a tendency to focus on a single set of questions and interests that does not allow crossovers to other disciplines and exploitation of knowledge in non-conventional ways; isolation that leads to failure to meet a critical mass of R&D results; lack of an IPR policy at the institutional level that would set clear rules and incentives. [10]

At the level of the capital providers, the obstacles include: too much focusing on numbers leading to systematically underestimating potential investments coming from research ideas; lack of technical and scientific skills are not regarded as problems, so they are not tackled at an appropriate level; focusing on short term results and quick yields of investments; inability to access small innovative start-ups and spin-offs.

The above obstacles demonstrate the necessity for the existence of appropriate mechanisms that could bridge the "distance" between the two worlds of academia and finance. The role is usually being covered by organizations like the knowledge transfer offices of the Universities or local/ regional innovation support entities. Still, according to the EC: *"The personnel"* 

working on knowledge transfer must possess a wide range of skills in order to carry out their tasks effectively. However, relatively inexperienced staff is often appointed to such positions. Continuous professional development exists in a limited number of countries but it is often inadequate in terms of cost and/or delivery" [10]. Intermediary mechanisms tend to be either attached to academia (i.e. industrial liaison offices) or to a financial institution (i.e. the VCs that are being established by banks). In this sense they are not truly intermediaries and they are not able to perform their basic function which is to facilitate the flow of knowledge between the world of academic research and the world of the "market". Often they do not have the necessary capacity and incentives to produce success stories while they experience lack of specialization of their staff who are either too broad (generalist) or too narrow (overspecialization). Building an appropriate intermediary mechanism is one of the main challenges for any local/regional innovation system.

The last observation highlights the importance of the existence of innovation/ knowledge transfer policy. So a fourth type of actor at play should be also considered: The policy maker (either at a national or local/regional level). The basic obstacle that inhibits the role of the policy maker is the fact that their policies are often fragmented.. Policies that address the academia are indeed designed and implemented but they quite so often neglect the needs and drivers of the business world. And the reverse is true regarding policies that are addressing primarily the business world.

A really successful national/ regional research and innovation system will have to find a "fine balance" between the "scientific/ technological" perspective which only an extrovert, flexible and innovative academic community can offer with the "business" perspective that a risk prone, entrepreneurial and global-minded finance community can contribute. Putting together researchers and business people to achieve this fine balance is the challenge of any policy and requires the employment of able, sustainable intermediary mechanisms.

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# Managing innovation in SMEs: Evidence from Serbia

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The main objective of this paper is to try to research the current innovation activities in SMEs in Serbia. Based on the analysis of a sample comprising 56 small and medium enterprises in Serbian industry we shall try to highlight certain managing innovation problems, which may have a negative impact on the total efficiency of economic performance, and growth and development of small and medium enterprises in Serbia. Regarding strategic choice to invest in product and/or process innovation, we find that small enterprises are favour to process innovation while medium enterprises more invest in product innovations. Only two observed enterprises legally patented their innovations. More than a quarter of innovations remained unused. In the observed enterprises lack of employee innovativeness indicated a lack of managerial initiatives aimed at encouraging creativity (motivation, competent development, reward), which results in insufficient product and process innovation. In addition, we find that small enterprises are more likely to choose external knowledge acquisition (imitative innovation strategy), while medium enterprises are more likely to combine internal and external knowledge (absorptive innovation strategy).

#### Keywords

Industry, Innovation, Manufacturing, Serbia, SME, Strategy

#### 1. Introduction

In the fast changing business world, innovation has become the mainstay of every organization. The nature of global economic growth has been changed by the speed of innovation, which has been made possible by rapidly evolving technology, shorter product lifecycles and a higher rate of new product development.

The need for organizations to innovate and to gain benefits of innovation is stressed throughout the innovation management literature. This need comes from increasing competition and customer demands. Innovations involve new working methods, new ideas, new products, new processes, new form of organization, and new management. The common criterion in any definition of innovation is newness.

The purpose of this paper is to present the main findings of an empirical study conducted in the Serbian manufacturing industry, on identifying the innovation determinants in small or medium enterprises (SMEs). The aim of research was to identify patterns of innovative activities of selected SMEs.

Two main reasons motivated the decision to investigate small and medium manufacturing enterprises in Serbia. First, according to profitability manufacturing SMEs dominate rather than large enterprises. Second, it is argued that SMEs are essential to economic development and transition to market economy.
The paper structured as follows. First, an overview of the main categories is presented. The paper then introduces the research methodology, presents the research findings, discusses them, and draws some conclusions and implications. Finally, the contributions and some possible directions for further research are presented.

# 2. Theoretical background

For the purpose of this survey, innovation is defined, according to CIS methodology, as new or significantly improved goods and/or the processes used to produce or supply all goods or services that the business has introduced, regardless of their origin. These may be new to the business or new to the market.

Innovation may be radical, or incremental. Radical innovation is a new product or system with original technology that will significantly expand the capabilities of existing ones. It requires significant R&D. Incremental innovation refers to significant extension of product characteristics with original adaptation of available technology.

The mode of financing is linked to characteristic types of innovation, with debt financing associated with incremental innovation and equity funding with R&D intensive innovation.

The concept of innovation is used to describe the learning process through which the organization generates a flow of new technological knowledge, competencies and capabilities based on inputs that are also knowledge-intensive. This dynamic process has the following characteristics:

(1) The innovation process has essentially continuous nature.

(2) The innovation process is path dependent.

(3) The innovation process is partially irreversible and this strong resistance to the abandonment of a technological trajectory.

(4) The innovation process is affected by different types of uncertainty such as technological, environmental etc.

The term innovation management encapsulates the management of the whole process of innovation from the idea generation stage through product or process development/adaptation to the market. This involves both strategic and operational issues.

Organizations and the dominant coalition must be supportive of innovation as a way of life, by their example, their words, and their actions. In addition, they must keep close to its customers, so that it can work out what they want in the future, before customers know themselves.

There must be an internal procedure for keeping all innovation projects under continuous reconsideration, so that the work is done simultaneously on all fronts, but remains cohesive and compatible.

Regarding organizational culture, innovative culture usually involves considerable freedom of action, substantial resources for educating all ranks in the firm about new technologies, and the use of small teams of employees who possess many skills between them. To sustain an innovative culture, it is important that employees who innovate successfully should be seen to have been rewarded by the other employees.

The approach of innovation value chain exposes the mechanisms through which these factors influence innovation performance, providing a potential structure for the evaluation of future policy initiatives. Through the innovation value chain, managers are able to identify the drivers of innovation behaviour itself, emphasizing the role of R&D as both a direct and indirect influence on innovation success, but also the role of other important sources of knowledge for innovation. Key here is the role of in-house R&D, which has both direct benefits and helps to maximize the innovation benefits of other forms of knowledge sourcing.

Strategic leadership and innovation strategy are crucial for achieving and maintaining strategic competitiveness in the 21st century. According to level of R&D expenditures and source of knowledge, we can distinguish three main innovative strategies: conservative, imitative, and absorptive strategy [1].

Conservative innovation strategy concentrates innovation efforts exclusive to internal research (internal knowledge). It focuses activities simultaneously to exploration of existing technology - process improvements and to product innovations. Imitative innovation strategy uses only external knowledge and methods created by others. Those enterprises are engaged in all type of cooperation. In the innovation activities main partners can be: suppliers, customers, competitors or other businesses in industry, consultants, commercial labs, and universities or other higher education institutions, government or public research institutes.

If combining different sourcing strategies increases the efficiency of each sourcing strategy, they are using absorptive innovation strategy.

Our analysis of relevant literature showed that there is voluminous literature on innovation in SMEs, which embodied different aspects. The literature is dominated by those studies endeavouring to predict success by identifying the determinants of innovation [2-4]. Other dominant approach revealed on studies that specify successful innovation practice in SMEs [5-7]. Some existing studies limit analyses to the study of structural characteristics [8]. Previous studies examined simultaneously large and small enterprises which main conclusion that small enterprises are attributed with behavioural advantages [9]. There is need to access intra- and inter-organizational firm links [10]. In some aspects our research contributes better understanding innovations in small and medium size manufacturing enterprises in Serbia.

# 3. Research methodology

The choice to analyze manufacturing SMEs is dictated by the importance of this section for the Serbian economy in terms of total results (in the total value added the biggest share had section of manufacturing - 32.3%). Precisely, the share of this section in total number of SMEs in Serbia (14.8%); with regard to the total number of employees in manufacturing were engaged 20.6%; generated turnover in manufacturing was 13.7% of the total turnover; in the total value added the share of manufacturing were 18.9% [11].

Research sample consisted of 56 manufacturing enterprises selected based on financial performances (operation revenues, capital, and profits) and number of employees. The vast majority of participants (60.71%) came from small enterprises (less than 50 employees), while 39.29% came from medium-sized (50-250 employees).

According to NACE division, structure of the selected sample is:

- Manufacture of food products and beverages 14 enterprises;
- Manufacture of leather and leather products and footwear 8 enterprises;
- Manufacture of chemicals and chemical products 6 enterprises;
- Manufacture of furniture 4 enterprises;
- Recycling 4 enterprises;
- Manufacture of metal products 4 enterprises;
- Publishing, printing, and reproduction 4 enterprises;
- Manufacture of office machinery and computers- 4 enterprise;
- Manufacturing of textile products 3 enterprises;
- Manufacture of medical, precision and optical instruments 3 enterprises; and
- Manufacture of rubber and plastic products 2 enterprises.

Prior to the survey, in order to provide more complete information for the study, the prototype of questionnaire was developed based on Oslo Manual [12] and CIS methodology. Through simple data analyses, feedback and discussions with the five R&D managers the final version of the questionnaire was developed. This stage has been particular useful since it provided a direct insight into how specific phenomena, found actual application in the industrial practice within the context under investigation.

The final version of the questionnaire comprised 20 questions classifying into following four groups:

- General information about the enterprise
- Innovation activities and innovation strategies
- Product and process innovation
- Sources of innovation.

Each question were formulized as statements and respondents were ask to answer to categorical questions (by choosing yes or no) and to estimate degree of *importance* using a Likert scale ranging from 1 to 5. On the "importance" scale, a "1" indicates that the statement according to him/her is of very minor importance, while statements that score "5" are perceived as having very high importance. For the purpose of data analysis, descriptive statistics and analyses of variance were computed.

The questionnaires were mailed to the executives of small and medium-sized enterprises and R&D managers. The research took place during 2008, but results about innovation activities related to period 2005 - 2007.

# 4. Research findings and discussion

The major findings of the study are presented in following four sections: type of innovation, innovation strategy, information networks, and innovation obstacles.

# 4.1. Type of innovation

It is important to note that 21 of 56 enterprises (37.5% selected enterprises) introduced innovations during the 2 years period (1 January 2005 - 31 December 2007). Regardless the size, 8 were small and 13 medium (*see table 1*).

		Strategic choice			Total (%)
		Product innovation	Process innovation	Product and process innovations	-
Enterprise	Small	9.52%	23.81%	4.76%	38.09%
size	Medium	28.575%	14.285%	19.05%	61.91%
% of Total		38.095%	38.095%	23.81%	100.0%

Table 1 Organization size and type of innovation

In observed enterprises, same frequency is evidenced in both product and process innovation. Relative smaller number invested simulating in product and process innovation. Regarding strategic choice to invest in product and/or process innovation, we find that small enterprises are favour to process innovation while medium enterprises more invest in product innovations.

The attitude towards innovation of observed managers in manufacturing enterprises showed that in most cases innovations were implemented according to procedures for process innovation. 34.5% of selected enterprises did not have procedures for inducing process innovations. More than a quarter of innovations remained unused.

Only two observed enterprises legally patented their innovations. Reasons for low percent of legal protection were not elaborate in this study. Both enterprises used conservative innovation strategy, but because of limited simple we cannot conclude that there is correlation between patent protection and this type of innovation strategy.

#### 4.2. Innovation strategy

With regard to innovation, 23 firms (corresponding to 41.07% of all 56 enterprises) own a R&D unit. Table 2 provides a descriptive analysis of the survey respondents in terms of the innovation strategy.

	Strategic choice			
Enterprise size	Conservative strategy	Imitative strategy	Absorptive strategy	
Small	1	5	2	
Medium	1	1	11	
Total	2	6	13	

 Table 2 Organizational size and innovation strategy

Respondents were supposed to choose 1 out of 3 offered innovative strategies. In two enterprises conservative strategy was implemented. They exclusive used internal knowledge created in own R&D unit. In six observed enterprises imitative strategy was implemented. They exclusive used external knowledge, produced by other organizations. Most observed enterprises implemented absorptive innovation strategy (61.91%).

We find that small enterprises are more likely to choose external knowledge acquisition (imitative innovation strategy), while medium enterprises are more likely to combine internal and external knowledge (absorptive innovation strategy). This goes in line with the literature suggestion that, due to limited financial and human potentials, SMEs must rely on external R&D and must develop co-operation and partnership in technology and innovation with other SMEs, public institutions, and large corporations [2, 3].

#### 4.3. Information networks

The different information sources are classified into three broad groups:

- Companies (suppliers, customers, and competitors or other enterprises in industry),
- Science / Research Base (consultants, universities, public research institutes),
- Intermediaries (conferences, trade fairs, exhibitions, scientific journals and trade/technical publications and professional and industry associations).

Respondents were supposed to choose information sources, which they used in innovation process. Information networks with cumulative frequencies presented in figure 1.

With regard to the role of collaboration for innovation, the findings show that SME introducing innovations are cooperating more often with customers, suppliers and competitors. Less common ways are cooperation with scientific research institutes as well as universities. This is contrary to relevant literature and empirical researches in EU countries. The network with companies cannot be considered as an important source of information for innovation [13].



Figure 1 Information networks

This opposite result is not surprising for author, because one study about intellectual capital in large and medium industrial enterprises in Serbia showed similar result [14]. In the observed enterprises lack of collaboration with universities and research institutes, partly results in insufficient product and process innovation.

#### 4.4. Innovation obstacles

In the last section of the questionnaire, respondents were asked to rank proposed innovation obstacles:

- Importance of lack of finance,
- Importance of lack of information,
- Importance of lack of qualified personnel,
- Importance of lack of knowledge and sharing knowledge.

As far as, obstacles to innovation are concerned, the results indicate that in majority of the observed SME lack of finance (more than 89%) and lack of sharing knowledge (58% of manufacturing enterprises) are dominant obstacles.

Lack of finance embodies relative low financial assets (comparing to large enterprises), and available sources of financing innovation activities. The results show that SME mostly used loans approved by commercial banks. Only few of them used loans approved by Government funds, which has lower interest rate and grace period. This relates to lack of information about financing mode.

The fact that employees were not willing to share or were afraid to expose their ideas indicates a lack of trust in the organizational culture and prevents development of employee competence. In order to change those practices managers should conduct mentor work, notification, knowledge basis etc. Some activities to encouraging creativity, which products new products and processes include motivation and reward.

# **Concluding remarks**

Business environment becomes more and more turbulent because of fast development in technology. No manager can neglect the impact of such development on his industry and

organization. In such business environment, imagination, creativity, innovation, and courage become more and more important as there is no general rule for success.

In this study, we examined innovation activities in the context of manufacturing SMEs in Serbia. From a practical perspective, the results of this study have important implications for SME owners/managers. These implications are highlighted below:

- It is clear that innovation was regarded by respondents as essential for most small and medium enterprises. Those enterprises tend to continuously develop new processes or introduce new products.
- Regarding strategic choice to invest in product and/or process innovation, small manufacturing enterprises are favour to process innovation while medium enterprises more invest in product innovations.
- Small enterprises are more likely to choose external knowledge acquisition (imitative innovation strategy), while medium enterprises are more likely to combine internal and external knowledge (absorptive innovation strategy).
- SME introducing innovations are cooperating more often with customers, suppliers and competitors. Science/research base was rarely used source of innovation by observed manufacturing SMEs.
- Major innovation obstacles were lack of finance and lack of knowledge sharing in observed enterprises.

Notwithstanding the results of this study, there are three main limitations. The study was conducted in a specific national (Serbia) and industry context (manufacturing enterprises). The relatively small sample size was examined.

The results represent a basis for future research that would enable SME in Serbia to better managing innovation. Future research should expand into all industries as well as service sector and embody a large sample.

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# Basic Determinants of Bulgarian Industrial Growth after the EU Accession Bulgaria

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Bulgarian industry has lost many of its positions since of the beginning of 1990s. Structural reform during transition period resulted in markets' lost; lack of innovations, low product quality, inefficient organizational and production structure. This has changed after the end of the economic crisis of 1996. Industry growth in Bulgaria has been driven by two factors: 1) the increase in the effectiveness of use of the existing capital and labor resources, resulting from the financial stabilization, privatization, liberalization and institutional reforms, and 2) the gradual recovery of the physical capital lost during the transition period through a pick-up in domestic and foreign investment. The paper analyses basic determinants of industrial growth such as innovation behavior on sectoral and micro level, deregulation and investments, education, competitiveness, and the overall impact of macroeconomic environment respectively – fiscal policy, inflation, international trade, financial system. This problem is not deeply studied and only a few economists do a research on it after Bulgarian accession to the EU. The analysis reveals the level of impact of each factor on Bulgarian industrial growth before and after accession to the European Union.

#### Keywords:

Industrial growth, innovations, investment behaviour, Bulgarian economy

#### 1. Introduction

Bulgarian industry has lost many of its positions since of the beginning of 1990s. The structural reform during the transition period resulted in loss of markets, lack of innovations, low product quality, inefficient organizational and production structures. all this changed after the end of the 1996 economic crisis.

Industrial growth in Bulgaria was driven by two factors: 1) the increase in the effectiveness of the use of existing capital and labor resources, resulting from the financial stabilization, privatization, liberalization and institutional reforms, and 2) the gradual recovery of the physical capital lost during the transition period through a pick-up in domestic and foreign investment.

In this paper we claim that the problem has not been studied in depth and that only a few economists have researched it after Bulgaria's accession to the EU. The analysis reveals different factors that have influenced Bulgarian industrial growth before and after the accession. The assessment of the endogenous and exogenous factors determines the key role of innovation, R&D and human resource development, and demonstrates the interrelation between *innovations – investments – industry growth*.

Section one of the paper is Introduction. Section 2 provides a brief explanation of the current situation, while Section 3 is focused on the analysis of the basic determinants of industrial growth in the last eight years (2000 - 2008), based on macro and firm level data. The conclusions of the study are presented in Section 4.

# 2. Current situation

Many and different interpretations of growth and dynamics may be found in literature. According to Krafft [1], there is a different explanation of industrial dynamics and the role of industrial growth. One of the most common definitions treats industrial dynamics as a result of the increasing ability to enforce the industry evolution (Forrester [2]) for long-term periods. Industrial dynamics does not only describe and analyze the current industrial structure, but also those market-driven factors that can change the economic structures over time. (Krafft [3]).

Therefore, the adoption of the "evolutionary approach" of industrial dynamics is fundamentally set by Schumpeter's entrepreneurs. Thus, the existence of "entrepreneurial governance" as an economic phenomenon changed the industry from the inside. Not surprisingly, managing the endogenous factors for dynamic are the same which are the major challenge for industrial growth (Krafft [3]).

Bo Carlsson and Gunnar Eliasson [4] define economic growth as a result from the interaction of all market actors. From this point of view, economic growth looks like a continuous enlargement of present and potential markets. Therefore, economic growth is in many cases measured by the growth of GDP (Ju, Lin and Wang [5]).

According to the definitions, both industrial dynamics and economic growth are macroeconomic phenomena which are driven by micro level factors. Evidence and proof of both processes can be found at national, sectoral and micro level. Therefore, three essential steps that reveal the factors driven by industrial dynamics are defined:

- to analyze changes of national growth indicators, such as GDP and GNP;
- to analyze some key structural changes, such as: level of competition; level of labor force absorption; level of innovation;
- to analyze intra-firm changes which are directly connected to economic growth.

The ability to explore the link between economic inputs and outputs is essential in identifying industrial dynamics. We therefore need to focus our attention on "the systemic characteristics" of industrial development. We should mention that economic growth is not a result of single firm activities, but a result of market players' activities (see Ju, Lin and Wang [5]).

# 3. Analysis of investment and innovation behavior in Bulgaria in the last eight years (2000 – 2008)

# 3.1. Basic Determinants of Industrial Growth in Bulgaria

*Macroeconomic stability*. Since 1999, the Bulgarian economy can be described as stable. One can see that all macroeconomic indicators, such as GNP, GDP unemployment, inflation, salaries, etc., have went up. The Bulgarian economy retained the strong growth of the past few years. The stable economic growth supports the industrial dynamics.

*Currency board*. A Currency Board was introduced in Bulgaria in 1998. The exchange rate of the Bulgarian national currency (BGN) was fixed at 1.95583 Euro. Currency board guaranteed the investments in Bulgarian economy have been guaranteed. Therefore we find that the stable currency, in combination with the economic growth, is used by investors to generate greater added value from their investments. Hence we can make the conclusion that the currency board has stabilized innovation growth in Bulgaria.

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**Access to international markets.** Bulgarian exports, and especially the exports to the EU partners, has also increased in the last 10 years. The main reason for export growth is the free market access for Bulgarian industrial products. As a country of a pre-accession status, in 2000-2007 Bulgarian producers had free access to the EU markets. However, EU clients typically had higher product quality requirements. As a result, there was a growing need for innovative products and technologies. Therefore, the free access to markets was one of the engines of innovation growth on Bulgaria during the last decade.

**Innovations.** Today, the development of science, innovation and related investments is increasingly seen as a tool for solving important social and economic problems and overcoming the impact of economic crises at global, regional and corporate level. Therefore, they invariably become the strategic objective in the concept of sustainable industrial growth. To secure sustainable industrial growth in the long term, innovations have to support the improvement of human resources quality, the creation of new products and technologies and their timely implementation and use in industries, the development of markets and the availability of financing innovations. Despite some achievements in this respect, numerous shortcomings and lag from the leading countries in innovation system. The Bulgarian national innovation system is still under development. This is evident by the absence or the insufficient number of units specialized in brokering and transfer functions in the innovation process. Such organizations are the business incubators, the innovation centers, the technology parks. The measures undertaken so far at national level have not produced all desired effects.

**Finance.** Generated in recent years, industrial growth is concentrated in innovative companies from rapidly growing sectors of the economy. To ensure growth of industrial growth a great contribution and impact on innovations has the innovation policy and access to various sources of finance for innovation and innovation activity. Such sources of funding are the EU Framework Programs, the Scientific Research Fund, the National Innovation Fund, the EU Structural Funds. Experience shows that Bulgarian firms prefer to finance their activities either with personal funds (reinvestment of profits) or through bank loans. Another source of funding for company activities that became widely used in recent years is the issue of shares of public companies in the country. Initial public offerings have become a fashion trend and an easy way to raise funds for innovation and investment. It was a prerequisite for the establishment of a unified stock exchange and the possibility of listing the shares of most companies in the country. All this is a catalyst of the economic process and a prerequisite for ensuring industrial growth in the national economy

**Tax policy.** During the last seven years the tax policy was changed and enhanced in favor of the entrepreneurs. Since 1 January 2008, a 10% corporate income tax was introduced and Bulgaria become the country with the lowest flat rate tax in the whole EU. The main objectives of the scheme are to modernize the tax system and to provide an incentive to dynamic companies to develop at a rapid pace through the use of their generated profit. Taxation affects the incentives for the creation of more wealth and jobs. Lower taxes lead to more entrepreneurship and more investments. Therefore, lower taxes are important for increasing the rate of economic growth and play important role in industrial dynamics. Moreover, the dividend tax was cut by half to 7% (0% for EU residents). Furthermore, the tax-deductible depreciation rates for new production equipment were increased. All these tax measures have a positive effect on industrial growth.

**Competitiveness.** The key national priority is development of competitive and efficient business structures. The state developed an Operational Programme (OP) "Competitiveness of the Bulgarian economy 2007 – 2013". The overall objective of OP "Competitiveness" is to develop a dynamic economy competitive at the European and world market. The general objective of the operational programme is to implement through two specific objectives that cover both aspects of competitiveness – the readiness of Bulgarian enterprises for the Single European Market and for the fast changing conditions on international markets, as well as the condition of the environment in which they function.

# 3.2. Analysis of investment and innovation behavior in Bulgaria

There are several studies focused on Bulgaria and Bulgarian economic changes before and after the EU accession. The questions which interest most economists are: What changes have occurred in the Bulgarian economy over the pre-accession period? Is there enough ground for fast industry growth? Was the pace of industrial growth retained after the accession? What are the main characteristics of industrial development and the future development paths?

To answer these questions, the analysis is based on the growth indicators.

#### Is there a real industrial growth?

The Bulgarian national statistic data shows that there are enough evidences for industrial growth. Data analysis should be based on the differentiation of industrial sectors as follows: mining and quarrying; manufacturing; energy production.

According to the market variation index (Figure 1), there is a fairly strong differentiation between the mining and manufacturing sectors. The mining sector shows a slight change in sales over the period in question. Vice-versa, manufacturing is a sustainably growing sector. Therefore, according to this picture, the industrial growth in the Bulgarian economy is based on manufacturing.



**Figure 1.** Market variation of industry growth (measured by total sells)[6]

Figure 2. Quality market variation of industry growth (measured by added value)[6]

The Figure shows only the quantitative change of industry. But industrial growth is a long-term oriented concept and we need a confirmation of these results on a qualitative level. When we focus the attention on quality market variation (Figure 2), the interpretation of industrial growth changes radically. Despite the continuous increase of manufacturing sales, we find that quality changes in the sector do not occur very fast. Vice-versa, the mining sector shows sustainable sales but we find out a rapid increase of sales quality.

In conclusion, there is evidences of industrial growth as a result of the increase in market sales and better product quality. But is this a long term trend?

#### Which factors affect over Bulgarian industrial growth?

To analyze industrial growth correctly, we should find out how different factors vary over the last few years. The most commonly used factors are the rate of investments (Figure 3) and the rate of newcomers (Figure 4).

Investment changes show a very fast increase of investment in the pre-accession period. This result is the first proof of EU trust in the Bulgarian industry. of the increase of investments, especially in new technologies and products, is a guarantee for long-term economic growth.

In comparison, the newcomers variation shows which market actors make these investments. The picture shows that there are not many new investors in manufacturing, but there are a lot of newcomers in mining. This is an indicator that manufacturing has stabilized its structure while the process of re-structuring mining has continued in the pre-accession period.

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Figure 3. Investments' variation

Figure 4. New comers' variation

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#### What is the impact of investments on Bulgarian industrial growth?

The qualitative and the quantitative indicators show a stable industrial growth. But the question is: How stable is it?



We need to compare the conditional changes in observed indicators (Figure 5 and Figure 6).

Figure 5. Dependency indexes in sector: Mining and quarrying



In conclusion, investment growth is a result of the diversification and the expansion of company activities, which leads to increased market potential in several industrial sectors. In general, investments in technology resulted in value added growth. In some industrial sub-sectors, the decrease of value added is due to the use of recycled technologies and equipment.

After the 1996-1997 financial and economic crisis, the Bulgarian economy experienced eight consecutive years of economic growth. Fixed capital investment reached 20% of GDP in 2004, for the first time since transition started, and continues to increase; credit activity booms and unemployment are steadily decreasing.

At present, Bulgaria competes with homogeneous, labor- and material-intensive products and low costs are the driving factor behind its competitiveness. Escaping from this low technology trap requires the development of a flexible and open national innovation system within a competitive market economy framework that would ensure an influx and wide diffusion of foreign innovation in the country, and gradual development of local innovation capacity of European and global quality. Investment in innovation is an instrument for industrial growth through improving the competitiveness of Bulgarian enterprises in the long-run. During the last few years, R&D expenditure in Bulgaria has been limited.

In the past ten years, R&D expenditure as a percentage of Bulgaria's GDP (0.5% in 2006) has remained approximately six times lower than the EU27 average. In addition, the contribution of enterprises in total R&D expenditure remains less than half that of the state, which is exactly the opposite situation as observed in the leading innovation economies in Europe. As a result, the

physical R&D capital in Bulgaria has been almost completely depreciated and the accumulated human capital has lost a substantial amount of its value.



Figure 7. Gross Domestic Expenditure on R & D (GRED) [7]

Bulgaria ranks twenty-second among EU27 by Gross Domestic Expenditure of R&D (GERD), a highly unfavorable position. Bulgaria spends less than 0.5% of GDP on R&D.



Figure 8. Expenditures for R &D by sectors, 2000 - 2008

Most the R&D expenditures of are concentrated in the group of Budget Organisations/Government Sector. This group consists of research institutes, research centers and R&D laboratories that are funded by the state budget. More than 50% of all expenditures are done by Budget Organisations. Since 2000, there is a slight decrease in this group. In contrast, the Enterprises and Non-commercial Organisations group has increased its share of R&D expenditures.



Figure 9. Expenditures for R &D in Enterprises as a percent from total expenditures for R&D (2000-2008)

[9]

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The analysis of the R&D expenditures of the enterprises shows a stable increasing trend. After the EU accession, there is an increase by 5 per cent in total R&D expenditures of enterprises compared to the pre accession period. In Bulgaria, the structure of expenditures by economic elements remained unfavorable in 2008 despite the small improvement over the previous eight-year period.



Figure 10. Share of expenditures for labour and external services in enterprises

**Figure 11.** Elements of expenditures for R & D in enterprises

In the pre-accession period, two groups of R&D expenditures in enterprises show controversial tendencies. Since 2003, the share of expenditures for labour and external services has been increasing constantly, while the share of expenditures for tangible assets (technology, machines and equipment) decreased. Current expenditures amount to 80.79% of total R&D expenditures in 2008, while only 19.21% are allocated for the acquisition of tangible fixed assets (a 1% decrease compared to the previous year). Despite the increased share of R&D expenditures, this is a negative trend. Investments in innovation are funds spent on creating (or adapting) the innovation, technological and/or research product in the country. They are mainly used to cover the expenses for research and development (R&D). Investments in innovation depend on the functioning of the whole innovation system, yet they are most closely related to the presence of various funding mechanisms and tools, including venture capital [8]

In a dynamic pattern, Bulgarian enterprises focus mainly on the acquisition of machinery and equipment in their innovation activities. Innovative enterprises place R&D second and employee training comes third.

The sector with the largest share of innovation expenditures for the 2000-2007 periods manufacturing (more than 30%).



Figure 12. Gross Domestic Expenditure on R &D (GERD), % [9]

According to the latest available data of the National Statistics Institute, the share of innovation enterprises in the country is 16.2 % of the total number of working enterprises .

During the last years, a general increase in the number of innovation enterprises can be noticed, with the largest share being in the computer technologies, R&D, engineering and financial brokerage sectors (Figure 12).

The share of enterprises in the fields of computer technologies, architecture and engineering sciences represents only 6.46 % of the total number of enterprises in the country (39.9 % of the total number of innovation enterprises). The share of innovation enterprises in the transport, storage and communications sectors is low (7.2 %) and the same applies to the electricity, gas and water supply sectors (9.9 %).

The number of innovation enterprises in the country represents approximately one fourth of the same share in EU. According to 22.7 % of the enterprises covered by a survey, the lack of innovation activities is due to different problems which impede their activities and 53.9 % of them answer that those activities are not necessarily under the existing market conditions. This comes to show that a great number of the enterprises do not realize the character and the significance of innovations for ensuring their competitiveness.

Product innovations prevail in almost all sectors of the economy (44.8%). Process innovations are carried out only in 7.3 % of the innovation enterprises. They are predominant in enterprises in the mining industry and the production and distribution of electricity, gas and water supply. In the EU, the share of process innovations, which ensure to a greater extent the increase of competitiveness of the enterprises, is larger. The technical level of innovations is still rather low. A great number of product innovations have a limited scope and can hardly influence the increase of company competitiveness. As a result of the innovation activities, a large number of enterprises have widened their product range and increased the number of new services and goods they offer (42.7 %), and the quality of the existing products has also improved (45.5%). The market share has expanded and the entry on new markets has been favourably affected (32.8 %), the production power of enterprises has also been increased (23.3 %) and the prime cost of existing products and services has been reduced (35.8 %). These values apply to the predominant number of innovation enterprises in almost all economic sectors except the production and distribution of electricity, gas and water supply, where the main result for most of the innovation enterprises (61.6 %) is the reduction of prime costs and only 7.7 % of the enterprises have launched new products and services. The relative share of innovation products represents a small part of the total volume of products. For 12.4 % of the enterprises surveyed, this share is up to 5%, for 245% - between 5 and 10%, for 24.8% - between 11 and 20%, and only for about 145 of the enterprises the share is over 50%. [10]

Bulgaria needs to be very active in its efforts to attract investment and introduce innovative decisions, so that its production would be competitive on the international markets. The data in the latest World Bank report on global competitiveness for 2006–2007 show that our country's

rating has deteriorated in the global context in respect to technological development (68<sup>th</sup> place)

and innovation potential (87<sup>th</sup> place), and that once again there is insufficient and non-efficient interaction between the main sections of the national innovation system [5]. The major challenge in this respect is the most effective commitment of these institutions and organizations and their integration into the European innovation infrastructure, in order to gradually transfer activities and responsibilities to the private sector [5].

The analysis of the enterprises in Bulgaria by type of innovation reveals a positive trend for the economy as a whole, increasing the share of mixed innovation (both products and processes) at the expense of purely product innovation.

Given the fact that most Bulgarian companies focus on well established and saturated markets (EU) rather than emerging industries, the implementation only of product innovation without accompanying process innovation means that enterprises rely mainly on the low cost of products and that they will receive just a small portion of the added value of the end customer.

The analysis of the innovative behaviour of Bulgarian enterprises confirms that the Bulgarian economy is still at an early stage of its innovation development, where capital investments prevail over innovation.

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# 4. Conclusions

Until recently, Bulgaria's economic growth has been driven by two factors: 1) the increase in the effectiveness of use of the existing capital and labor resources, resulting from the financial stabilization, privatization, liberalization and institutional reforms, and 2) the gradual recovery of the physical capital lost during the transition period through a pick-up in domestic and foreign investment. Low labor costs were the main competitive advantage of the enterprises so far. Nowever, this advantage will quickly be eroded in the face of growing international low cost competition. Hence, the enterprises redirect their long-term growth strategy towards investment in technological upgrading, innovation and improvement of the quality of human capital. This new strategy is centered around the development of a dynamic, market-oriented and internationally open national innovation system, which encourages entrepreneurship and investment in the acquisition and creation of new technologies and skills.

Investment growth is a result of the diversification and the expansion of company activities, which leads to increased market potential in several industrial sectors. In general, investments in technology result in value added growth. In some industrial sub-sectors, the decrease of value added is due to the use of recycled technologies and equipment.

The most appropriate approach of subsectors and enterprises with potential for development is to retain the investment volume and to increase the effect and the quality of the investment output.

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# Human Resource Management Practice at Makedonski Telekom AD for Promoting Innovation

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Giving a critical role of organizational culture in innovations makes companies be more effective and successful in promoting new products/services. Creativity is viewed as a driver of innovation, as well as a concept that encompasses the range of workforce skills and attributes that are needed in an increasingly competitive and knowledge-based environment. Innovation enables survival, growth, and sustained competitive advantage in dynamic environments as well as allows firms to compete more effectively on the market.

The article presents Makedonski Telekom experiences in Human Resource management practice for promoting innovations thus creating organizational culture of innovations but also achieving better company results, capital investments usage, including R&D spending and increased employee education level.

Makedonski Telekom developed internal Innovation Management System (MT-IMS) which purpose is to ensure that novel ideas from all employees are captured and that best ones are rapidly implemented. MT-IMS covers a comprehensive process whit a goal to capture ideas, share them, build on them, evaluate in real environment and implement them. Moreover it measures the whole innovation management efficiency and records company's benefits of each new developed service. The main objectives of MT-IMS are strengthening Makedonski Telekom leadership position within increasingly competitive market, stimulate and motivate innovative solutions across the company, foster a culture of innovation, extend employees participation in creating company's future and making the best use of all intellectual resources and provide means for change and enhance flexibility.

Makedonski Telekom example shows that creativity and innovation had the key message that investment in education and in the skills and creative capacity should be one of the top priorities of the companies.

#### Keywords

Corporate culture, Customer experience, Human resource management, Innovation management system, Product Idea Management

# 1. Introduction

As the primary activity of entrepreneurship, innovation starts with a novel idea and concludes with market introduction. Innovation enables survival, growth, and sustained competitive advantage in dynamic environments as well as allows firms to compete more effectively at

the market place. Even though substantial investments, including financial and human resources are made to create innovations, other factors including the internal context in which these resources are used have the potential to influence the possible occurrence of innovation. Corporate culture can play reasonable role in initiating innovative thinking and bringing tangible results to company business development and growth.

Given the critical role of organizational culture in innovation, lot of authors have been argued that organizations independent of the industry and size have to make efforts and promote a culture of innovation as strategic priority. However, if innovation and entrepreneurship are to be successful, they must be supported by an appropriate corporate culture, a culture that is aligned with the firm's planned strategy.

Service operators and providers have taken a key role in business environment today. Services are based on, and in many cases dependent on human, interpersonal delivery system [1]. Traditional product can be innovative in its design, physical properties, but services are fluid, dynamic and frequently co-produced in real time by customers, employees and technology. Thus, many of the invention protocols and prototype design techniques used for physical goods do not work well for human and interactive services.

Telecommunication services are playing significant role in changing our world. New technology and various telecommunication services, customers are using in daily communication, are changing the way of doing business, world economy and the way of our lives. Convergence of voice, data, and multimedia content will change the way telecoms and service providers interact with their customers. The ability of service providers to personalize content and deal with the convergence of data via improved networks will determine their success at the marketplace. On another side, it is of crucial importance service providers to understand how customers evaluate the service process, and how those judgments evolve. Some research suggests that it is the summation of all the steps, or service encounters, within a service process that is evaluated by the customer and not just individual interactions with service providers [2]. Other research examines the distinct events (i.e., service encounters) associated with a service process that are evaluated along unique attribute dimensions [3].

Organizations that are most successful in providing new services keep their service development processes from being ad hoc [4]. In other words, they prepare and move systematically through a set of planned stages from the establishment of clear objectives, to idea generation, to concept development, service design, prototyping, service launch, and customer feedback.

Makedonski Telekom (member of Deutsche Telecom group) chose this way of service development and implementation. Company made great efforts to push innovative thinking, developing a model how to capture ideas, share them, evaluate in real environment and implement them. The results were considerable, and the company improved its market position enhancing portfolio of broadband service, increasing revenue streams and over performing key business targets.

# 2. Company's past

Makedonski Telekom started important changes under the motto: "We started to create a culture of innovation in which we enjoy working" which was very successfully accepted through entire company. The main idea was to make employees aware about their role in the company, showed them that they are only ones who can create the future of the company and its development.

In the past MKT was technology driven company, focused on the network and platform development. Young engineers were proud to be a part of the projects and contribute to implementation of new technologies and network modernization. However, MKT in period of 2005 to 2007 started to lose market share (Figure 1). There was no rich service portfolio that

can be offered to all customer segments, no customize and innovative services. Customers were treated as those who should pay their bills without any proactive approach to their requirements to be understood. Later on the period was identified as "declining period". Recognizing this situation MKT was under big pressure to make breakthrough in the way of managing activities and to change complete company behavior.

Reorganization of the company departments that showed bad performance or even broader restructuring of the company areas was not an issue; something faster, more efficient and concrete had to be done to stop this trend.



Telecom Market Share in Macedonia

Figure 1 Makedonski Telekom AD market shares by years

# 3. Innovation management system

Management of the Company and especially HR specialists were hardly working on identifying possible solutions for the situation. Employees and their involvement were recognized as a key factor in this unwilling situation.

MKT has relatively young but skilled and knowledgeable employees. HR area recognized that this is a great potential for the company in sustaining operational goals and maintaining shareholders business targets. But, the question was: how to advance change?

On the end of 2005, company's management, lead by Chief HR Officer, decided to collect ideas from all employees. These gave a chance to all employees to create a new company's culture, new attitude, a new unique environment where ideas were valued and respected. This was the key of the later company development. There were many ideas from the employees dealing with improvement of MKTs service portfolio, development of more efficient and faster procedures in service delivery process, changing approach to service assurance and maintenance, but also there were interesting ideas how to better utilize CAPEX, how to reduce operational costs even how to improve some financial processes [1]. Phase by phase Innovation Management System was created.

The purpose of MKT's Innovation Management System was to ensure that ideas from all employees are captured and that the best ones are rapidly implemented. The Innovation Management System covered a comprehensive process with a goal to capture ideas, share

them, build on them, evaluate, implement and measure the whole innovation management efficiency. In the process of collecting, filtering, evaluating and selecting ideas the main purpose was to achieve introduction of new products/services and improve the efficiency of product innovation in the company, thus actively promote creativity and innovation as a critical issue to company's competitiveness. The main objectives of the system were:

- To strength MKT's leadership position within an increasing competitive environment
- To foster a culture of innovation where each and every idea/innovation counts and is welcome
- To stimulate and motivate innovative solutions across the company
- To extend employees participation in creating MKT's future and making the best use of all intellectual resources
- To identify and apply solutions rather than present problems
- To challenge what is done and how it is done
- To provide means for change and enhance flexibility

The IMS procedure covers the whole company. All employees and managers were encouraged to be creative and innovative. This was a new innovative strength of the company. Powered by the HR area, producing ideas by the employees and evaluating them via innovative quality control, the corporate innovative capability was increased and thus enhances overall company performance. Concrete results were reached relatively soon (see figure 1, recovery period).

Employees and managers were conferred for their bright ideas and those who have idea generation as a bonus target in their yearly business target lists were awarded through the IMS only for the ideas that are outside of the scope of their activities.

Two parts of IMS were defined, general one and specific one. In the general one, employees can innovate in the following areas:

- Process improvements ideas for facilitating organizational efficiency and effectiveness
- Product innovations new products and services or enhancement of the existing products (this part is managed and evaluated by Product Management Area)
- Marketing and branding ideas for creating new markets, finding new or different ways to advertise, promote and package services and products
- Financial developments, cost reduction initiatives
- Sales improvements
- Technical, IT and technological improvements
- Internal communication developments
- HR improvements and programs
- Strategy innovations

In the specific part, the employees are in position to submit ideas based on a specific business challenge/task prescribed by the CEO or COs.

The mechanism that was established was identified as *Product Idea Management*. It covers idea management of new retail product and wholesale products that have a retail equivalent, additional features of existing products, campaign ideas, promotion ideas, price change ideas and feature product naming. Product Idea Management Body was established, formed from members of different areas/departments responsible to make preliminary evaluation of the idea about new products, price changes of existing products and campaign introductions, based on their professional experience.

Figure 2 shows flowchart of the process and process control points (CP) where company measures process efficiency.



Figure 2 Idea management process flow

The ideas through the process were very seriously considered, evaluated by respective managers as well as were assessed by the Product Idea Management Body. A high value of the process is idea's financial analysis, estimation of impact to company EBITDA which made idea, service/product to be ready for implementation on the market. The procedure involved incentive mechanism as well. The model that was promoted includes awards for *"Prince"* and *"King"* ideas, presented on figure 2. This mechanism did not apply for the middle Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development

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and high management members. The most prestigious awards for young talents were additional education programs or visit to international training campus, however there were other benefits to choose.

# 4 Company's present

Generation of ideas was over all expectations. Employees showed openness to novelties and new courses in leading business and daily operations. They were dedicated to development of new services/products, creating sales improvements through different sales channels and new approach dealing with customers. Innovations were mixture of accumulated experience of the people and their creativity. Employees provided values to themselves, increased efficiency to the company and benefits to the shareholders. It was recognized as company recovery period (see figure 1). In addition to market share improvements in last three years, company achieved great results in revenue streams and was the best among all Deutsche Telecom subsidiaries measuring EBITDA margin.

Table 1, gives a view of generated and implemented ideas structured in six different areas. Significant correlation of these parameters and company's market and financial results was found, but they are not topic of this paper. A number of very successful product innovations and sales and process improvements created a new business atmosphere in the company, encourage young employees, motivate them, make people being proud as part of Makedonski Telekom AD.

Area of innevative idea generation	Number of generated ideas /implemented		
Area of innovative idea generation	2007	2008	2009
Process improvements	17/14	19/13	8/5
Product innovations	25/12	29/19	21/17
Marketing and branding	5/2	4/3	4/2
Sales improvements	11/6	10/8	9/6
IT and technological improvements	7/3	5/4	3/3
Financial improvements	6/4	3/1	3/0

Table 1 Number of ideas generated at Makedonski Telekom by the years

# 5 Conclusion

Innovation as multidimensional concept goes beyond technology innovations, including new means of service/product distribution, service/product design and/or new ways of service and product promotions.

Organizations that have planned stages from defining clear objectives, to idea creation, concept development, service design and implementation are most successful in providing new services, hence keeping company development process. A well-designed service that is pleasing to experience can provide the firm with a key point of differentiation from competitors. A smoothly delivered service with a positive outcome is more likely to result in favorable service quality and brand image evaluations, which both have influence on customer loyalty.

Notwithstanding of what was mentioned above, continuous education and employees' training are key issues in keeping nice stories for technology and service novelties within the companies. Companies should identify and foster those skills that can make innovation happen. Education and training companies' policies clearly have important long-run effects on innovation, in particular through efforts to raise the long-term supply of human resources

of high quality. Education systems have a broad role to play in supporting innovation and developing creativity, reflecting the marked shift in demands, and a widening in the skills and competencies that are needed for innovation [5]. Similarly, management, leadership, marketing, sales and distribution skills are a central part of the innovation process, with organizational innovations becoming increasingly important.

Makedosnki Telekom is an example for a team oriented and innovation oriented policy maker that established a model for supporting innovations as well as motivating employees through awards that include additional education and special training programs.

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# Entrepreneurship and Innovation – Generator of National Economy Development

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Innovation is about three core phenomena: generating new ideas, selecting the good ones and implementing them. Success in innovation depends on two key elements: resources (people, equipment, knowledge, money, etc) and the capabilities in the organization to manage them. What does it take to manage innovation successfully? Over the hundred years, there have been many attempts to answer this question. As a result of research, four core themes emerged. If the ambition is to succeed in managing innovation we need to (on both macro and micro levels): (i) understand what we are trying to manage; (ii) understand how we are going to make it happen; (iii) understand strategy shaping our innovation work; (iv) understand that innovation is a moving target – it takes dynamic capability of managing. This work has a goal to illuminate the effects of innovation on development of a national economy through managing innovation, in both the company and national economy.

#### Keywords:

development, innovation, managing, resources

# 1. Introduction

Innovation is the crucial part of the entrepreneurial process. The job of entrepreneur is more complex than just inventing something new. It includes entering the market with innovation in order to satisfy consumer needs. New product or service must be profitable, with according distribution, marketing and shield from competition. Innovation is not just about inventing new products - it is also about their introduction to the market.

We live in the world of constant development, growth, innovation and changing needs and cultural habits. How to handle these constant changes and how to adapt to globalization, technological changes and constant creativity and innovativeness of key human resources within large corporations as well as education facilities – these issues belong to the concept of corporate entrepreneurship.

# 2. Characteristics Of The Entrepreneurial Activity

# 2.1. Ownership Over Organization

Understanding of the term "entrepreneur" is mostly associated with its ownership over organization. Modern market economies are characterized by distinction between ownership and leadership. Ownership is in hands of those who invest in business and have partial ownership, while the leadership is delegated to professional managers or *agents*. These two roles are quite different. Therefore, if the entrepreneur owns business, then he *de facto* takes over a double role: of investor and manager. The distinction was seen in 1803 by the French classic economist J.B.Say.

#### 2.2. Establishing New Organizations

The opinion that the entrepreneur is someone who established a new organization is shared by many people. The entrepreneur is a person who conducts business connecting different elements of organization (people, assets, production resources, etc) and gives them special legal identity. Many authors believe this is the essential feature of the entreprenur (foe example Bygrave and Hofer, 1991).

Many people we consider to be enpreprenurs enter the already established organizations and expand them, develop them and absorb them into existing organizations. Buy out of part of a company by the managers increasingly becomes a way for them to show their entrepreneurial capabilities.

#### 2.3. Entering Innovation To The Market

Innovation is the crucial part of the entrepreneurial process. Member of the Austrian school of economic thought J.A. Schumpeter considers innovation as fundamental element of the entrepreneurial process of wealth creation. Short list of his ideas can be found in the article that he wrote for "Economic Journal" in 1928. He doesn't look at the entrepreneurs as oil for the wheels of an economy, but as egocentric individuals that look for short-term monopols based on specific new innovation. As the entrepreneurial monopol is maintained, the new generation of entrepreneurs emerges with new innovations that will take over that monopol in the process that Schumpeter calls "creative destruction". Peter Drucker in his book "Innovation and Entreprenurship" (1985) states that innovation is the central task of the entrepreneur-manager. Entrepreneurs must do something new, because otherwise their role in the market does not make sense. But we must be cautious with the term "innovation". Innovation in a business sense is more that development of a new product or technology. Innovation idea is every new way of business conducting that creates value. Innovation may be a new product or service, but also it may contain new way of delivery of existing product or service, new methods of informing the consumer on product or new way of promotion. The job of entrepreneur is more complex than just inventing something new. It includes

The job of entrepreneur is more complex than just inventing something new. It includes entering the market with innovation in order to satisfy consumer needs. New product or service must be profitable, with according distribution, marketing and shield from competition.

#### 2.4. Identification Of Opportunities In The Market

Identification of opportunities on the market is one of the key tasks of an entrepreneur who must constantly monitor the business environment, because the opportunities are not presented by themselves, but must be searched for. Innovation *per se* is not significant unless there is an opportunity, i.e. demand for that innovation. But, the entrepreneur can't stop at identification of opportunities, but must use them with appropriate innovation.

# 2.5. Application Of Skills

Skills of an entrepreneur consist of the skill to recognize opportunities on the market and to innovate. In addition, they have a special ability to decide how to *allocate scarce resources* when *informations are limited*. Their skill in this business is what entrepreneurs makes attractive for investors.

# 3. Innnovation And Use Of Opportunities

Business opportunity is a chance to do some job in a different and better way, while innovation represents a tool for using the business opportunity. All products and services are the result of combination of three factors: *raw materials, workforce and capital (money)*. Innovation represents a new way of combining these three factors, while the entrepreneurs are innovators that create these new combinations and introduce them to the market, so that buyers determine their value.

Innovation is not just about inventing new products - it is also about their introduction to the market. Different forms of innovations are presented in the following part of the text:

<u>New products</u> – One of the most common forms of inovation is creation of new products. New product can offer radically new way of performing some work or enhancement of existing one. Whatever the basis of innovation, new product must offer to the buyer certain *advantage* in order to be successful.

Products are not just a tool for realization of some goal, but also a way of satisfying *emotional* needs. In that sense, brending is very important aspect, because brend offers to the buyer asurance in quality of his choice and gives opportunity of expressing personal attitude. Therefore, the possibility of innovation through brending should not be neglected.

<u>New services</u> - A service is an activity taken in order to realize certain task. Services are open for the possibility of innovation, as well as physical products. For example, American entrepreneur Frederick Smith formed multi million international business – "Federal Express" based on impoved transport of shipment.

As physical products, services can also be improved using brends. It is very important not to view products and services as two separate categories, but as a whole offer, because certain products can be inovated by improvement of services attached to their consumption.

<u>New way of production</u> – Inovation can also be performed in production of products developing existing or accepting new technology. New production process represents a basis for success if it can offer new benefits for final consumer. It can refer to lower product price, better quality or service that is included in product.

<u>New way of providing services</u> – Services are provided in a way that is quite common. It is this way of providing services that can be the subject of inovation. As with inovation in production of phisical products, innovation in providing services also should offer certain benefits for final consumer, such as easier access to services, higher level of quality or shorter time for providing services.

<u>New way of delivering products or services to customers</u> – Distribution of products/services represents an important element of business success and offers great potential for innovation. It can refer to the path that product crosses from producer to consumer and to the way of managing that path.

The most common type of innovation refers to direct innovation refers to direct distribution, with as few intermediaries as possible. There are a lot of successful entrepreneurial organizations that owe their success to direct distribution.

<u>New way of informing customers about product</u> – Demand for product will not exist unless promotion is adequately prepared. Promotion consists of two parts – message and the way of presenting that message. Both elements are subject to innovative ideas. Communication with customers can be expensive, while entrepreneurs, especially in early phases of business, can have insufficient financial means for investment in advertizing and public relations. Therefore, they are motivated to develop new ways of promotion of their products.

<u>New way of managing relations in organization</u> – Performance of organization greatly depends on effectiveness of internal communcation channels. These channels, at least

formally, are led by organizational structures that can be the subject of innovation. It is especially important to mention development of franchising as the organizational form. (Franchising is a way of business expansion through giving authority to someone to sell and distributes products of a certain company). This structure of organization combines advantages of small business with strength of large companies. Examples are branches of companies such as "The Body Shop", "Holiday Inn" or "Mc Donald's".

<u>New way of managing relations between organizations</u> – The way in which organizations are functioning with each other is very significant for their business conducting. Many entrepreneurial organizations have introduced innovations in relations with other organizations (especially customers) and it is this area that represents the key element of their strategy. Sector of business services is especially involved in these activities. For example, the success of a marketing agency lies not only in making good commercials, but also in promoting relations with customers.

<u>*Multiple innovation*</u> – Entreprenurial organization does not have to limit to only one type of innovation. Success can be achieved combining innovations, for example new way of distribution of products with new message. It means multi-dimensional approach to the same phenomenon.

# 4. High-Innovation And Low-Innovation Entrepreneurship

Although innovation is defined as key feature of entrepreneurship which is used as one of the factors for making difference between entrepreneurship and small business, specific entrepreneurial businesses differ by adopted degree of innovation. High-innovation and low-innovation entrepreneurship differ by the range of *strategic features*. Selection of these features talks about innovation itself, about business opportunity and used resources, as well as about personal preferences of the entrepreneur. These features are presented in the following table:

Strategic features	High-innovation	Low-innovation entrepreneurship		
	entrepreneurship			
Managing idea	Relies on local contacts and ideas	Intends to be more inventive and		
	from existing products or services.	acquire ideas from broader sources,		
	Strategic vision is limited at first, but	maybe international. Strategic vision is		
	it develops eventually. Holding on	developed from the start. Curiosity in		
	to or repeating previous success.	terms of finding new ideas.		
Managing autonomy	Prefers managing autonomy	Appoints people with relevant skills,		
	working with team of close people.	even when they are not known well.		
	Develops knowledge through	Develops knowledge employment		
	experience.	opportunities and formal training.		
Managing competition	Relies on proven methods. Avoids	Takes over new high-risk steps.		
	competition when there is no great	Greater motivation to attract new		
	experience. Intends to build good	clients. Highlights the importance of		
	business relations with limited	the product, quality and service.		
	number of key clients.			
Development strategy	Desire to acquire development that	Desire to achieve growth, but also		
	rests on clear market principles.	actively fight for market position.		
	Risky steps are avoided.	Probability of taking risky steps.		
Managing HR	Relies on known co-workers with	Using expert knowledge when		
	experience. Use directives as	necessary. Relies on strategy and		
Managing rick	Theans of control.	Culture in order to maintain control.		
Managing risk	methods are used. Looking for	example market research. Institutional		
	institutional and governmental	support is also needed, but there are		
	support for expansion.	risky steps without support from aside.		
Development of	Local formal and informal networks	Broader range of networks. Use local		
network of relations	are used.	network for further expansion.		
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Table 1. High-innovation and low-innovation entrepreneurship

# 5. Types Of Entrepreneurial Innovation

There are several types of innovations (picture 1):



Picture 1. Types of entrepreneurial innovation

Incremental innovation deals with smaller accomplishments in existing technology, with limited market ambitions. If the market ambitions are broader and based on modifications of existing technology, and competition depends on new way of using technology, then it is *innovation "new knowledge"*. If the innovation is based on new technology, but with limited market ambitions, while competition depends on small group of customers, then innovation can be described as *specialized*. Innovations based on new technology, with great ambitions regarding influence on the market are called *innovations "new world"*.

Innovation is a process based on knowledge. Successful innovation depends on knowing three areas: market, technology and business capacity. Knowledge about market includes data about customers and fluctuations of demand and competition. Knowing technology includes information about effective development and production of products and services for the market. In addition, it is very important to understand business capacity, i.e. advantages that business has compared to competition. If these three fields are combined in a new and innovative way, then business has a chance to avoid existing stereotyped business conducting and to create new value through innovation – innovation break through (picture 2)



Picture 2. Break – through of innovation

All types of businesses, regardless of experience, must be active innovators if they want to keep their position on the amrket. There is a difference between the way in which entrepreneurs manage innovation and the way in which innovation is managed in larger company with longer tradition. Entrepreneurial innovation is driven by vision, i.e. desire for creation of new world, while corporate innovation is mostly driven by strategy. Entrepreneurial innovation is radical, because successful innovation greatly influences the results of business, while corporate innovation only adds new on existing value and it is not fundamental for functioning of a company.

# 6. Connecting Knowledge And Market: Innovative Approach For Innovative Development

We live in the world of constant development, growth, innovation and changing needs and cultural habits. How to handle these constant changes and how to adapt to globalization, technological changes and constant creativity and innovativeness of key human resources within large corporations as well as education facilities – these issues belong to the concept of corporate entrepreneurship.

Advantages of corporate entrepreneurship range from material (e.g. phisical, financial and working resources) to immaterial resources (e.g. human, social and working capital). Immaterial feature is increasingly becoming a key competitive advantage in entrepreneurial world, including human and social capital, while approach based on people is becoming more and more important factor of business success.

Having in mind the need for entrepreneurial approach in research institutions, transfering knowledge from "producers" (public private research centres, universities) to "users" (potential entrepreneurs, companies, industries), different approaches must be used.

During 1990-ies, entrepreneurship was recognized as key instrument of technological innovation (European Commission 1998).

Measures that will be taken in the fields of greater valorization of research results and creation of new fast-growing companies, demand different view and implementation of more systematic approaches. The approach that ranges from development of awareness and creation of idea to commercialization of research results is necessary on global markets in order to increase the level of knowledge exploitation and creation of high profile companies. It is a strategic need ever since the increased global competition has emerged on the market of knowledge.

# 6.1. Creation Of New Companies

Innovation, new technologies, as well as scientific research and development have become important factor in economy in the second half of the twentieth century. Both business sector and non profit organizations realized the importance of acquiring support for sector of research and development and training of researchers.

There have been founded a few new research organizations, universities expanded their research capacities, while companies started to invest more and more in new research projects and organize specialized sectors. Such environment have created new forms of companies, which are more capable to use leading technologies and convert scientific results in market success.

#### 6.1.1. Technology Transfer

Technology transfer refers to any process through which one party gains access to technical informations of the other party and successfully implements them in its production process.

Technology ranges from selection of quality inputs and outputs to organization of the production process, management, finances and other elements.

#### 6.1.2. Necessary Features

Team of managers in start-up companies usually represents key factor of success. It is broadly accepted the fact that managerial skills of the entrepreneurial team represent the key factor for investors in deciding whether to invest or not. However, good entrepreneurial team is not enough for success. In order for a business idea to become a business opportunity, the following conditions must be fulfilled:

- Motivation and reliability of the person who makes proposal;
- Market potential;
- Sustainability of the business model from financial point of view;
- Technological position compared to competition (competitive advantages unique points of sale).

Depth level of evaluation of these four areas depends on maturity of the idea. There are two major phases of the path to business creation that the potential entrepreneur must face and they are as follows:

- Definition of the idea;
- Transferring the idea into a business project.

# 6.1.3. Investing And Financing

Difficulties of new companies to access finances in early phase exist because of the inability of these companies to provide data on business conducting, low level of guarantees and long waiting before creation of positive cash flow. All these obstacles are evidently increased with the degree of included innovations, such as the presence of immaterial assets, no previous managerial experience of the team, business model that is still undefined (greater innovation involves higher risk).

# 6.1.3.1. Public Private Partnership As A Key Success Factor For Start-up companies

Creation of innovative companies represents the key factor of growth and development. For companies that compete in high technology sector, the challenge of access to growth capital is especially important in early phase of development of these companies. However, a new company based on knowledge is not attractive for banks due to lack of relevant data on business results and portfilio of customers, as well as the fact that their basic asset is knowledge.

European Commission supports establishment of public private partnerships for managing the start-up capital, so that the synergy is used in a right way. Keeping small and medium enteprises "in the valley of death" represents a typical governmental goal, but the success of that goal depends on capabilities of selection of projects according to the market opportunities and business potential that private organizations usually use. Creation of independent public private partnership is recognized as a key success factor for financing start-up companies.

#### 6.1.4. Intelectual Property

Managing the rights on intelectual property is a sensitive issue even for both the academic and corporate spin-off compnies. While corporate spin-off can inherit developed patent strategy and professional staff of the main company, this process is showing down turn at universities. There are certain obstacles faced by universities and other research organizations: certain research institutes do not have clearly regulated rights on intelectual property, which can cause problems for potential investors. Another problem that scientists do not realize is that they loose the possibility for patent if they publicize the results or ideas before they submit application for patent.

#### 6.1.5. Environment For Establishing New Companies

For creation of new companies, not only research and production of ideas are necessary, but also local and regional environment are preconditions for development towards creation and market exploitation of business opportunities. Regions that produce new corporate and academic spin-off companies represent so called knowledge intensive regions (KIR).

KIR represents industrial and economic system that:

- Encourages openness, studying, exchange of information, co-evolution of ideas, flexibility
  of work force and companies and fast answers to challenges;
- Promotes collective study and flexible adjusting between idea creators and the market.

In the process of definition of environment that supports establishing of new companies, the following features should be considered:

- 1. Strong production of endogenous knowledge KIR is characterized with one or more knowledge centers in one or more areas/sectors of research. They represent the point of interest of KIR, for talented people and companies.
- 2. Presence of high-quality and high-mobile workforce Comes from knowing that region can not provide service for economy based on knowledge and move forward on the scale of added value without high quality work-force, and high-mobile workforce contributes to collective study in society. Even though the exchange of busimess informations is not allowed, professional employees have different knowledge because they move from one company to another.
- 3. Willingness to accept differences and young entrepreneurs Presence of large number of young entrepreneurs as well as immigrants entrepreneurs is one of the features of KIR.
- 4. Environment that appreciates entrepreneurship Talented people are highly valued in the culture that promotes and awards taking risks.
- 5. Effective habitat for transforming research into economic value KIR provides range of financial and nonfinancial services that cover every step from idea to the market. The most of these services are available because of the strong role of the private sector.
- 6. Dynamic economic texture The presence of dynamic system of firms provides sustainable regional economic development based on knowledge and provides that innovation is broadly acceptable within one national economy.
- 7. Series of connections KIR is deeply connected to the rest of the world: institutions, companies, research and education naturally functionin international environment.
- 8. Openness and easy access Successful KIR is easily accessible. Mobility of people feeds the flow of innovative ideas.

# 7. Conclusion

In economy that is characterized by high level of competition and dynamics, production of knowledge and innovation represent a moving force of economic development. The presence of adequate ground for innovative business represents an essential feature in the field of high competition. Such companies are characterized by a strong acceleration which results in provision of work opportunities, employment and integration with socio-economic groups at an international level.

To bridge the gap among research and productive world is a priority. However, evidence from universities and other research institutions in Europe and other countries indicate that typical volume of knowledge transfer and research results valorization is relatively low.

As such, the starting point for assessing knoledge in the market is to identify and examine achievable impacts and benefits from all intervention in this area and in doing so to establish concrete policy recommendations.

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# A Strategy for Human Resource Management in Small and Large Companies in the Global Environment

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It is very important for modern business to consider the system of management of human resources in different environments, their similarities and differences, especially the relationships that are developing in the United States, European developed countries and some countries and economies in transition. It is important to know how different countries manage people, how to find a balance between the needs of workers and employees in order to be competitive in the global market, whether to develop specific human resources management systems tailored to local labor markets and the like. Today, in modern business conditions, the successful management of business systems means respecting the environment. How the development of business activities spread out within a single country managers who work in a multicultural environment should approach the study and understanding of intercultural management, to know to analyze business problems in the global business context. The success business management systems required by managers and the development of cultural awareness, knowledge and new competencies. It is necessary to ensure that managers develop new skills in managing human resources in global business systems. On the other hand, due to rapid changes in the environment, modern enterprise organizations are trying to find new organizational forms, new structural solutions, flexible enough and necessarily adaptive. The transformation is visible in all elements of an organization, its objectives, resources, human resources, information systems. The new organization has deep and significant implications for the practice of human resource management and causes major changesthe emphasis is on people, motivating employees and managing their potentials.

#### Keywords

global environment, human resources, intercultural management

# 1. Introduction

The above changes in the global environment shape of strategy human resource management. On the other hand, the organization of modern enterprises due to changes in the environment finds new organizational forms, new structural solutions, necessarily flexible enough. The new organization has deep and significant implications for the practice of human resource management and that is causing major changes. The emphasis is now on human resources and management of their resources. Because of the crucial role of human factors in a business enterprise, it is considered that investment in people is far more attractive than investment in physical capital. Still, it is necessary to be well aware of cultural

specificity of human resources in some regions due to globalization. Of course, you should always bear in mind that existing cultural factors affect policies and practices of human resource management. In fact, more and more business activities are carried out outside the home country and then it is necessary to know, understand, and adapt to cultural diversity that is present in human resource management strategies. In the process of human resource management an important question is motivation of employees specially over last few years. Of course, it should be noted here that the strategy that is applied to motivate employees depends on cultural diversity. Regardless of the everyday challenges and problems, an increasing number of corporations at the global level has a greater macroeconomic stability. Namely, even small companies, often family corporations, have now grown into companies with a larger number of employees. Despite the stock market turbulence and a global crisis that is increasingly felt in the market and which affects daily operations, managers of these corporations need to work as a team in order to realize business objectives and the question of motivating the employees who contribute to the success of corporations is very important. To this end, each leader is faced with the challenge of finding the right solution that will be best run by the employees while respecting cultural diversity. So, the solution now depends on the conditions of globalization of the cultural differences. Therefore, we can conclude that large and small corporations in globalization process have profound and significant implications for the practice of management of human resources and causing major changes focusing on people and their cultural diversity.

Despite the fact that most of motivating factors found in the results of conducted research are similar, there are still significant differences in their importance to managers from different cultures. This is a clear signal to international corporations that inflexible policies of human resources, which has not been adapted to the cultural peculiarities, will allow managers to successfully motivate each employee individually. Therefore, studies prove that there are different values among different cultures and therefore any international corporation must be aware of them. Different needs and expectations from employees in different countries require human resource managers to implement a policy that is flexible enough to respond to local specificities and to meet a higher level of personal expectations.

# 2. Human resource management strategy in Japan, the EU and countries in transition

It is very important for modern business to consider human resource management system in different environments, their similarities and differences, especially those related to developing countries in the developed economies of Europe and some countries in transition and with reference to the United States. It is important to know how different countries manage people, how to find a balance between the needs of workers and employees in order to be competitive in the global market, whether should they develop specific human resource management systems tailored to local labor markets and so on. In order to improve manager preparations for global business it is necessary to take into account, and understand the peculiarities that exist in different cultural regions (9). - Having that goal in mind, this paper suggests specific strategies for human resource management in large and small companies. In some countries, like Japan, we should start from the fact that Japan has no natural resources. Thus, their government was forced create a competent work force in many different industries. Not only hours spent in training, but also but also methods are important to them. Japanese organizations invest in their people more than other nations. The first phase emphasizes construction of teamwork and problem-solving, but over time they are going to create a workforce that is loyal, flexible and able to adapt to rapid changes in technology and cultural diversity. Unlike the United States the relationship

between management and workers is not that of being opponents. With movement of employees, common practice is to start recruiting some university-educated people before employment actually begins. Also, when the economic teams are bad, companies will often rely on part-time workers. Number of changes at work is on the increase, but the improvement of observing system in Japan, which is based on senior positions, it is difficult to believe that experienced workers will work so long, when it is known that the changes are happening very fast now. Senior promotion system in Japan created a valuable, but uncreative directors. Newly employed people are expected to do everything. The national culture encourages the sense of collectivity and implies a strong identification with the expertise of profession, i.e. workers see themselves as part of a company in which they are employed. Reward system in Japan starts with a monthly salary which is based on education. Employees get salary increases every twelve months and the progression is based on the principle of seniority. Compensation in Japan is not considered as a measure of personal values in like it is America. Increase in salary and promotion are automatic and they are the result of work and not only a remarkable business success. While these bonuses are common, the main drivers of interest are business tasks, for training and promotion to a managerial position. Japanese firms continue to take into account the age and years of service when they plan promotions. Status differences between managers and workers are rare and they see each other as colleagues. Differences in pay between workers and directors are much smaller than in the United States. The crucial question is -"Can Japanese human resource management be applied outside Japan?" We can say that the Japanese human resource management system is largely applicable outside Japan, but not completely Japanese global companies headquartered in the United States have achieved a great success thanks to the implementation of its own human resources management system of the host culture. However, the practice of human resources in the Toyota in the United States is not the same as in Japan. Western Europe is characterized by the diversity of cultures. Multinational corporations that want to do business in Europe must understand the national culture, tradition, labor, government and economic philosophy. Although the common currency has led to changes in business practices, changes in the market and changes in the work of government, significant differences still depend on how people manage. Three major business partners: France, Germany and the United Kingdom continue to have a variety of human resource management systems that reflect different cultures, laws, traditions and economic systems work. As Japan and France are classified as high-context cultures, communication depends less on what is said than how or when it is said. In France, people and relationships are always more important than respect for rules. Labor, management and government are part of the business environment. The government provides a legal framework for essential things, and labor and management agree on the details of organising and implementation in everyday business life. Training and development of employees have a high priority among social partners with a government that provides financial and technical assistance for the unemployed and for those industries where jobs have become redundant. France achieved its success thanks to people who have the same attitude when it comes to substantive matters. French unions are unique, because it is their political orientation, not social, or economic. Different types of collective agreements form the basis for relations between employers and employees on almost all levels. Notwithstanding the great role of unions in the French society, labor unrests are more frequent than in the United States. Part of the reasons for this lies in the belief that French workers have little economic mobility, and thus expect to find solutions to any problem from the government France is stricter in terms of structural classes, but it has great social benefits, even when the price of labor falls. Recruitment and selection methods and the law does not differ much from those in the United States. The largest number of new employees are employed on probation and they are a subject to collective negotiation agreements. Laying off workers in the private sector does not differ much from the practices

of the United States. Usually you must provide an extensive explanation, and then follow strict procedures. Laying off workers in the public sector is much more difficult. Reducing and restructuring prevails, and must follow special procedures. Job security and free time are more important to people in France than in America. German workers work hard, they always say what they think, they are always right, serious, disciplined, methodical and precise, but they have paid holidays, and the price of labor is the highest in the world. Decision-making process takes longer than in the U.S., but this is usually because a German worker investigates every possibility. Labor, management and the government put a great emphasis on training, especially vocational. An extensive internship program is available for qualified young people. It is expected that managers and professional technicians are educated and their education needs to be in the area of leaning toward engineering and other specialized areas. Desirable quality of management and leadership from the German perspective can be achieved by the top technical and communications skills. While the Americans prefer to have leaders who are charismatic and confident. Compared with the United Kingdom and France, Germany has the lowest ratio of staff to the line workers. This means that German companies have fewer layers of management, a greater amount of control, or line workers who want and are able to do business - stuff. Although Germany does not offer a lifetime guarantee of employment, there are strict rules to end the contract of employment, which makes laying off unproductive workers difficult. A characteristic unique to Germany is legally defined role of labor in all business decisions. Employees have certain rights and obligations in relation to employer and as a group they have the right to participate in matters concerning the work of a plant. Every company, except the smallest, must have a working council, which represents the employees, and they can refer to them to the appeal and ensure impact on policy decisions important for the workers. The size of the workforce, compensation systems, systems selection, work planning, training, restructuring and termination of work are employment advice and examples of where management share the responsibility. Management of the co-determination still retains substantial power, but since it has to take into account the perspective of business advice, the link between human resource planning and business planning has significantly increased. In practice, labor councils have a great legal power, but generally do not need to use it. The interests of workers are more closely aligned with the objectives of the company because of constant interaction between workers and managers, and because does not create a substantial inelasticity of Management. The United Kingdom is one of the main trading partners of the United States and the primary source of foreign direct investment. Great Britain is the first European location for the Japanese automotive industry and the Asian electronics industry. English class system still exists regardless of the changes that have occurred, and people still tend to remain in the class in which they were born. The British tradition of love and hate changes. Like the Germans, the British work in low-context culture, where people say exactly what they think. In the United Kingdom university managers are less educated or technically trained than in other advanced nations. One of the reasons is that the manager's job is less appreciated than a job in law, medicine, finance, or government service. One study showed that only 40% of UK corporations have a budget for the education of their employees. Collective negotiations process in the UK is similar to that of the United States, as both are based on opposed relationship between workers and management. Oldfashioned methods of selection for employment almost completely rely on the following: questionnaire, interview and recommendations- this helps in making a final decision. Centers for testing and evaluation are rarely used. There are laws on equal conditions for employment there, but there are no laws against discrimination, for example, by age and the like. Women who work part time and temporary workers are an important source of flexible labor and they are generally paid less and have fewer benefits. Employers in the UK differ from those in continental Europe in having a great freedom provided by the government with

regard to firing workers and reducing the organization. Workers are laid off due to the decrease in the number of employees and they receive modest a compensation determined by the government. Neither management nor the workers have a strategy for planning work such as construction teams, or quality circles. Management sees the strengthening of the workers as a threat to their autonomy, while unions have other priorities, such as the amount of wages, job security and participation in decision-making management. British supervisors on the front line, unlike those in Germany, have a management style that emphasizes support and consideration rather than the content of the task. Workers in manufacturing tend to have more impact on business planning, distribution and determining the number of workers. In the UK the pay is a function of job classifications in which employees are paid the same rate for the same job, which in some way corresponds to the unions. Over the past few years, plans to pay for performance have emerged, but it's still less than in the United States. Communism in the countries of Eastern and Central Europe has left people badly prepared for the establishment of market reforms and the adoption of market economy. Millions have created non-productive workers, abandoned factories, destroyed infrastructure, high unemployment and unstoppable inflation. The countries of the Central Europe such as Hungary, Poland and Czech Republic have made enormous progress. Unlike these countries, Eastern European countries such as Russia, Ukraine, Bulgaria, Romania, and our country prosper and grow much more slowly. China is a special country, a country with two systems, in which the government is still communist, but the country where communism did not prevent the progress and openness to the world. In China, market reforms have been already largely carried out and they have shown significant results not only in the economic field but also in all other areas. The previous system neglected the role of human resources. In the open market systems employees and management look for professionals in human resource management. A director of personnel in enterprises controlled by governments has often been associated with the Communist Party. The party wanted to have a political voice in the company and use the personnel titles that would have legitimacy. Centralized plan depended on workers who were involved. Promotions were allocated on the basis of connections and loyalty to the party. Training manager was neither available nor appreciated. . China, most populous country in the world is changing rapidly. Doing business in China today is not easy, and one of the biggest obstacle is corruption, bribe and bribery. Foreign employers are likely to have problems attracting unskilled labor force that wants to work for low pay, but employers must also be prepared to provide a lifetime employment, housing discounts, maternity leave, pensions for employees, as well as cash payments to those already retired. In China, the owner must pay the state for already trained workers. When it becomes necessary to lay off employees they must follow strict rules, which have been proscribed by government. The largest number of employers provide generous severance pay, hoping to avoid long and costly legal procedures. We should point out that in this global environment it is very important to understand and to be familiar with different business cultures which will have influence on motivation, communication of people and control. It will have an impact on success of business communication.

# 3. New strategies for human resources and globalization

Modern and new conditions also mean big changes and globalization. Globalization consists of transformation of world market from expensive national to unique market where enterprises from different countries compete with each other with minimal barriers. It implies accelerated flows movement of capital trade, mobility factors production exchange technologies information etc. Today, managers are facing group activities and teamwork. A basic idea of integrated companies affects everyone in interdependent environment where
cooperation is an essential factor for success. Teamwork functions naturally through cooperation and integration but these concepts are similar in its application in international federations and collaborative joint activities. International company can be successful only if there is teamwork. A lot of managers should fulfill expectations developing group access to global tasks and begin international teamwork. International teams are formed or based on international initiatives management or they evolved as a result of global expansion. In both cases teams working primarily on helping their companies to distinguish global effectiveness. Teams as form of strategic management sare ubstantive for strengthening global organizations. Without intensive focusing on global network relations international companies can effectively lead (especially transnational configuration). International teams create and give power to local branches - companies or regional groups-so they can react on pressures competition. Teams bring benefit and by nature are groups which already have power thanks to certain stage of possibility to make independent decisions. In ideal configuration teams provide interdependent activities between specific operations of a company. Accordingly, global network teams of one company may combine significant independence within their subsystems with interdependent contributions to the global system. International teams operate as a pipeline for learning organization. Team unites individuals with different interests individually and they contribute to the activities of the team. This process of division enables transferring knowledge because team members discuss, negotiate and react amongst themselves. Of course, heterogeneity increases risk of conflict and misunderstanding but concrete heterogeneous management can enrich the experience of members of groups and be useful for organization to spread the volume of making decision. If management is bad, there is always a danger from conflict or unproductive compromise for potential and then groups can disintegrate or there can be bigotry among their members. Accordingly, effective management team is a crucial factor for success. Success is assigned to ability of company managers to inspire development team. Managers are in charge of creation constructive group processes what involves group members. Group leaders work as mediators helping individuals to confederate in collective body which makes decision so that they could together work on realization of justified

goals. When work group is composed of multinational members whose activities include several countries we to call it a transnational team. Unlike other strategic teams transnational team work in extremely complex environment and have personnel managers from different global operations: members must not work in immediate physical vicinity already cooperate via information network and they need to have occasional meetings to consider numerous plans. Geographical distance can cause problems in communicating between members of teams, but they must be psychologically coordinated if their strategic focus has common and valuable goals. Forming transnational teams is a complex problem because members of international team represent different cultures and bring their personal perspective, prejudices, linguistic characteristics and behavior to the group which enriches work team but also breaks up the unity. Variety obviously has its advantages but it also represents a special problem for management. Modern conditions caused that international teams increasingly receive status of basic coordinating elements of global strategies in multinational systems. They take part in making decisions in overall portfolio interests of transnational firms of global symbols and products of global export strategies. They are also in charge of management and Coordination of activities of former subordinate teams (regional). Managers of strategic transnational teams must carefully develop a system of human resources forming teamwork needed for success in all international activities. Regional or administrative groups are called representative teams. This term initiates notion of representative managers of international operations. (Representative regional manager or corporate manager doesn't have a hierarchical role but a role of a coordinator of a regional interest). Such manager supports autonomy of international team (on that level) and makes decisions related to responsibility for interdependent requirements of organizational

systems. Representative team is only a mediator coordinating body and a channel of information and decisions between peak company and its regional or group branches. A manager-mediator must concentrate on staff development, not management from the top. There also must exist working conditions for team to facilitate cooperation among members and if necessary reconcile differences among them. Team focuses on operational effectiveness, distribution sources transferring priorities from one affiliates to another and optimization obtained by any member in one branch or between regional alliances.

### 4. Conclusion

The way in which employees and managers behave in business and all other types of organizations is determined largely by subconscious assumptions, values and norms of national culture which they brought into the company. Companies and other organizations in every national community are organized and they operate according to rules that are deeply rooted in national culture and community. People in organizations cannot act otherwise than according to their assumptions, values and norms of their culture. Cultural determinants of management imply that an organization and management needs to subject to the assumptions and beliefs of national culture in the community. For example, as the distance power in the Serbian national culture is higher than in the UK, it will lead all companies in Serbia, under the same business conditions, to be more centralized and autocratic than British companies. This does not mean, however, that the national culture is the only factor of organization and management of enterprises in a country. Culture is the only additional factor that complements and influences the other factors. If the national culture was the only factor of management, all companies in a national community would be organized and managed in the same way. The national culture determines the trends before they define the situation. The organization, for example when it starts to grow needs decentralization but decentralization depends on the culture. Companies in Serbia and Great Britain will be equally subjected to the rule that they are larger, more decentralized. But the companies in Serbia which are the same size as companies in Great Britain will be a more centralized one. The globalization of markets and international competition will require companies that operate in multicultural environments. The above mentioned facts indicate the need for multicultural managers. Experts estimate that company annually loses 2-2.5 billion dollars due to employee errors that occur in business in other cultures. Large companies are taking steps to globalize the training of managers and their ability to understand other ways of thinking feeling and the way they realize their business activities. The aim is to improve their ability to operate effectively with customers, suppliers, managers and employees in other countries and regions. Managers need to examine their own beliefs, overcome comparisons with other cultures and adapting the way of communication, problem solving and decision making process. Global enterprises, and multinational companies that invest in Serbia, as well as any other country culturally different from their parent company, are (in) a significant dilemma. Their crucial question is: how to deal with cultural differences between their units in different countries? These companies must find a way to reconcile the two conflicting requirements. On the one hand, multinational companies need to preserve the unity of their corporate cultures and values, beliefs and norms of behavior that are shared by all employees and managers. Also, multinational companies need to ensure the implementation of unique strategies, policies and procedures throughout the system. You cannot manage people in the same way people London and Belgrade. And it's not just because of cultural differences but also because of the economic environment and legal system. Multinational companies need to preserve the unity of its key systems, structures and mechanisms of governance, and also allow local units of these systems, procedures and structures to adapt to their specific features to a level that will not jeopardize the unity of the whole system.

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## Estimating Inventory Related Costs in Supply Chain Practice

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When setting inventory levels in practice, a common hurdle is estimating the various costs. The three major costs we have analyzed in our paper are material cost, order cost and holding cost. The material cost is typically the easiest to identify, so we focus on the components of order and holding cost and discuss how they may be estimated. In this paper inventory management is analyzed as an indivisible of the supply chain managing process. It can be observed as a critical, and also very costly, segment of ensuring high customer service levels. In competitive economic environment traditional inventory policies should be improved and readjusted to uncertain, dynamic reality. Simulation models enable a priori managing and analyzing a variety of possible results and implication of selected inventory policies. The model presented in this paper uses the Monte Carlo simulation method and variables taken as random, in order to depict a harmonization and unavoidable integration of dynamic quantitative analysis and theoretical, qualitative concepts of inventory management.

#### Keywords:

inventory models, simulation models, supply chain models

#### 1. Supply Chain Management

Supply chain management is relatively new business philosophy, based on the ideas of logistics management, which tend to optimize physical, financial and data flow between all parts of the supply chain system, from primary producer to final consumer. It crystallizes concepts about integrated business planning that if finally possible due to advances in information technology. A company's supply chain comprises geographically dispersed facilities where raw materials, intermediate products, or finished products are acquired, transformed, stored or sold.

The main goal is maximization of total value in the supply chain based on synergetic effects. The traditional objective of supply chain management is to minimize total supply chain cost to meet fixed and given demand. This total cost may include a number of terms such as the following: raw material and other acquisition costs, inbound transportation costs, facility investment costs, manufacturing costs, distribution center costs, inventory holding costs and outbound transportation costs. In building a model for specific planning problems, it can be decided to examine only a portion of the company's entire supply chain and associated costs.

Different types of mathematical models and modeling techniques can be used for managing and analyzing supply chain. First, there are descriptive models that modeling practitioners develop to better understand functional relationships in the company and the outside world. Descriptive models include:

- Forecasting models that predict demand for the company's finished products, the cost of raw materials, or other factors, based on historical data
- Cost relationships that describe how direct and indirect costs vary as functions of cost drivers
- Resource utilization relationships that describe how manufacturing activities consume scarce resources
- Simulation models that describe how all or parts of the company's supply chain will operate over time as a function of parameters and policies<sup>1</sup>

Other huge group of models is called normative models that modeling practitioners develop to help managers make better decisions. Those models are also known as mathematical programming models or optimization models.

In this paper a simulation model in inventory management is presented on the concrete example.

## 2. Inventory Management

Inventory management is a very important part of supply chain, because it provides a flexibility and certainty to production and sales activities. A company may hold inventories of raw materials, parts, work in process, or finished products for a variety of reasons, such as the following:

- To create buffers against the uncertainties of supply and demand
- To take advantage of lower purchasing and transportation costs associated with high volumes
- To take advantage of economies of scale associated with manufacturing products in batches
- To build up reserves for seasonal demands or promotional sales
- To accommodate products flowing from one location to another (work in process or in transit)
- To exploit speculative opportunities for buying and selling commodities and other products

Beside those advantages in holding inventory, other side of a coin is that it can become very costly segment of a supply chain. Sometimes inventory costs may exceed 20% of total supply chain costs. Inventory management problems are characterized by holding costs, shortage costs, replenishment delays and probabilistic demand distributions for products. Inventory costs are just one group of total supply chain costs and they encompass ordering costs, holding costs and shortage costs (that occur if demand exists, but the product is out of stock).

Models for optimizing inventory management decisions that take these factors into account have been proposed and applied for over 60 years. Recently, attention has focused on creating business processes that reduce or eliminate inventories, mainly by reducing or eliminating the uncertainties that make them necessary. Models for optimizing inventory policies for individual items use methods from statistics and applied probability theory. As such, they are very different in form from deterministic optimization models, which broadly consider products, facilities, and transportation flows in analyzing resource acquisition and allocation decisions. Inventory models involve parameters and relationships such as variances of market demands and delivery times and their impact on stock outages, which are not easily represented in optimization models. For this reason, incorporating inventory decisions in supply chain optimization models is difficult. Nevertheless, depending on the scope of the analysis, acceptable approximations of inventory costs can be developed.

<sup>&</sup>lt;sup>1</sup> Shapiro F. Jeremy (2001) Modeling the Supply Chain, Duxbury Thomson Learning

#### 2.1. Managing inventory

When managing inventory to meet predictable variability, firms use a combination of the following approaches:

Using same assets across multiple products – in this approach, a firm uses the same financial source for multiple products, with each product having predictable variable demand that results in relatively constant overall demand.

Build inventory of high demand or predictable demand products – when most of the products a firm produces have the same peak demand season, the previous approach is no longer feasible. A firm must decide which inventory to build during the off season. The answer is to build products during the off season that have more predictable demand because there is less to be learned about their demand by waiting. As more is known about demand closer to the selling season, production of more uncertain items should take place.

#### 2.2. Types of inventory and inventory costs

There are many existing types of inventory, but this paper is focused on two:

- Cycle inventory exists because producing or purchasing in large lots allows a stage of supply chain to exploit economies of scale and lower cost. The presence of fixed costs associated with ordering and transportation, quantity discounts in product pricing, and short-term discounts or trade promotions encourages different stages of a supply chain to economies of scale by ordering in large lots.
- Safety inventory is inventory carried for the purpose of satisfying demand that exceeds the amount forecasted for a given period.

Safety inventory is carried because demand forecasts are uncertain and a product shortage may result if actual demand exceeds the forecast demand. On one hand, raising the level of safety inventory increases product availability and thus the margin captured from customer purchases. On the other hand, raising the level of safety inventory increases inventory holding costs. In today's business environment, it is much easier for customer to search across stores for product availability. The increased ease of searching puts pressure on firms to improve product availability. Simultaneously, product variety has grown with increased customization. As a result, markets have become increasingly heterogeneous and demand for individual products is very unstable and difficult to forecast. Thus, a key to the success of any supply chain is to figure out ways to decrease the level of safety inventory carried without hurting the level of product availability.

When setting inventory levels in practice, a common hurdle is estimating the various costs. The three major costs we have analyzed in our paper are material cost, order cost and holding cost. Holding costs is estimated as the sum of the following major components, not all of which are applicable to every type of situation. This cost is usually estimated as a percentage of the cost of a product. Holding costs consist of:

- *Costs of capital* This cost takes into account the return demanded in the firm's equity and the amount the firm must pay on its debt.
- Obsolescence or spoilage cost The obsolescence cost estimates the rate at which the value of the product you are storing drops either because of market value of that product drops or because the product quality deteriorates.
- *Handling costs* Handling cost should only include receiving and storage costs that vary with the quantity of product received. Quantity-independent handling costs that vary with the number of orders should be included in the order costs.
- Occupancy costs The occupancy cost should reflect the incremental change in space cost due to changing cycle inventory.

• *Miscellaneous costs* – Other costs like theft, security, damage, tax, etc.<sup>2</sup>

The order cost includes all incremental costs associated with placing or receiving an extra order that are incurred regardless of the size of the order. Components of order costs include:

- *Buyer time* Buyer time is the incremental time of the buyer placing the extra order. This cost should be included only if the buyer is utilized fully.
- *Transportation costs* A fixed transportation cost is often incurred regardless of the size of the order.
- *Receiving costs* This include administration work such as purchase order matching and any effort associated with updating inventory records.
- Other costs Each situation can have costs unique to it that should be considered if they are incurred for each order regardless of the quantity of that order. <sup>3</sup>

#### 2.3. Replenishment policies

A replenishment policy consists of decisions regarding to reorder and how much to reorder. There are several forms that replenishment policies may take, but we restrict attention to two instances:

- Continuous review inventory is continuously tracked and an order for a lot size is placed when the inventory declines to the reorder points.
- *Periodic review* inventory status is checked at regular periodic intervals and an order is placed to raise the inventory level to a specific threshold. In this case the time between orders is fixed. The size of each order, however, can fluctuate given variable demand.

These inventory policies are not comprehensive but suffice to illustrate the key managerial issues concerning safety inventories.

## 3. Monte Carlo Simulation

When we use the word simulation, we refer to any analytical method meant to imitate a reallife system, especially when other analyses are too mathematically complex or too difficult to reproduce. A Monte Carlo method is a technique that involves using random numbers and probability to solve problems.

The Monte Carlo method is just one of many methods for analyzing uncertainty propagation, where the goal is to determine how random variation, lack of knowledge, or error affects the sensitivity, performance, or reliability of the system that is being modeled. Monte Carlo simulation is categorized as a sampling method because the inputs are randomly generated from probability distributions to simulate the process of sampling from an actual population. So, we try to choose a distribution for the inputs that most closely matches data we already have, or best represents our current state of knowledge. The data generated from the simulation can be represented as probability distributions (or histograms) or converted to error bars, reliability predictions, tolerance zones, and confidence intervals.

Monte Carlo simulation is a versatile method for analyzing the behavior of some activity, plan or process that involves uncertainty. If you face uncertain you can benefit from using Monte

<sup>&</sup>lt;sup>2</sup> Chopra Sunil, Meindl Peter (2004) Supply Chain Management – Strategy, Planning and Operation, Pearson Prentice Hall, New Jersey

<sup>&</sup>lt;sup>3</sup> Chopra Sunil, Meindl Peter (2004) Supply Chain Management – Strategy, Planning and Operation, Pearson Prentice Hall, New Jersey

Carlo simulation to understand the impact of uncertainty, and develop plans to mitigate or otherwise cope with risk.

We use simulations if one or more of the following statements is true:

- It is not feasible to do the actual experiments,
- The cost in money, time, or danger of the actual experiment is prohibitive,
- The system does not exist yet and
- We want to test various alternatives.

Despite the many applications and advantages, the following are some disadvantages of computer simulations:

- The simulation may be expensive in time or money to develop.
- Because it is impossible to test every alternative, we can provide good solutions but not a best solution.
- Because a simulation is probabilistic involving an element of chance, we should be careful of our conclusions.
- The results may be difficult to verify because often we do not have do not have real-world data.

### 4. Estimating inventory costs for construction materials

In order to present the practical usage of simulation models, the model that describes inventory management in a private construction firm will be presented. Our client is a successful local businessman and one of the services, that his firm provides, is a trade of construction materials. He is interested in a reduction of inventory costs, since he has a limited amount of the capital that should be invested in this part of business. The firm provides transportation for all the products that they trade with and have no inventory holding costs. The major challenge is to reduce amount of capital that is invested in inventory, so it could be used for other business activities.

Model manages inventory of several products: cement, gravel, sand, separated gravel, brick, fixtures and balk. Beginning variables per type of product are: demand per day, purchase price, transportation costs and sales per day. Beginning inventory level, ordering costs and order quantity are also defined. Ordering costs present a sum of purchase price and transportation costs for every product. Order quantity depends on the type and size of transportation vehicle and also on some government regulations about maximal weight of the transported goods. All the orders can be delivered the same day, so delivery time is not limiting condition in this case.

The firm provides us with the information about projected monthly demand for one year's period. In order to obtain more precise analysis we use simulation to split those monthly data and get weekly demand for all seven products. Simulation model uses random number generator to determine input variables for a single iteration. Initial assumptions of a model that presented in a following table are extracted from stated data.

materials	mean monthly demand	standard deviation	selling price per unit (rsd)	total costs per unit (rsd)
gravel (m3)	375	160.25548	1950	1228.03
separated gravel (m3)	75	44.82288	2160	1355.07
sand (m3)	125	58.38742	1130	637.86
cement (t)	108	57.43613	12000	9577.70
brick (piece)	8333.33	11276.14806	9.50	6.37
fixtures (t)	4.17	5.57320	63000	42.21
balk (m3)	11.25	12.08399	21476	14388.92

Table 1 -	Initial a	assump	otions	of the	model
		accountry	0.0110	01 010	

Results of Monte Carlo simulation are used to define a level of weekly demand for all the products and the demand for sand is shown at figure 1.



Figure 1 – Weekly demand for sand

Seasonal character of the demand for construction material is well known and it can be observed in the chart. In winter demand for all seven products is very low and it is increasing in spring, summer and autumn. Due to this seasonality, lower and higher levels of safety inventory are used in a model, depending on the period of a year. On this way two options of inventory level are calculated and compared, based on lower and higher safety stock level. Based on those data, the required weekly inventory is calculated together with the level of safety inventory and also optimal order quantity is defined, considering previously mentioned limitations. By analyzing changes in inventory levels together with trends of other variables

and using the results of simulation as input data, the weekly inventory costs per product are determined, so the total amount of weekly inventory cost can be presented.



Figure 2 – Weekly inventory of gravel with two levels of safety stock



Figure 3 – Weekly inventory of sand with two levels of safety stock

Inventory presented on the figures 2 and 3 with green line show potential inventory level with lower safety stock (blue line) and black line shows necessary inventory level with higher safety stock (red line). This calculation is done for all seven product and it can be concluded that at the beginning of the year and in the winter months lower safety inventory is enough to satisfy the demand, so costs can be reduced by maintaining this level of inventory. In the season, it is necessary to order higher level of inventory to satisfy customers demand. Total costs are presented in the next figure.



Figure 4 – Total costs per week with different levels of safety inventory

By analyzing tendencies in two variants of total costs it can be observed that there exists significant difference between those two amounts. Statistical significance is verified with t-test and results are presented in the next table.

		Mean Group 1	Mean Group 2	t-value	df	р
costs1 vs.	costs2	1159999	1498788	-6.39500	94	0.000000
Valid N G	Froup 1	Valid N Group	Std.Dev. Group	Std.Dev. Group	F-ratio	р
		2	1	2	Variances	Variances
	48	48	279659.4	237710.0	1.384089	0.268785
Proceeding	js of					
Internation	al Confer	ence for				
Entreprene	urship, lı	nnovation and				
Regional D	evelopm	ent				
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Table 2 - T - test values for difference between obtained costs levels

By reducing level of safety inventory it is possible to significantly decrease total costs, but variances remain the same, because they are determined by demand fluctuations.

## 5. Conclusion

The presented model shows how simulation model can be used to help managers and investors in complex situations. This model can be extended by testing various scenarios and finding the most suitable one together with capturing all other parts of what-if analysis. Modeling provides valuable support for decision making process in nowadays turbulent business world, so harmonization and integration of dynamic quantitative analysis and theoretical, qualitative management concepts is absolutely necessary and unavoidable.

This paper tries to create inventory policy, which could be able to adjust inventory level if demand is seasonal during the year and to use simulation as a tool to test different scenarios. During the simulation process we tried to detect demand pattern that truly reflects actual demand, including any lumpiness as well as seasonality. The inventory policies obtained using simulation models can be then be tested and adjusted if needed to obtain the desired service levels. Identifying problems in a simulation can save a lot of time and money compared to facing these problems once the inventory policy is in place. Finally, once an inventory policy has been implemented, it is important that its performance be tracked and monitored. Monitoring is crucial because it allows a supply chain to identify when a policy is not working well and make adjustments before supply chain performance is significantly impacted.

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## A New Strategy for Companies in the Field of Human Resources Management (HRM) Sustained by CSR

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Corporate social responsibility (hereinafter CSR) has became one of the central issues on the agenda of organizations today, but is still a long way from being a central stage on corporate strategy. From a CSR perspective, organization provides the drivers that can construct a better world [1].

CSR is one of the frames of references that tries to shed light on the role business should play in society [2].

The paper proposes a new strategy for Companies in the field of Human Resources Management (HRM) linked with CSR.

The rationale for this study derives from the Human Resource Management-related problems faced by companies within the EU states with a rising economy.

HRM, including the various categories and the techniques it applies have become obsolete for countries with a developed economy, and are totally inappropriate for the rising economies of the new EU member states.

Managers admit to operating troubles encountered by the countries with rising economies, which are largely due to obvious differences in terms of civilisation, culture, religion, group mentality and so on, not only among the states but also between the various regions within the same state.

Companies work with space and time. While the spatial approach (quantitative perspective) has been obtained by a sensible coverage of the territory of the states in question, the temporal approach (qualitative perspective – limited in time) is facing long delays in reaching its strategic goals. There are additional arguments/disputes that have arisen.

My 13 years business experience as an entrepreneur, coupled with MBA studies, have assisted me in coming up with a personal perspective of management, which I refer to as Attitude Management (AM).

This study proposes AM as a new strategy for Companies, in what concerns HRM. In order to make myself understood, I shall adopt the formal logic principle: analyzing a simple problem, from the simple facts to the complex facts: the implementation of the CSR in Romania.

#### Keywords

Corporate Social Responsibility, Human Resource Management, Companies, Attitude-Management

## 1. Literature review

Corporate social responsibility (hereinafter CSR) has became one of the central issues on the agenda of organizations today, but is still a long way from being a center stage on corporate strategy [3].

Corporate social responsibility has attained a high -enough profile [4] that many consider it a necessity for organizations to define their roles in society and adhere to social, ethical, legal and responsible standards [5]. According to Friedman and Miles, from a CSR perspective, organization provides the drivers that can construct a better world and therefore experience pressure to demonstrate accountable corporate responsibility [6].

Caroll explains that CSR is one of the frames of references that try to shed light on the role business should play in society. In research and theory building, CSR is approached from different perspectives, such as social performance, business ethics, corporate governance, social contract, stakeholder management, corporate citizenship, accountability or bottom pyramid.

Although current CSR frameworks are diverse, fragmented and not always congruent, CSR can be defined as the voluntary integration of social and environmental concerns in to business operations and in to their interaction with stakeholders [7].

CSR initiatives use different nomenclatures, classifications and definitions, but as shown in Figure 1, Vilanova, Lozano and Arenas [8] propose that CSR issues can be grouped in five dimensions: (1) Vision, including CSR conceptual development within the organization, governance, ethical codes, values and reputation; (2) Community relations, including collaborations and partnership with different stakeholders, corporate philanthropy and community action; (3)Workplace, including labour practices and human rights issues [9] (4) Accountability, including CSR practices directly related to core business activities such as research and development, pricing, fair competition, marketing and investment.



Figure 1. The five dimensions of CSR. Source: Marc Vilanova 2007.

#### Figure 1: The five dimensions of CSR

Cramer uses WBCSD definition of CSR:" the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life [10]. Business commitment to CSR should " envelop all employees (i.e their health and well- being), the quality of products, the continuous improvement of making opportunities" [11]

According to Werre [12] there are four main phases in a Corporate Responsibility (CR) implementation model:

1. Raising top-management awareness.

- 2. Formulating a CR vision and core corporate values.
- 3. Changing organizational behaviour
- 4. Anchoring the change

## 2. Research Topic

Will companies be able to adopt CSR as a practice in Romania?

## 3. The research Objectives

- Evaluating the CSR concept accommodation in Romania.
- Checking the implementation of the CSR concept in Romania, by the companies
- Suggesting own solutions regarding the aspect of companies adopting CSR as a national practice.

## 4. Qualitative Research Methodology

This study aims to employ quality-related research criteria.

#### 4.1 Collecting necessary data by using secondary information sources.

From the researched sources, the following have been selected as being relevant to the topic:

Secondary Information Sources [13]

a. Bucharest Conference in Applied Ethics, October, 2008
Organizer: "Research Centre for Applied Ethics"
Purpose: the integrated approach to ethic management and durable development
Number of lectures: 10
Authors: scholars from Bucharest, Cluj, Constanta

A Bank: Cec Bank Other media: NCH Advisors, Smart Solutions & Support

Conclusions: Although there are only a few Romanians who really acknowledge the importance of business ethics, we are gradually advancing towards a culture where not only turnover matters but also the ways of profit making .

b. Research report: « Overview of the Social Responsibilities for 2008 » Authors: Dragos Dohelau, General Manager of Selenis, agency for management services for the PR specialists of MNCs Method: analysis of the bloggers' opinions on CSR (76 participants) Most responsible companies:

Appraisal Method

-investments related to the protection of the environment (63%)
-investments related to health (37%)
-investments related to education (26%)
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-investments related to the promotion of civic behaviour (23%)

c. Top Corporate Awards published in the Romanian Donors' Forum for 2007:

- 1. Petrom and Vodafone: 2.7 million Euros
- 2. Banca Transilvania: 760 thousand Euros
- 3. Unicredit Tiriac Bank: 300 thousand Euros
- 4. GSK: 271 thousand Euros
- 5. Alexadrion Grup: 210 thousand Euros

#### 4.2 Research by using semi-structured interviews, with open questions

#### 4.2.1 Preparing interviews

The companies have been selected by taking into account several business fields, their prominence in Romania and the public acknowledgment of the company implementation of the CSR concept

The following companies have been selected: a fuel manufacturer and distributor, a commercial bank, a mobile telephone service provider, a beverage manufacturer.

The hierarchical level selected for the interviews: CSR Project Manager.

#### 4.2.2. Data collected pursuant to unstructured interviews, with open questions

Question 1: Do you invest in CSR? Answer synthesis: Yes, amounts between EUR 0.3 and 1.4 mil / 2008.

Question 2: What is your company's strategy in terms of CSR? Answer synthesis: Each company has a strategic CSR platform. The annual company budget mandatorily includes the CSR budget.

Question 3: What are the projects you support? Answer synthesis: environment protection (planting trees, collecting waste, school camps); acknowledging the rational resource consumption; material aid for under - privileged people; supporting education by granting scholarships to bright pupils and students; supporting sports)

Question 4: What are the results of your company in terms of ROI? Answer synthesis:

By integrating CSR into the business strategy, business becomes easier, as the concept is adopted both by the employees and by the communities where we operate, and they are changing their attitude towards us for the better.

Our employees are our main stakeholders

- the CSR strategy and the adopted platform take into consideration the company's specific field of business and the interests of the community w here the company operates - we aim at reaching a durable development

Question 5: Which CSR investments bring the highest ROI: your own projects or the third party projects you support? Answer synthesis: The nature of the CSR assumes a permanent dialogue and co -operation with partners Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 (employees, investors, public or private institutions, NGOs)

Partnership is the fundament al aspect of all the company's business. Partnership helps in a better understanding of the problems of the community, offers precise solutions in specific areas, and it also helps in promoting a responsible social behaviour from the individuals within the community.

Our own campaigns (10 -20 % of the CSR budget) are imperative, as they require the company and its employees to get involved, thus increasing the company's credibility.

Question 6: What is the budget assigned for CSR in 2009, under the current crisis?

Answer synthesis: A small but responsible bud

### 5. The qualitative Data Analysis

The analysis method is a qualitative, deductively-based analytical procedure, namely « the explanation-building procedure »

Sentence: Companies can adopt CSR as a practice

Note/NB: The proper noun, Romania, is not used at the end of the sentence, in order for the iteration to be clear.

Iteration 1

Pursuant to the analysis of the secondary information sources, Chapter 4.1 a and 4.1 d we are able to state Iteration 1:

Companies have not imposed CSR as a practice yet

Iteration 2

Pursuant to the analysis of the secondary information sources, Chapter 4.1, paragraphs b and c, we are able to state Iteration 2:

Companies have adopted CSR as a practice for themselves

Iteration 3

Pursuant to the analysis of the data collected from the interviews, Chapter 4.2.2, we are able to state Iteration 3:

Companies have adopted CSR as a partial practice for others. NB: « others « means: natural and legal persons from the community

Iteration 4

My personal experience of 1 3 years as a SME owner, together with my background as a legal adviser and my Mba studies, have assisted me in formulating a border-line approach, which I refer to as Attitude Management.

Attitude Management borrows from both management and psychology. It operates with four concepts:

- Self-motivation
- Emotional Intelligence

#### - Social Intelligence

- Communitary Social Responsibility

My study shows that the concept of self-motivation as being the most effective for SMEs.My aspiration is that companies accept Attitude Management either as a whole or in part.I believe that companies have the needed strength to prevail upon, through efficient lobbying, both the European Economic Commission and the European Parliament not only to accept but also to instigate and co-finance educational programs on Attitude Management, namely Self-motivation, IE, SQ, CSR.These educational programs would be incorporated into the school curricula of the new EU member states, under an EU Directive.

Note/NB: In several EU member states with developed economies certain such educational programs are already being employed, albeit in a somewhat different form to that proposed here .

Should my proposal be accepted, then Iteration 4 can be stated: Companies may adopt CSR as a practice.

Iteration 5

The study of Attitude Management in schools and universities would help build a qualified labour force, with a more homogenous mentality as to what concerns the fair conduct towards companies and communities. In addition, it would provide vital educational content on self-motivation and the use of IE and SQ.

Under these circumstances, Iteration 5 becomes plausible.Companies can adopt CSR as a practice.

#### 6. Conclusions and recommendations

The selected research topic has reached its goal: to promote a new strategy for companies, in the field of HRM.

By employing qualitative-related criteria for the research and analysis of the collected data, the study has reached its research goals.

By quoting my previous papers, this study shows originality in what concerns the strategy proposed for companies.

#### Recommendations

1. HRM should not be outsourced:

a. The labour force educated on Attitude Management, will benefit from an HRM which is appropriate for the specific business .

b. HRM will record a high performance (lower costs and maximum results in a short period of time)

c. Business ethics becomes a practice in Romania and in other states with rising economies, and the mentality o f the EU citizens, and as far as the companies and the communities are concerned, gains in homogeneity.

Therefore, the collateral advantages include: decreasing the East-West migration of the labour force, decreasing illegal labour, enhancing responsible social behaviour within the community.

Business becomes easier.

2. By adopting Attitude Management, companies will rapidly integrate in the post -Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 crisis social and economic reality.

Alternative proposals: ignore Attitude Management

Business transactions have been performed since the beginning of civilization. What has changed from 'The Invisible Hand' in Daniel's Prophecy to the 'invisible hand' in Adam Smith's "The Wealth of Nations", and to the opinion of US president, Herbert Hoover (governed 1929-1933): the capitalist crisis appears and disappears like magic, due to the laws of the market.

We have survived all the abominations (in reference to the ones that blamed him for the Great Depression)

The answer to this question lies in globalization.

Globalization has been the perfect camouflage for infringing the laws of the market,

in the name of the old Theory of the rights of claim.

Let us destroy this camouflage by enforcing a new Theory of the rights of claim, transparent in the light (clear view) of the unchangeable laws of the market.

By also adding an ethic al perspective, via Attitude Management, companies can prove their determination towards the greater good of the population.

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## The Role of Entrepreneur Education in the Construction of Student Propensities for Starting a Business

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The aim of this paper is to investigate the contribution of entrepreneur education in the construction of entrepreneurial propensities with students at the University of Novi Sad. The topic is investigated from the students' perspective: how they perceive the role of educational content and the form of teaching practice in their specialization and preparation for the career of a business owner. The research in the form of a survey was conducted on the sample of 653 students of the University of Novi Sad. The starting hypothesis was that the educational process, educational experience and the general climate at the University are not encouraging enough for students to become engaged in entrepreneurship. The findings of the research show that a significant number of students did not have the subjects with overt content from the field of entrepreneurship; that students think that the knowledge they gain in the teaching process is not enough to equip them for establishing and leading their own business; that most students perceive the general atmosphere either as not stimulating at all or as partially stimulating for the development of entrepreneurial culture. The comparative analysis of the names of subjects which contain words management, business, organization of business and those that contain the word entrepreneurship in their name indicate the dominance of manageiral over entreprenurial content of curricula. The general conclusion is that entrepreneurial education does not play the expected role in the construction and shaping of student propensities for opening their own business. The lack of educational activities which would connect theoretical and practical aspects of entrepreneurship is evident.

#### Key words

education, entrepreneurship, entrepreneurial propensities, students, university.

#### 1. Introduction

The topic of this paper is the investigation of students' perception of the features of a university environment – the contents of existing curricula and teaching activities (practice, seminars, projects, mentoring), i.e. how they assess their contribution in acquiring practically applicable knowledge in the field of entrepreneurship. Our aim was to check how much the listed elements of the educational process as well as other features of the university environment affect the specialization of students in the field of entrepreneurship as an optional future career. The expected, practical implication of the research is that, on the basis of the collected data, a question can be answered whether the propensities for starting one's own business can be induced and developed through factors within the university environment.

The conceptual framework for the research of the chosen topic was built on the theory of socialization for career [1]. According to this theory the decision to start a career, in this case one's own business, is caused by many factors, including the educational experience (the acquisition of knowledge in the field of entrepreneurship, the opportunity to observe and analyze entrepreneurial role models – examples of good practice, to practice – exercise significant responsibility, to create and realize entrepreneurial ideas, and the like). This kind of experience through the learning process can undoubtedly contribute to the fact that students perceive the desirability and feasibility of their own business. It can also induce the formation of aspirations to start such a business. We, therefore, thought that this research, structured as an examination of how the educational process and the general atmosphere at the University of Novi Sad affect the formation of entrepreneurial propensities of students, can contribute to shedding light on the process of formation of entrepreneurial mentality of students in a society which has just started the journey on the road of the construction of market economy.

In this research we also investigated the connection between the noticed wider social context in Serbia at the beginning of the millennium and the expressed entrepreneurial propensities of students. We used the Shapero model [2],[3], which supposes that the intention of a person to start a business is caused by the perceived desirability, feasibility and propensity to do it. The resulting behaviour, according to Shapero, will depend on the readiness to do it and the probability of alternative behaviours (the existance of the possibility of choice). We used part of this model which presupposes the direct influence of the perception of contextual factors on the entrepreneurial aspirations of students.

In accordance with these theoretical postulates, the perception of educational contents and educational practice in the area of entrepreneurship, the incentiveness of the general climate at the University regarding the formation and spread of entrepreneurial culture and the involvement of faculties in the training of students for entrepreneurship were examined in relation to the type faculty, gender and expressed/unexpressed aspirations of students towards a career of a business owner.

This is one of the first researches in Serbia in the thematic domain of university and entrepreneurship. The relevance of the research of factors which determine the construction of entrepreneurial propensities of students lies in the fact that propensities are the precursors of the choice of entrepreneurial carier as an option for the future. On a practical level, the investigation of this topic contributes to defining adequate programmes of preparation and specialization of students towards a career of a business owner in the areas of high technologies or the application of other types of professional knowledge.

The starting hypotheses of the research are the following:

- Students perceive the sum of knowledge gained through the teaching process as an insufficient preparation for starting their own business.
- The general climate at the University in not encouraging enough for students to become interested in entrepreneurship.
- Activities of faculties regarding the training of students for entrepreneurship are perceived as insufficient.
- Students perceive the social environment as unfavourable for the development of entrepreneurship.
- The spread of entrepreneurial aspirations among students is significant and connected with the type of faculty and specialization.
- Entrepreneurial aspirations are more present with men than women.

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The empirical data used for testing the starting hypotheses were collected by the method of questionnaire mostly with closed answers, with a smaller number of questions of the open type which were used in cases where it was deemed that qualitative data would be more appropriate for understanding certain dimensions of the chosen research problem. The Proceedings of International Conference for Entrepreneurship, Innovation and

research was conducted on the sample of 653 students from five faculties of the University of Novi Sad (Faculty of Technical Sciences, Faculty of Economics, Faculty of Sciences, Faculty of Agriculture, and Faculty of Philosophy). Most of the students were inclined to participate in the research and affirmatively assessed this type of research. For data processing the  $\chi^2$  test test of independence of two features and descriptive statistics were used in the programme package Statgraphics with the significance threshold of p=0.05.

## 2. Analysis of the results of research

The data indicate that a large number of respondents (around 40%) did not have subjects with explicit knowledge contents from the area of entrepreneurship, whereas the contents obtained via similar subjects were not enough for them to acquire comprehensive and systematic knowledge about entrepreneurship, i.e. to stimulate and develop entrepreneurial propensities. This finding was confirmed by the data that almost 44% of students who intend to start their own business think that the knowledge they acquired in the teaching process was "mostly" or "completely insufficient" for managing a business. Simultaneously, the finding that half of the potential future entrepreneurs relatively positively assess the knowledge acquired in the university educational process speaks of the fact that some faculties and departments, work on preparing students for this type of economic activity.

Significant data on the contents of entrepreneurial education at the University of Novi Sad were received through answers to the question about which types of knowledge, according to students themselves, are significant for a successful business managing which were not given to them in the teaching process at their respective faculties. It is characteristic that the most frequently listed missing items of knowledge were from the area of financing. The second place in frequency was taken by the knowledge in the practice of entrepreneurship, in the third the knowledge in the area of management, and in the fourth place the skills of communicating. These findings confirm the lack of subjects and contents in the areas of key importance in the formation of propensities for opening a private business in the future.

Researching the possibility of students to take part in the realization of entrepreneurial business projects during their studies provides more detailed records for the diagnosis of the state of arts regarding educational activities where students gain a more direct insight into the essence and manner of how independent business functions. This is one of the dimensions of socialization for the profession where students play the roles of subjects. What is the situation like in that regard at the University of Novi Sad, i.e. how is that situation assessed by students? The results of this research indicate that the involvement of students who participated in the survey is of very limited scope. Only every tenth student has had some of the following experiences: "with colleagues we made and realized a student project" (2..73%), "we made a student NGO" (2.88%), "with a group of students we made an entrepreneurial project but we did not realize it" (1.67%). Most of the students said that they did not have the opportunity to participate in a project, whether it was a student project or within the department where they study, whereas one tenth of students were not even interested in that. We can conclude that, pedagogically speaking, students are still primarily in a passive position in the teaching process.

Undoubtedly, the area of acquisition of practically applicable knowledge, especially practice classes dealing with how to create an applicable project, how to take responsibility for the realization of aims and how to control the whole course of activities during the realization of the project, is the one of those areas that should have a more significant position inside the educational process at the university. The collected qualitative data indicate that students think it has been a matter of will and enthusiasm of some teachers to a greater or lesser extent up to now.

The data collected from secondary sources indicate that some study groups, specialized in the socialization of professions with wider opportunities for starting an independent business, had practice classes with up to 150 students. Obviously, this is not an optimal number of students for the realization of the principle of modern education regarding the active role of students, especially during practice or simulation of the use of acquired knowledge byway of designing, evaluating and applying projects. Another question arises concerning the realization of the principles of learning flexibility, lifelong learning, etc. In the conditions when most students state that they had not actively participated in projects and other forms of application, i.e. exercises during which acquired knowledge was applied, can one of the basic aims of modern education be accomplished? Is the transfer of knowledge more important than the methods of gathering vital information? This principle is one of key principles precisely for spotting the opportunities for entrepreneurial undertakings and that is why deeper and wider research of the mentioned dimensions of the educational process in university institutions would be of indubitable practical significance.

One of research questions in this study was how students themselves evaluate the general climate at the University concerning the spread of entrepreneurial ideas and the formation of entrepreneurial culture. The collected data indicate that every tenth student from the sample assesses the atmosphere in the university environment as very stimulating for the formation and spread of entrepreneurial ideas. Simultaneously, almost half the students think that it is partly stimulating, wheras less than a third of students think that the university environment is not stimulating in that aspect of their activities. The presented findings indicate that most students perceive the university environment as having stimulating elements for the formation of entrepreneurial propensities. Yet, the answers to open questions in the questionnaire indicate that various activities of University authorities concering the spread of innovative spirit and behaviour at the University do not reach students in a significant way.

The data indicate that there is a firm connection between the assessment of the influence of the general atmosphere at the University on the adoption of entrepreneurial culture and the type of faculty where students study (p=0.00<0.05). The smallest number of respondents, students at the Faculty of Philosophy (only 3.19%) and Faculty of Sciences (7.25%) assessed the general atmosphere as very stimulating, while the same answer was given by 15.14% of respondents from the Faculty of Economics and 11.42% from the Faculty of Technical Sciences. The largest number of students of the Faculty of Economics (over one half) and the Faculty of Philosophy (40%) see the general atmosphere as partly stimulating. At the same time the smallest number of students from the Faculty of Economics (over one eigth) and the largest number from the Faculty of Philosophy (over one half) and Faculty of Sciences (over one third) assessed the atmosphere as not stimulating.

An important finding of this research is that only around one sixth of respondents think that the university environment in its activities is "dynamic, full of changes and innovations", wheras one half of them think that there are changes but they are insufficient when it comes to stimulating and spreading entrepreneurial and other innovative ideas. This result not only shows that students are aware of the fact that there are changes but that they are also aware that the changes are not intensive enough and that they are not in accordance with trends in the wider setting. If we add to this the fact that around one quarter of respondents see the university environment as static, lacking inovation, it becomes clear that we have a result which obliges us to think and define measures which would transform the university environment into a more dynamic one in the sense of a faster adaptation to the changes in the markets of work and knowledge.

If the analysis is done by faculties, statistically significant differences ocurred regarding the preception of dynamism and openness of the university environment to changes (p=0.000<0.05). The largest number of students from the Faculty of Sciences (63.77%), Faculty of Technical Sciences (52.94%), Faculty of Philosophy (50.54%) and the Faculty of Economics (49.19%) assessed that "there are changes but they are insufficient", and the

smallest number of students from the Faculty of Agriculture (33.33%) said the same. At the same time the largest number of students from the Faculties of Philosophy and Agriculture, somewhere between 40 and 50%, consider the university environment to be fairly static and closed to student initiatives, wheras considerably less students of the Faculties of Economics and Technical Sciences (a bit above one fourth) think the same.

It is certain that joining the Bologne Process brought about significant changes in curricula practically at all faculties of the University of Novi Sad. Yet, when it comes to putting these curricula into practice, students of some departments are somewhat critical towards the (lack of) readiness of the department to accept changes and introduce modernization of the teaching process so they are stressing formalism in the implementation of these processes.

The perception of the activities of faculties in preparing students for entrepreneurship is fairly negative. Over 40% of students said "not at all" or "barely engaged" and only a few percent of respondents perceived the faculty acitivities in this area as "greatly engaged". We can presume that students are more acquainted with activities concerning entrepreneurial education at their own faculties, which is why they negatively assess their engagement in the trasfer of knowledge and organization of other activities in that domain to a greater extent than the general climate at the University.

As the  $\chi^2$  test showed that p=0.000<0.05, we concluded that there is a firm connection between the faculty engagement in preparing students for entrepreneurship and the type of faculty. The respondents from the Faculties of Economics and Sciences assessed most favourably the activities of their faculties in that domain (nearly half of them said that these activities were developed "moderately" or "to a great extent") and students from the Faculty of Philosophy assessed them least favourably (one third said the same).

When it comes to the perception of the current social context in Serbia, almost half the students notice that it consists of more limiting than motivating elements when one has to make a choice concerning an independent business as an option for the future career.

The data collected in this research indicate that 43.74% of respondents of the University of Novi Sad have formed and defined propensities to start their own business after they graduate. Around 23% said that they had no such intention, while one third of students was undecided in this respect. In the category of undecided there are certainly those who could be reoriented towards starting an independent business under certain circumstances. Such circumstances could surely include wider and more intensive activities in spreading the knowledge from the area of entrepreneurship.

Since the P value 0.001 is smaller than 0.05, this means that the type of faculty significantly influences the spread of entrepreneurial aspirations of students. A regularity was noticed in the fact that the largest number of students with a propensity to start their own business after they graduate comes from the faculties which prepare students for professional work in areas like economy, tourism and veterinary medicine. In addition, a high percentage of undecided, even at some of the aforementioned faculties, indicates that there is a need to spread the contents of entrepreneurial education.

The established regularity that students with noticable entrepreneurial aspirations more often see the general climate at the University as stimulating regarding the formation of entrepreneurial ideas than students with unexpressed desires of this kind confirms the starting hypothesis on the direct influence of the factor of the university environment on the orienation towards entrepreneurial carier.

The results of this research indicate that considerable more men (over one half) than women (slightly over one third) want to start their own business. It is also characteristic that significantly more women than men were undecided when it comes to the intention to start their own business in the future. This indicates that there is a need to design special programmes to empower female students regarding the choice of a career of a business owner after they graduate.

The comparative analysis of subjects which contain the words *management, business, administration* or *business* in their names and those whose names contain the word *entrepreneurship* show a strong prevalence of managerial over entrepreneurial contents of the curricula. However, in the last few years modern entrepreneurial syllabi were introduced: *Entrepreneurship in Information and Communication Technologies* at the Department of Electrotechnics of the Faculty of Technical Sciences, the subject *Small and Medium-size Companies and Entrepreneurship – a Challenge for New Europe* at the master's level of European Studies within the Centre for Advanced European Studies and Research (CAESAR) as well as courses at the UNESCO department for the studies of entrepreneurship.

## 3. Conclusion

The results of this research are contradictory in a certain way. On the one hand, they indicate that the respondents did not have adequate possibilities to adopt knowledge in the area of entrepreneurship nor the practice of entrepreneurship. On the other hand, the diversity of entrepreneurial propensities of students is significant for the society which has just recently started developing market economy. This finding did not confirm the hypothesis from the Shapero model that the propensity to start one's own business is caused by the perceived desirability and feasibility of such a business, but by the lack of employment alternatives.

The starting hypotheses that the students percive the insufficiency of knowledge and practical acitivities from the area of entrepreneurship, the insufficient engagement of faculties in that domain, the insufficient encouragement of the general climate and that the university environment is not open to changes and innovations are confirmed. Last hypothesis was also confirmed regarding the greater spread of entrepreneurial propensities among men than women.

The findings of this research suggest that it should be concluded that propensities to start one's own business can be stimulated by factors within the university environment. The area of entrepreneurial education is one of the primary issues where university and faculty authorities should be significantly more active in the future. These findings should simultaneously serve as a useful foundation for the creators of both economic and educational strategies in this country, so that the supportive measures for the development of entrepreneurial education are much more concrete and systematically implemented. In the conditions of intensive economic reforms with dramatic consequences that reflect on the lives of the majority of the population of Serbia, the measures for the formation of a positive attitude of young people towards entrepreneurship, the development of aspirations and intentions of university and high schools students towards the career of a business owner would have to find a more significant place in the educational curricula as well as in other various educational practices as an alternative for (self)employment of a growing significance.

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# How to Reach Innovative Product by Knowledge Transfer?

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The aim of every company, in modern conditions for the foreseeing, is to become available at global market. Creation of an innovative (new) product represents the key to success in global environment, while team work and use of demonstrated results of existing educative models represent the condition for creation of such a product. This paper shows results of knowledge transfer and implementation of the educative model KaLeP in education of mechanical engineers in Serbia.

Major problem in modern world market is – how to create new innovative product which will fulfils all customers' requirements and expectations?

The above-mentioned means that new products are created in severe market competition which should fulfil customers' expectations, even their individual wishes, which as result has striving for "innovative production", and/or "innovative management". The only possible solution in such actual environment conditions is application of one of the global development strategies, integrated product development. It is only mean for obtaining better, innovative design solution which is nowadays primary objective of any company.

The objective of the university education of mechanical engineers is to impart the complex knowledge necessary for efficient product development in an industrial environment and to teach students the key abilities required for their professional life. Industry is searching for engineers with a university degree as a "problem solvers" and "creativity sources"

#### Keywords

Education model, integrated product development, innovative product and management, team and team work, transfer of knowledge.

#### 1. Introduction

Major problem in modern world market is – how to create new innovative product which will fulfils all customers' requirements and expectations? Modern conditions of the foreseeing, and/or the market requirements impose to the economy of any country more complex tasks with respect to speed of mastering new products, their quality, design, productivity and flexibility. The above-mentioned means that new products are created in severe market competition which should fulfil customers' expectations, even their individual wishes, which as result has striving for "innovative production", and/or "innovative management".

The only possible solution in such actual environment conditions is application of one of the global development strategies, integrated product development (Fig.1).



Figure1. Integrated product development process (A. Albers, IPEK)

It is only mean for obtaining better, innovative design solution which is nowadays primary objective of any company.

In this paper has shown results of experimental research, which had validated through joint cooperation project, between students from engineering faculties in Niš and Karslruhe, which resulted with innovative products.

#### 2. Objective of teaching product development

Product development is one of the most complex and important stages in the value creation chain. The objective of the university education of mechanical engineers is to impart the complex knowledge necessary for efficient product development in an industrial environment and to teach the students the key abilities required for their professional life. Industry is searching for engineers with a university degree as "problem solvers" and "creativity sources". Especially those engineers are indispensable that are at all times able to cope with new problem situations due to their well-founded basic training of the acquired methodical skills and their ability for abstraction and model design. Besides technical and methodical knowledge, so-called soft skills/key qualifications are also essentially important. But there exist a lot of deficits in the general engineering education, as shown by a study from VDI (Association of German engineers). In this study, several companies were asked about deficits and reasons for detachment during the probation period: 55,1% of the companies criticize the social competence of entrants, 47% complain about personal competence and only 13,1% of the companies mention the professional competences as a deficit of entrants. The main reason for detachment is the disability of the entrants to transfer the theoretical knowledge into practice, furthermore the entrants' overestimation of their own capabilities as well as the want of social behaviour.

With the aim to improve this situation of entrants in companies, the main requirement for the engineering education is the improvement of the key competences during the education.

Engineers have to be "team players", they have to be skilled in technical know-how and business management and they have to capable of reaching decisions and implement them. In order to meet these requirements in the university education, KaLeP (Karlsruhe Education Model for Product Development) was developed at the IPEK (Institute for Product Development, University Karlsruhe).

It is important to emphasize that a problem of need for "closing space" between engineer education and practice requests is not just evident in immediate surrounding (former Yugoslavian republics), but solution of this problem represents challenge to most of big developed countries and their mechanical engineers education system. The basic reason

why this space appeared is lack of "rational" and "detailed". That is why modern approach to education of mechanical engineers has to assure capabilities:

Conceive, design, implement and operate.

## 3. KaLeP model of education

KaLeP is general concept oriented to real product development process in industry, based on construction theory in education, created to improve developing engineer's competence in product development. KaLeP method goal is to inform participants in complex product development environment (that are currently in the education process), about the aspects of real working environment and teaches them the best possible basis for complex challenges development in further professional career. Also, mentioned model is enabling a work on concrete project's tasks, in work's conditions which are very similar to real, industry's requirements. The project conceived in that way - performing according to in advance predicted steps, which has presented by plan, with predicted terms for lectures, workshops, presentations and milestones (reviews). The plan has predicted lecture's performing, by nominated professors, from their parental faculty, according to their educational plan and program. Also, the plan has predicted, in addition, adequate workshops, guided by assistants and presentations performed in same time, by usage modern video-equipment, which enables establishment video-conference and enables participation for all participants in process, under same conditions.

THE KARLSRUHE EDUCATION MODEL KaLeP						
Education Environment Key qualification						
Lecture Exercise course Project work	Creation of realistic Environment	Integrated Project work				

Figure2. KaLeP model of education

Institute of product development IPEK has many years of tradition in crating projects based on KaLeP method. Also, their project results have utilized in concrete purpose.



Figure3. IP projects - examples

## 4. The results of successful coordination practice

In order to reach an innovative idea for human resource management in process of product development and to make improvement in evaluation of engineer profile competences (as team members) an real experiment had placed in the base of joint project of collaboration between Mechanical faculty in Niš (Serbia) and Mechanical faculty in Karslruhe (Germany). That project included 4 teams, 2 from Serbia and 2 from Germany, a combination of unique-culture teems with cross-culture cooperation, with common aim – development of new product for German's industry demands. That fact was specific of this project. The manner for target realisation was unique, an education model KaLeP.

But, this experiment was a first time that two different faculties have involved in it. Also, KaLeP model was an aim of knowledge transfer between Mechanical faculties Karlsruhe and Niš. In that circumstances, in order to control and monitor project, it was necessary to set same limited conditions for realization. That was also challenge and that was base for comparison of project results. Basic education plans and programs on this faculties are very different, so basic students knowledge was very different, as their background in whole. This unique cooperation is maintained by coordination during project, at the start of the project until first turning point. Also, goal was not only education and gaining experience through work in virtual teams, but development task based on KaLeP method, in two different work and living conditions and output of this process is working prototype for industry needs.

#### 4.1 How to create a functional team?

Size and complexity of most developmental projects nowadays require team work rather than individual, so the necessity of team work in product development is generally accepted. The results of team work depend on many factors: team members' qualification, good structure of product development process and methods for supporting product development process. Team must focus its attention to different working styles, problem solving styles of all team members. Importance and role of team and team work in product development process is very significant segment of this work.

Design problems, by usage teams, are individual also, in understanding, generating, evaluating and making decisions, at the same time. But, there are many important differences, which should be clarified and solved. In the first place, social aspects of team work which are growing up in every social activity. In the second place, every team member has different problem's understanding, different alternatives for problem solving, and different knowledge for problem evaluating. The first and second thing is good and the bad, at the same time; it is a place for many solutions and much more confusion. The modern, design problem demands design team – a relative small number of people, with complementary skills, which is integrated in common purpose, common target acquirement and common access, in amount which they can take care of each other. But an effective team is much more than that.

Within promotion of team and team work value in product development process, where team composition of players is vital value of project success, it is necessary to use participant competence evaluation methods, at next levels: professional competence, methodological competence, elaboration possibility creative potential.

As a result, different types of character tests are used and they allow self-assessment of ones own competences based on obtained results. Such are MBTI test, especially Balbin test, which gave practical results of application when forming teams of students. For example, Balbin suggest 9 different behaviours required for team functionality regardless the skills: Organizer, Motivator, A person who «encourages», Soldier, Collector, Listener, Finisher, Specialist and Evaluator.

In order for mentioned roles to be applied, team has to identify members who would actively and with responsibility assume roles during the project. The role assignment has to be made through individual evaluation, discussion, management decision making and simulation of team creation. The key is in roles being assigned according to skills, with periodical review of team progress and execution.

Developmental teams should comprise the same number of different types of persons, with variations when equalizing average team competences, in order to have homogeneous group which in optimal way supports dynamic effect. It could be very exciting to be a member of a productive team, but it could be frustrating to work in a team that does not function very well. One of commonly used procedures for evaluation of profile competences is shown in Figure 5.



Figure4. Competences evaluation of engineer's profile

If evaluations are reduced to simple measurement of work results, in form of reports, presentations and physical inspections of project products, we cannot be certain that students have developed competences which were intended to be developed.

In the following is showed an innovative model of evaluation, through collecting students' opinions and feedback information. The reason for that is a result of integrated learning which gives capability to students to make assessment of their own work and outside work, because main part of their work isn't monitored (controlled) from teacher's side, as teachers aren't incorporated in their work completely.

System for assessment consists of next assessing elements:

- Project targets (aims, goals)
- Capability of expressing (conceiving attitude),
- Giving of feedback information about another's contribution through suggestion of appreciation,
- Capabilities for evaluation (assessment) of work quality and work quantity for all members,
- Expressing reflection on complete project

#### 4.2 Student's project

In given circumstances, four undergraduate student teams, two from IPEK, TU Karlsruhe and two from Mechanical Engineering Faculty, University of Niš (MFN) were involved in the product development project defined by German company Kärcher. Teams were formed in accordance with previously described model for evaluation of development engineer's competences. All of the student teams had the same development task, so their performance could be measured during the project lifetime and in that way evaluate the model for evaluation of development engineer's competences.

Student teams were competing between themselves as competition foster the team work.

As the development task, Kärcher defined that students should develop device for sterilisation of water by UV (Ultra Violet) radiation. The project development task was based on idea that was introduced by TU Karslruhe student team during previous project. The idea is that passive circulation of water in the tank is achieved by heating of water trough waste heat emission of UV emission element. It is observed that only 10% of energy input to UV emission element is transformed to UV radiation, the remaining energy is transformed to heat.

According to the development task defined, student teams should:

- 1. elaborate the basic idea, expand it if possible, and develop device for sterilization of water by UV radiation;
- 2. develop device which doesn't posses any active elements e.g. the flow of water around UV sterilization element must be passive;
- 3. develop device which after the filtration process provide water which is acceptable for drinking according to the microbiological standards<sup>1</sup>;
- 4. manufacture the prototype of the device and validate it in operating conditions;
- 5. chemically treat the intake water is a plus, but not obligatory;

During the four months long work on the project, student teams from Niš developed two innovative devices for pathogen filtration of the water. After market and their own development capabilities research, student teams defined the profile of new products, expanded the basic project idea trough several product concepts, evaluated those concepts and design the best evaluated. As the last phase of the project, prototypes were made and validated according to the project task. Both teams came to innovative approaches for expanding of given development task idea trough usage of modern methods in industrial product development.

One of student teams (team WAFIPO - WAter FIltering PrOject) came to idea to speed up the passive circulation of water in the filter tank (and thus lower the filtration time or increase the capacity of the filter) by heating the lover sections of the tank. They defined product that will be used in equatorial area, which is the most endangered region concerning the supplies of drinking water.



Figure 5. Student team WAFIPO prototype

Second student team (CFS- Constructors from South) came to idea to increase the passive flow velocity in the tank by under pressure. If above the free surface of the water is under pressure the water will boil at temperature lower than 100 °C. If under pressure is greater than 0, 9 bar the water will boil at room temperature. Boiling of water has two effects:

- The flow velocity around UV emission element is vastly improved, and
- Oxygen from the water is removed so most of the pathogens are killed because they etc. cannot survive the lack of oxygen in a period longer than 15 min.

They defined the product profile with the goal of removing the usage of chlorine in city distribution networks. In modern distribution networks chlorine is used in the water treatment process for sterilization and prevention of pathogens after grow during the transport to consumer.



Figure6. Student team CFS prototype

Water was tested after the filtration process to ensure that it is safe for drinking if she stays in the tank. Table 1 shows the results which clearly show that water is safe for drinking after the filtration process is finished and it is not used instantly. In that way it is proven that chlorine used in water treatment can be removed in water treatment process.

Table 1 Results	of water	r microbio	logical	testing

		Inlet values,	After	After 5h in prot. 12h.
		before	1h. filt.	in refrig.
		filtration		Ū
Total count vital bacteria	TCV	142/1 ml	0	0
Total coli forms	тс	161/100ml	0	0
	10	E-coli	0	0
Faecal coli forms		161/100ml	0	0
	FC	E-coli	0	0
Faecal streptococcus	SF	0	0	0
Clostridium sp	SSA	76/100ml	0	0
Proteus sp	PV	0	0	0
Pseudomonas sp	PA	0	0	0

## 5. Conclusions

With the help of many years experience that the Institute of Product Development of the University of Karlsruhe has in implementing the education project Integrated Product Development (IPD) and the continuous improvement of KaLeP, it was achieved to meet today's requirements for a successful engineer education. Evaluation results and interviews with graduates show clearly that the KaLeP approach improves systematically the key qualification for engineers. In the meantime, the education model of the IPD was transferred to the special fields – East Europe's countries. It demonstrates that the integration of aimed training of soft skills in a practice environment in combination with the university education with long tradition of is a very successful model.

This model demonstrated results through coordination and management of common cooperative innovative project, which has performed by student teams from Mechanical Faculties in Niš and Karslruhe. The success of project realisation is result of good team member selection, good project performing and project coordination. Students demonstrated strong motivation and achievement orientation. Their presence on the lectures was over 95%, so in some critical phases of the project they demonstrated the behaviour that vastly exceeded demands of classical education model. Although the involvement in this project is based on a hard work, the knowledge and experience gained in this way can be directly applied in a practical work. That makes great benefit for future development engineers once they graduate.

Result of student's development project, are two products that could be instantly implemented in the manufacturing program of the company that has sponsored the project. Student from Serbia performed similarly to the German student teams. By that, the quality and the effectiveness of the project and new model for evaluation of development engineer's competences are proven in the best possible way. This joint student's project could be a good example for future work, not only as an example of knowledge transfer, also as example for effective team work with results - practicable products.

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# Innovation and Economic and Financial Performance: An Analysis at the Firm

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It is widely accepted that innovation plays a major role as far as economic and financial performance is concerned. However, very often, one gets the impression that this statement comprises indiscriminately many different aspects such as economic growth in general, national economic competitiveness, competition, profitability as well as individual business firms' survival and growth. Therefore it is important to develop an empirical research to help clarifying *how*, *when*, *in what sense* and *how much* innovation may affect the firms' economic and financial performance. With this study, the authors wish to give a contribution to a better knowledge of these issues aiming mainly at analysing innovation's positive impact on the Portuguese firms' economic and financial performance for the period between 1998 and 2004. Bearing in mind the complexity of the phenomenon, the hypotheses under study were tested empirically with recourse to statistic econometric analysis. The results obtained show that innovation has a positive impact on Portuguese firms' economic and financial performance on Portuguese firms' economic and financial performance for the period between 1998 and 2004. Bearing in mind the complexity of the phenomenon, the hypotheses under study were tested empirically with recourse to statistic econometric analysis. The results obtained show that innovation has a positive impact on Portuguese firms' economic and financial performance for the period between the results obtained show that innovation has a positive impact on Portuguese firms' economic and financial performance for the period between the results obtained show that innovation has a positive impact on Portuguese firms' economic and financial performance and vice-versa.

#### Keywords:

Innovation, economic and financial performance, innovation's determining factors, Community Innovation Survey

#### 1. Introduction

Innovation capacity is, nowadays, recognized as one of the main factors on the firms' competitive advantage. Therefore, it is important to learn on the nature of innovation, how it influences both economic and financial results and the mechanisms through which social and economic agents get involved in the whole innovation process, always bearing in mind that innovation management is intrinsically difficult and risky.

Innovation can thus be a critical element in improving the economic and financial results of firms and the performance of national economies. Recent research confirms that an increased economic and financial performance is observed among firms capable of using innovation to improve their processes or differentiate their products and services in relation to their competitors. This performance is measured in terms of market quota, profitability, growth, and market capitalization (e.g. [1], [2], [3], [4], [5], [6], [7])

In light with this perspective, the study of the relationship between innovation dynamics and the economic and financial performance is very relevant, in the context of academic and business research. A revision of the existing literature has shown that there are few studies addressing the impact of innovation on the firms' economic and financial performance and

that most of them are, to some extent, incomplete due to a partial analysis of the subject, i.e. the analysis is not based on a complete list of all the relevant factors influencing innovation (see [8], [9], [10], [11]). Nonetheless, these show the relevance of these factors in different stages of the innovation process with different impacts on the firms' economic and financial performance.

Recently there has been a growing amount of research related to new ways of defining and measuring innovation. Innovation variables can, on the one hand, be organised into macro, meso and micro variables and, on the other hand, into input, throughput (the process of transforming inputs into outputs) and output variables (e.g. [12], [13]). This paper focuses on the micro level and distinguishes innovation input, the transformation of input into output (throughput) and innovation output. The present analysis uses the latest reference approaches on innovation and its impact on economic and financial performance as the conceptual framework, while developing a theoretical support based on empirical findings which allow identifying innovation's determining factors on Portuguese firms' performance for the period between 1998 and 2004.

The paper is structured as follows. Following an introductory section, there is a theoretical discussion of the approaches on innovation processes and its impact on economic and financial performance; the paper then proceeds in the conventional manner: method, results, discussion and conclusions. The research's main limitations and some avenues for future investigation, as well as implications for management practice, are also explored.

### 2. Theoretical background and Hypotheses

Despite the risk and uncertainty, innovation, when well succeed, may produce a relevant impact on the firms' economical and financial results. Innovation is, thus, a key element for the improvement of firms' performance in particular, and of economies, in general. Recent research confirms that firms are able to use innovation to improve their processes or to differentiate their products and services, presenting a better economic and financial performance than its competitors, measured both by the market share and profitability (e.g. [14], [15]); or by growth and market capitalization (e.g. [16], [17], [18], [19]). The literature review has shown that few studies were devoted to the impact of innovation in the economical and financial performance of firms, showing, also, that some were, to a certain extent, incomplete because they approached this topic in a partial manner.

In this context, the study of the relationship between innovation and the economical and financial performance of firms has become fundamental, allowing us to set up the main research hypothesis:

 $H_0^{(1)}$ : Innovation has a positive impact on the Portuguese firms' performance and vice-versa, i.e. there is a circular relationship between the different stages of the productive process (performance, input, and output).

The conclusions of the studies referred to so far suggest a number of determinants in each of the stages of the innovation stages (input, output e througput) and in the impact that these can have in the economical and financial performance of firms. In what regards the input stage, the most commonly used variable is the R&D investment (e.g. [20], [21], [22], [23]).). However, [28] points out several disadvantages associated to the use of this variable as input, such as the fact that these studies only consider firms with previous R&D investment. In this perspective, some authors (e.g. [24], [25], [26], [27]) use the total investment in innovation as the variable that better represents the effort in innovation (input).

Taking into account the advantages and disadvantages of input variables, it seems that the variable that best represents the innovation effort is the total investment in innovation which

is influenced by variables of innovation transformation, output, and economical and financial performance. Thus, one can argue that:

 $H_0^{(1a)}$ : The output stage is influenced by factors associated to the process of transformation input-output, and for the firm performance.

Taking into account that the several studies that test the relationship between innovation output and the firm performance (e.g. [28],[29], [30], [31]) we are led to conclude that the variable percentage of new product sales is the most commonly used in these studies. However, having in mind the characteristics of the data of these studies, the variable innovation output is the one that better reflects is total innovation (product / processes / marketing /markets /organizational innovation) and thus one can argue that:

 $H_0^{(1b)}$ : The output stage is influenced by input determinants, transformation processes and the firm performance.

The academic studies used in this research (e.g. [32], [33], [34], [35]) show that firms that innovate have an increased growth of sales and profits. This explains why firms that cooperate and invest in innovation on a permanent basis are expected to verify increased sales. Therefore we propose as a hypothesis that the growth of sales is the best variable to characterise our sample in terms firms' performance and:

 $H_0^{(1c)}$ : The variable growth of sales is influenced by the output and by other performance related variables.

Based on these hypotheses we aim at developing our research. In a different way, we will seek to investigate if innovation has a positive impact on the Portuguese firms' performance. For that purpose, we have developed a research model based, in broad terms, on the models proposed by [36], [37] and [38], the literature defines models which include at least four stages:

1st Stage:	The decision presents itself as to whether or not to innovate and is likely to be influenced by several factors;
2nd Stage:	The firm decides to innovate, and this decision then influences the innovation input level and the level of investment in innovation;
3rd Stage:	The innovation output, which is often determined by the innovation input, comes under analysis. The transformation of the innovation input into innovation output (throughput) occurs between the 2nd and 3rd stages.
4th Stage:	Finally, the relationship between innovation output and the economic and financial performance of firms is analysed.

The research model mentioned above and the expected mathematical signs for the relationships established between the different stages of the innovation processes are shown in Figure 1.



## 3. Data and Empirical Methodology

#### 3.1 Dataset

For the aims of this study, it has been decided to use secondary data provided by the Portuguese component of the Community Innovation Survey, referring to the time period between 1998 and 2000 (CIS III) and between 2002 and 2004 (CIS IV). This survey was coordinated by EUROSTAT and carried out by GPEARI / MCTES<sup>1.</sup> Based on this database, we constructed our sample, composed by 508 observations in the three sectors: primary, secondary, and tertiary, located in rural and urban areas, with and without innovation activities, as shown in table 1.

		CIS III			CIS IV	
	Rural	Urban	Total	Rural	Urban	Total
Total firms(nº)	178	330	508	178	330	508
Primary Sector (%)	2,8	2,7	2,8	2,8	2,7	2,8
Secondary Sector (%)	73,6	66,4	68,7	73,6	66,4	68,7
Tertiary sector (%)	24,2	30,9	28,5	24,2	30,9	28,5
Micro firms (%)	0	0	0	0	0,9	0,6
Small firms (%)	32,6	29,1	30,3	33,1	29,4	30,7
Medium Firms (%)	33,1	30,9	31,7	23,6	29,7	27,6
Large Firms (%)	34,3	40,0	38,0	43,3	40,0	41,1
SME (%)	65,7	60,0	62,0	56,7	59,1	58,3
Innovative firms: Yes (%) Product Innovation (%) Process Innovation (%) Other Innovations (%) Innovation in products and processes (%)	74,7 36,0 44,9 62,9 4,5	80,0 40,9 43,6 70,9 1,8	78,1 39,2 44,1 68,1 2,7	70,8 38,2 47,8 47,2 7,3	74,8 48,8 51,2 60,0 5,8	73,4 42,5 50,0 55,5 6,3
Innovation strategy: Innovation in the market (%)	27,5	33,6	31,5	24,2	28.8	27,2
Job creation: yes (%)	39.9	32.7	35,2	39.9	32.7	35,2

 Table 1 Sample overview (508 Obs.)

<sup>1</sup> Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais / Ministério da Ciência, Tecnologia e Ensino Superior.
### 3.2 Empirical method

The proposed research model was used to identify the determinants that influence each of the stages of the innovation process and the possible existence of feedback relationships between these stages.

Presently, in innovation studies, the linear model and the neoclassical vision are neglected in favour of more complex systems, with entrepreneurial investment and the creation of knowledge at the core of research. The image of the company based on profit maximisation is substituted by a view in which the firm is seen as an organisation based on learning and with limited rationality, developing external networks and internal capabilities in a given geographical space ([39]). In the analysis of the interactive process of innovation, it is recommended to use more complex econometric models, such as the probit, tobit, or Heckman models and the models of simultaneous equations.

In feedback studies, it is common to use the two-stage and three-stage models ([40] e [41], respectively), both models based on the least squares for estimating the previously defined equations of the simultaneous equation models. [42] estimated the simultaneous equation model through the Seemingly Unrelated Regression Equation Model (SURE), in order to evaluate the existence of feedback between input, output, and firms' performance for the Portuguese industrial firms.

Having in mind the points made so far, the studies undertaken and the characteristics of the available data, we have used the Seemingly Unrelated Regressions – SURE for the estimation of a simultaneous equation model, in order to evaluate the existence of feedbacks between the different stages of the innovation process (input, output, and performance).

The variables of the innovation process are presented in table 2, as much as their characteristics:

VARIABLES	DESCRIPTION	SCALE
INPUT		
Innovation Effort	Total Investment in Innovation	Interval
Training for innovation	% of investment in training for innovation	Interval
THROUGHPUT		
Innovation strategy	innovation as part of the strategy	Dichotomous
Market	dummy variable - performance in the market	Dichotomous
Customer	dummy variable - customer satisfaction	Dichotomous
Cooperation	<i>dummy</i> variable – cooperation with research institutions and other firms	Dichotomous
OUTPUT		
Innovation	Process/product/market/organizational innovation	Dichotomous
PERFORMANCE		
Growth sales	Evolution sales growth between 1998-2004	Interval
Growth in employment	Evolution of job creation rate between 1998-2004	Interval
Location	Rural vs urban	
Size	Small, Medium, and Large firms	
Sector	Primary, Secondary, and Tertiary	
Funding	The existence of external funding (supporting programmes and other sources of funding)	

 Table 2 Innovation process variables and their characteristics

## 4. Simultaneous Equation Model: Innovation-Performance Relationship

In this section the existence of feedbacks between the different stages of the innovation process will be shown. In order to do this, we have used a model with three simultaneous equations, using the SURE as the method for estimating the parameters of the regression. The results of the estimation are shown in table 3.

	INNOVATION INPUT	INNOVATION OUTPUT	GROWTH IN SALES
Total investment in		3069,814***	
innovation		(1,83)	
Training for innovation	0,0610**	0,243*	
	(2,82)	(4,12)	
Cooperation		0,197*	
		(3,43)	
Innovation Output			0,632*
			(5,65)
Growth in Sales	0,0382*	0,167*	
	(3,46)	(5,65)	
Employment growth			0,212***
			(1,84)
Size	0,098**	0,313*	
	(2,86)	(3,31)	
Funding		0,134**	
		(2,24)	
constant	0,0174*		0,180***
	(2,56)		(0,72)
$\chi^2$	76,54	26,31	28,72
Prob> $\chi^2$	0,0003	0,0049	0,0071
Adjusted R <sup>2</sup>	0,7510	0,6540	0,7180

Table 3 Results of the estimation of the Simultaneous Equation Mod	el
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- t-statistics always appear between round brackets

- Significance level from which the null hypothesis is rejected\* 1%; \*\* 5%, \*\*\* 10%.

- Only statistically significant results are presented in this table

- Model estimated by the seemingly unrelated regressions equation method (SURE)

Using Zellner's SURE method to analyse the three equations estimated we can see that: (1) the total investment in innovation equation is influenced by innovation output (innovation in process/product/market/organizational) and firm performance (growth in sales); (2) the innovation output equation is influenced by innovation input (total investment in innovation and training for innovation), by the innovation process (cooperation) and firm performance (growth in sales); (3) the firm performance equation is influenced by innovation output (innovation output (innovation in process/product/market/organizational) and by one of the performance variables (job creation).

From the conclusions stated above, it is possible to establish that there are feedback relationships between the different stages of the innovation process, which confirm the links defined in our research model: innovation has a positive impact on the performance of Portuguese firms and vice-versa, i.e. there are feedback relationships between the different stages of the innovation process (input, output and performance) ( $H_0^{(1)}$ ).

We would like to highlight that the introduction of the variable firm size in the regression equations has shown to be statistically significant, contrary to what has been reported in a number of studies referred previously. In fact, according to the literature review, studies on the importance of the firm size in innovation show contradictory conclusions because a large amount of this literature

suggests the existence of a positive relationship between the firm size and innovation (see, for example, [43], [44], [45]); other empirical studies conclude that there is a negative relationship between the firm size and innovation (for example, [46], [47]); and according to [48]) there is no relationship between innovation and the firm size. There is a clear ambiguity in what concerns the role of size in innovation.

### 5. Conclusion, implications and Suggestions for future research

The results obtained show that innovation had a positive impact on the economic and financial performance of Portuguese business firms and *vice-versa* – in other words, there is a feedback relationship between the different stages of the innovation process (input, output, and performance), as we see in Figure 2.



It should also be stressed that the study of the relationship between innovation and economic and financial performance is currently a much discussed subject and extremely important for most firms and national economies. Nevertheless, it remains much to be discovered in this specific research area. As far as the dynamic component of the innovation process is concerned, identification of the factors that influence each of its different phases can never be considered complete.

The conclusions reached in this empirical research allow suggesting some corporate practices that are part of innovation systems and that can become responsible for fostering innovation at an entrepreneurial level:

Firms and other private agents should:

- 1. Recognise innovation as the primary source of competitive advantage, since innovation as a continuous entrepreneurial strategy is an innovation factor. In this perspective, one can use innovative firms as examples for other firms to innovate (demonstration effect).
- 2. Find the basis for strong co-operation, given that our research has demonstrated co-operation as a determinant factor, associating initiative of applied research (consortium) to the creation of new products and new productive processes, though the consolidation and support of innovation networks. These networks allow accessing to information, knowledge and to the supporting mechanisms that firms need and, on the other hand, to promote interaction between the various service providers in order to gain the knowledge on the specifics and necessities of firms. This interaction, combined with the co-ordination of the various actors of the innovation system, allows the compatibility of supporting measures provided by institutions and the real needs of firms regarding innovation. Thus, these networks may become a privileged vehicle of innovation diffusion and learning.

In this regards, government should:

- 1. Promote initiatives of information sharing with several actors (part of the innovation system) in order to facilitate knowledge exchange, the use and valuation of institutions, and of programmes and services to support entrepreneurial innovation.
- 2. Create measures to stimulate innovation, since the Portuguese entrepreneurial fabric is made of, mainly, small and medium sized firms (the creation and implementation of public policies to stimulate innovation in these firms should be a concern of policy makers); these measures should also embody the development of long term relationships and fostering co-operation projects between firms with little R&D experience; support R&D centres and universities to establish a 'bridge' between firms and R&D institutions, seeking, simultaneously to focus these institutions' practices and strategies on the necessities of SMEs.
- 3. Support, through the use of risk capital mechanisms, the initial commercial development of new entrepreneurial initiatives, and to support entrepreneurship (two forms of overcoming the innovation barrier, such as the lack of funding sources)
- 4. Reduce the costs of patents and create a legal protection system favourable to the commercial exploitation of innovation;
- 5. Introduce supporting measures to the creation or development of service activities to firms with a strategic character (the supply side), as much as the acquisition of these services by firms (demand side).

The adequate interpretation of the results requires that the main limitations of this research are made explicit: (1) a longer time period for the data would allow dealing with further issues in regards to innovation, namely profitability and growth; (2) the fact that the number of observations of the sample did not allow us to control all the relevant variables is a problem mainly felt by analysts who study a small economy like the Portuguese, where the universe of firms is relatively small; (3) case studies have not been undertaken in order to deepen the knowledge about the relationships between innovation and performance and to identify other factors related to the innovation process and the firms' performance.

In a competitive and globalised world is difficult to imagine a firm that continuously 'wins' without innovation. Innovation as a demanding practice is a strategic imperative for increasing competiveness of firms, and of countries. In this perspective, several actors and institutions (with responsibilities in this matter) should be co-ordinate in order to stimulate innovation and to create a real innovation system that allows an innovative environment.

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### Social Innovation: Determinants of the Demand for High-Quality Institutional Care by the Elderly

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One of the great challenges of contemporary society is the unceasing search for ways of generating, incorporating and diffusing innovation – and this is true of the most widely varying sectors of human activity, ranging from finance, through the arts to social welfare. Looking at society today we can readily confirm that social innovation predominantly takes place in what is called the Third Sector. It is important to recognise that our understanding of innovation processes cannot be reduced to a study of the passive reactions of organisations to changes in their external environment: we must also take into account the emergence of innovation within the organisations themselves. The main aim of the study whose results are presented here was to analyse the determinants of demand on the part of the elderly for high-quality institutional care, seen in terms of both the physical, psychological and social dimensions of the ageing process, and the physical, material, human, operational and relational dimensions of the intra-institutional innovation process.

#### Keywords:

Social innovation; third sector; ageing, society.

### 1. Introduction

One of the great challenges of contemporary society is the unceasing search for ways of generating, incorporating and diffusing innovation – and this is true of the most widely varying sectors of human activity, ranging from finance, through the arts to social welfare. Looking at society today we can readily confirm that social innovation predominantly takes place in what is called the Third Sector. It has often been suggested that social innovation does not occurs within institutions, but as a result of the evolution and the pressures exerted by something more abstract – civil society. However, it is important to recognise that our understanding of innovation processes cannot be reduced to a study of the passive reactions of organisations to changes in their external environment: we must also take into account the emergence of innovation within the organisations themselves.

The notion of social innovation, when specifically applied to the social sector, consists of the genesis of new and original products and services or the creative reapplication of existing ones in different forms or for different purposes, as a means of satisfying new market needs – in the case under scrutiny here, those of the "senior" or "grey" segments of the market – generating Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 quantitatively and qualitatively greater levels of welfare and quality-of-life, and providing a more specific place and role for all those involved.

While institutional providers of assistance to the elderly come in the most varied of forms, relatively few offer residential services at the higher end of the quality spectrum. The very specific and exclusive characteristics of the types of services in question require physical installations, social infrastructures and human resources capable of matching the special needs and limitations of each client and providing the personalised/customised manner expected.

The main aim of the study whose results are presented here was to analyse the determinants of demand on the part of the elderly for high-quality institutional care, seen in terms of both the physical, psychological and social dimensions of the ageing process, and the physical, material, human, operational and relational dimensions of the intra-institutional innovation process.

The paper is structured as follows. Following an introductory section, there is a theoretical discussion of physical, psychological and social dimensions of the ageing process and relational dimensions of the intra-institutional innovation process; the paper then proceeds in the conventional fashion: method, results, discussion and conclusions. The research's main limitations and some avenues for future research, as well as implications for management practice, are also explored.

### 2. Theorical background and hypotheses

Ageing is a process that can be understood at various levels. Above all, perhaps, the process is a biological one, because over time the most visible and palpable signs of old age manifest themselves in shifts in our physical appearance, the ease with which we move, and in the frequency and seriousness of diseases. Yet it is also a social process, for with the passage from full time activity to retirement, the change in our status is not merely an administrative or economic one; furthermore, it is a psychological process that is accompanied by changes in our intellectual activities and capacities, and in our motivations (e.g. [1]).

From this standpoint, though the prevention of disease and incapacity are essential prerequisites of "ageing well", the maintenance of good cognitive and physical functions, the continuation of a fulfilling social life and the productive occupation of our time also constitute key determinants of the quality of life of the older generation (e.g. [2]). In many respects, what today we call "social innovation" has emerged in order to creatively identify and collectively provide appropriate responses to these needs.

The following paragraphs discuss in more detail the biological, psychological, social and socialinnovation factors that may incline clients to opt for a high quality residential environment in which to spend the rest of their lives.

With advancing age, the body undergoes alterations due to changes in the cells and internal organs. In turn, the deteriorating performance of one organ may affect the proper functioning of others, possibly undermining the whole body's ability to function effectively. Due to this 'normal' process of deterioration, the elderly are the age group in which disease and disability are most prevalent. The corresponding problems may be incapacitating to the point of inhibiting both the instrumental (i.e. technical tasks such as preparing meals, performing housework, managing one's pension and other assets) and non-instrumental activities (such as personal hygiene, mobility and the capacity to dress and feed oneself unaided) that are involved in everyday life. Since these activities consist of tasks whose performance requires specific skills and behaviours, the effects of ageing may not only disrupt people's ability to perform what hitherto has been their daily routine, but may also be manifested in changes in their attitudes to the various components of independent life (e.g. [3], [4], [5]).

The deterioration an ageing person experiences in their physical state usually brings about a degree of adjustment to their identity (e.g. [6]). Various studies (e.g. [7], [8]) have concluded that different people adapt to ageing in different ways. For example, health is no longer perceived as

the total absence of illness, resulting from a comparison between one's current state and some ideal, but rather the product of an assessment of what one may expect from old age. Based on the studies conducted on physiological ageing, we can conclude that the main factors related to physiological wellbeing that are likely to inform a decision concerning the residential institution in which an elderly person will spend the remaining years of their life would include the following: the opportunity to continue with one's daily activities, the maintenance of an active life, the existence of facilities related to functional capacity and mobility, the monitoring of existing/future health conditions, ease of access to medication, and readily available medical care. This being the case, it seems appropriate to test the following hypothesis:

**H1:** Is there a relationship between the biological/physiological factors typically associated with ageing and the demand for (selection of) high quality permanent residential facilities for the elderly?

Those entering retirement often lose their social roles. According to Maia ([9]), social roles consist of the set of interlocking duties, rights and functions that depend both on the individual's personality and on the position held in the group or groups and in the society to which he/she belongs. The ageing process tends to be accompanied both by closer social relations and the construction of new safe havens: "old friendships become more important, and through shared tasks, contribute to the sustaining of personal identity and one's interpretation of both past and present (Justo [10], p.30). Some studies (e.g. [11], [12], [13], [14]) have pointed to a clear and substantial connection between a healthy old age, levels of social participation, and the development of productive activities. A healthy old age is premised upon the coexistence of three elements: (1) delaying the onset of dependency-enhancing diseases; (2) continuing physical and cognitive wellbeing; and, most importantly, (3) commitment to the maintenance of a rich social life.

With the development of science and improvements in the life-conditions of those of more than 60 years of age (commonly referred to as the older generation, or the elderly) comes the possibility of experiencing a period of unprecedented fulfillment and self-realisation: freed from parental and domestic responsibilities (on the one hand) and the labour market (on the other), there is time to enjoy one's leisure, travel, devote more time to new or established hobbies, return to education – in short, maintain an active social life.

On the basis of the literature on ageing from a social perspective, for the purposes of the research reported on here, we can conclude that the main factors related to social wellbeing that are likely to inform a decision concerning the residential institution in which an elderly person will spend the remaining years of their life, would include the following: the quality of intra-family relations, the presence/absence of an informal care, the maintenance of an active life in terms of leisure-time interaction with others, the opportunity to develop cultural and recreational activities, and the existence of social relations through a network of friends and neighbours. If this dimension were a priority for someone seeking a quality lifestyle in their old age, the following hypothesis would be legitimate:

**H2:** Is there a relationship between the social/sociological factors typically associated with ageing and the demand for (selection of) high quality permanent residential facilities for the elderly?

The process of psychological ageing affects perception, intelligence, memory and personality and, since ageing involves a general deterioration of the human organism as a whole, the brain and its functions are not exempt. The ageing of the brain does not have a uniform effect, and the seriousness of its implications varies from one individual to another. Many writers (e.g. [15], [16], [17], [18]) have recommended that in providing for a quality old age, particular attention should be paid to the fact that social habits and the level/intensity of social interactions specifically influence the ageing to which the brain succumbs, needs to be taken into account. Taking into consideration key psychological factors (such as levels of self-esteem and personal confidence, decision-making capacity and capacity for independent for thought and expression), the study formulated a third hypothesis:

**H3:** Is there a relationship between the psychological factors typically associated with ageing and the demand for (selection of) high quality permanent residential facilities for the elderly?

As indicated above, everyone is subject to biological, social and psychological aspects of ageing. Nevertheless, subjective acceptance of the onset and development of ageing differs from person to person. The way in which an individual cares for him/herself has a clear influence on the ageing

process: good physical and psychic health are essential if the elderly are to remain independent and carry on with their lives within the family and community in which they live. Even if an active, integrated and participatory old-age is promoted, eventual loss of autonomy and dependence on others for many day-to-day tasks is a reality that a significant proportion of old people are obliged to face. Institutional care is a positive alternative to the loneliness and/or incapacity that the elderly would otherwise suffer (e.g. [19], [20]) and a range of both "classical" and more innovative facilities exist to meet people's different needs and purchasing power.

One of the great challenges of 21<sup>st</sup> century society is how best to maintain the impulse for creativity and how best to integrate and disseminate innovation into our daily lives (e.g. [21], [22]). In the continuing discussion of the role of innovation in maintaining the competitiveness of firms, regions and countries, in recent years the theme of social innovation has been identified as being of particular importance (e.g. [23], [24], [25], [26]). In a society subject to constant change, organisations that try to control change will do so in vain, and the results of those that simply react to it will be disappointing; organisations should aim to anticipate change, using creativity and innovativeness as their principal means of remaining permanently competitive. Since, in contrast to invention, innovation concerns the creation and/or improvement of a product/service, organisational method or form of marketing, *social* innovation can be thought of as any improvement of this sort that specifically and directly impacts on the quality of life.

Thus in the study reported on here, we identified the innovation-related factors most closely associated with the type of organisations under scrutiny, as being the following: innovations in physical layout and infrastructural facilities, innovations in the organisation's type and combination of human resources and forms of organisational functioning, and innovations with regard to client relations. The question underpinning a hypothesis relating to social innovation would be:

**H4:** Is there a relationship between the innovative capacity of different high quality permanent residential facilities for the elderly and the demand for (selection of) such facilities?

On the basis of all the literature reviewed above, and given the specific aims of the research, the research model depicted in Figure 1 was adopted:



Figure 1: Research model adopted

### 4. Research methodology and statistical procedures

In order to test the hypotheses presented above, a purposive sample of all the residents of both the Lar Hotel da Santa Casa da Misericórdia de Vila Real<sup>1</sup> (SCMVR)<sup>2</sup> and the Queen Leonora Residential Centre situated in Vila da Conde<sup>3</sup> (SCMVC). These two facilities were chosen because both had the same legally established IPSS (Private Social Solidarity Institutions) status, and both provided similar, high quality innovative services for their residents, ranging from infrastructural specificities through specialized levels of care, to particular forms of client relations.

The residents of the two institutions were contacted personally. The questionnaire was tested in the first months of 2009 and data on the full sample was collected in the second half of 2009. Eighty questionnaires were distributed (45 in the Lar Hotel and 35 in the Queen Leonora Centre), with a total of 60 valid questionnaires being returned (41 from the Lar Hotel and 19 from the Queen Leonora Centre). Respondents' anonymity and ethical propriety guaranteed at all times. If it was found that the resident was physically (or in other respects) incapable of answering all the questions, missing answers were provided by the family member or carer responsible for the resident's welfare. The design of the questionnaire drew both on other research instruments that had previously been used for different purposes in old people's homes and similar institutions, and on the bibliography on this area of service provision that had been consulted. The questionnaire was divided into three distinct parts: (1) a demographic characterisation (i.e. minimal personal details) of the respondent; (2) data relating to biological, social and psychological aspects of the client's life prior to the provision of residential care; (3) information regarding the priorities that figured most prominently in the client's (or in the client's relatives') demand and informed their search for residential facilities, in particular those relating to the "innovative" features to which most importance was attributed. Table 1 provides a summary profile of the sample.

Respondent	%	Gender	%
Client	63,3	Feminine	61,7
Client's carer	31,7	Masculine	38,3
Age		Schooling	
65 – 74 years of age	23,0	4 years	49,0
74 – 84 years of age	48,0	9 years	9,0
84 – 95 years of age	27,0	12 years	7,0
>95 years of age	2,0	Secondary education	2,0
	,	Higher education	33,0
Profession		Who chose the institution?	
Small business owner/sales staff	38.2	Client	62.0
Teacher/civil servant	32,7	Spouse	13,0
Farm worker	9,1	Children/friend(s)	25,0
Other	20,0		- , -

Table 1 C	haracterisation	of the	sample
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In order to test hypotheses 1-4 and compare the influence of the various variables, a battery of tests typically employed in univariate and multivariate analysis were used. The following section

<sup>&</sup>lt;sup>1</sup> Vila Real, situated in the predominantly rural Interior Northeast of Portugal, is the administrative centre of the eponymous *concelho* (county) and *distrito* (district) of Vila Real. Both in terms of area and population, this *distrito* corresponds to approximately half of the NUT III of Alto Trás-os-Montes e Douro.

<sup>&</sup>lt;sup>2</sup> The Santa Casa da Misericórdia is a nation-wide Catholic charitable organization whose interests range from the national lottery, through residential homes for orphans and the aged, to hospitals.

<sup>&</sup>lt;sup>3</sup> Vila da Conde is a small city on the Atlantic coast of Portugal, approximately 35 kms from Oporto, Portugal's second city. It is both a dormitory area for Oporto and a tourist area that attracts local, national and international visitors.

first presents a brief summary of the multivariate analytical techniques employed, before focusing on the results obtained by applying the respective statistical procedures.

### 5. Application and adjustment of the binary logistic regression model

Logistic regression is one of a number of multivariate statistical methods commonly used today. The technique relates a set of independent variables with a categorical dependent variable (e.g. [27]) and allows the analyst to identify the factors that are associated with the occurrence (or not) of a given phenomenon. In the present study, the aim was to identify the biological, social and psychological factors, along with those associated with innovation, that determine the demand for, inform the search for and influence the choice of high-quality permanent residential facilities for the elderly.

In the present study binary logistic regression is employed to estimate 3 regressions with 3 binary dependent variables: the residential institution is chosen (1) by the client, (2) by the client's spouse, and (3) by the client's children or others (usually, close friends). Table 2 summarises the variables on which data was collected via the questionnaire and which conformed to the main aims of the research.

	Variable	Description of variables
de es	Esc_proprio	Client chose institution (0 = No; 1 = Yes)
nt able	Esc-conjuge	Client's spouse chose institution (0 = No; 1 = Yes)
Dep	Esc_filhos	Client's children (or others) chose institution (0= No; 1 = Yes)
	Vida_activa	Client's level of active life prior to institutional care
	Rel_social	Client's level of social relations prior to institutional care
S	Aval_cognitiva	Client's cognitive level prior to institutional care
able	Act_lazer	Client's level of leisure activities prior to institutional care
vari	Resumo2_fisic	Facility's innovative characteristics (physical/structural)
ent	Resumo2_rh	Facility's innovative characteristics (human resources)
pue	Resumo2_func	Facility's innovative characteristics (organizational/functioning)
lepe	Resumo2_ute	Facility's innovative characteristics (client relations)
lnc	Sexo	Client's gender
	Idadecat	Client's age (interval)
	Escolarid	Client's schooling

Table 2 Presentation/characterisation of the variables used in the logistic regression

The data were processed using the binary logistic methods<sup>4</sup> available in SPSS<sup>M</sup>, the results of which are presented in Table 3.

<sup>&</sup>lt;sup>4</sup> First, the highly inter-correlated variables are eliminated and then the stepwise method employed to generate a model containing the combination of independent variables that best fits the data collected. The importance of each variable to the model is expressed by the statistical significance of its coefficient. Likelihood and R<sup>2</sup> values are then calculated in order to adjust the model. The likelihood value indicates the general quality of the model; the higher its value, the better-fitting is the model. The Cox-Snell R<sup>2</sup> is based on the likelihood value and has a minimum value of 0 but a maximum of <1. The Nagelkerke R<sup>2</sup> provides a version of the Cox-Snell R<sup>2</sup> on a scale of 0-1.

Variables influencing shales		Who chose the institution?		
variables influencing choice		(Dependent variable/result)		
	independent variables)	Client	Spouse	Children/Others
Client ageing	Maintenance of an active life			0,685***
factors prior to	Social and residential relations	-0,703***		0,641***
institutionalisation	Cognitive and security assessment			
	Leisure activities		-1,558**	
Innovation-related	ated Physical/structural characteristics		2,326***	2,113**
characteristics of	Human resource related characteristics			
institution	Organisational/functional characteristics	2,519***		1,883***
	Client relations characteristics			
	Gender			
Age				
	Schooling	0,433**		
	Constant	2,161	4,498	9,413
	2Log Likelihood	51,808	26,780	45,902
	Cox & Snell R <sup>2</sup>	0,271	0,241	0,266
	Nagelkerke R <sup>2</sup>	0,371	0,458	0,396
	% Explained by model	78,8%	93,0%	77,2%
*0,01; ** 0,05; *	**0,1			

#### Table 3 Results of the binary logistic regression

On the basis of the results presented in Table 3, the following conclusions can be drawn. The model in which the spouse chooses the residential institution has the lowest Log Likelihood value and a Nagelkerke  $R^2$  that is closest to unity, and provides a 93% level of explanation. The other two models are similar to each other in terms of adjustment and statistical significance.

When it is the **client** (i.e. the potential long-term resident) that makes the decision, the variables influencing the choice are:

- (1) The negative value (-0,703) attributed to the quality of the client's social and residential experience prior to institutionalisation indicates that this is one of the characteristics that has often been absent from the client's life prior to institutionalisation but to which great value is nevertheless attributed. Thus the client aspires towards an improvement in this respect after moving to the chosen long-term residential institution, particularly with regard to the satisfaction derived from his/her new residence in terms of the extent to which it meets his/her needs and provides time for socialising with and undertaking activities with friends and relatives. These conclusions support the finding of previous studies (e.g. [28]) in which being elderly does not mean being inactive but rather being stimulated by active involvement in one's chosen daily activities. As Justo ([29]) argues, there is a tendency for the elderly both to attempt to secure their existing social networks and to deploy new "havens" in which to do so; residential units for the elderly can be seen as fulfilling this objective hence the importance of the client actively finding his/her new residence attractive and able to satisfy his/her needs.
- (2) The way in which the residential institution functions exerts an important influence over final choice (2,519) for even if the client has not felt deprived of dignity, privacy, freedom and autonomy before moving away from home, there exists an aspiration to retain and even enhance these aspects of his/her life. The preservation of independence is frequently a priority for the elderly and having the freedom to make one's own decisions is synonymous with autonomy. According to Sousa, Figueiredo & Cerqueira ([30]), respect for the dignity, autonomy and privacy of its elderly clients provides a virtual guarantee of success for a long-term residential institution. Given that relations between the client's family and the institution are also crucial to its successful functioning, visiting hours need to be extensive and take into account the schedules and availability of friends and relatives.
- (3) Clients' level of schooling also influences their choice of long-term residential institution. As shown by Table 1, in terms of schooling there are two predominant sub-groups in the sample: one consists of clients whose schooling has been minimal, closely followed by those with higher education. The conclusion may be drawn that both clients who, despite having little Proceedings of

formal education, have been nonetheless materially successful, as well as those with a level of education that practically guaranteed relative material success, are keen to maintain the quality of life they have struggled to achieve, or to which they have become accustomed as a result of their professional status, respectively.

When the institutionalisation decision is made by the **spouse**, two main variables come into play:

- (1) Opportunities for leisure activities (-1,558) made available by the institution, that perhaps it was not possible or not easy to enjoy prior to institutionalisation, are determinant in the choice. According to Drucker ([31]), the elderly are increasingly drawn towards new horizons: they can open up a small business, travel freely, and enjoy cultural activities. In their own homes, an elderly couple develops social, cultural, recreational and sporting interests that enhance their welfare and cause them to see their social relations in a different light. The group with whom an elderly couple spends time becomes a key reference point in their lives. The search for and use of information and the exchange of views and opinions within the group help to promote and consolidate an active social and intellectual life for all its members.
- (2) The institution's physical and structural characteristics (2,326) have an important influence on the final choice, for when the spouse takes the lead, preferences and needs common to the couple prior to institutionalisation will be given priority, such as: good location, security and pleasant surroundings. With reference to the innovative aspects of the couple's chosen institution, the spouse who decides tends to place emphasis on the physical and structural aspects of the institution, in particular those that combine high standards of housing, a welcoming milieu and a comfortable environment with access to services that ensure physical and psychological wellbeing, as Ferreira ([32]) has noted.

Finally, when it is the **client's children (or other members of the family)** that make the institutionalisation decision, a larger number of variables influence the decision:

- (1) Maintenance of an active life (0,685) has a clear influence, since when it is someone else making the decision, there is concern that the elderly person will be able to maintain their personal capabilities, keep healthy, retain an image of themselves as useful individuals, remain active socially and as a citizen, travel if they wish, in summary maintain a dynamic and vital lifestyle in site of the change of residence.
- (2) Social relationships (0,641) are also considered important by the decision-maker, who wants the elderly person to like and enjoy the new place of residence (despite not having made the choice themselves) and to feel that it matches his/her needs and preferences, in terms of providing facilities to spend time with friends and relatives.
- (3) The decision made by the client's children or other relatives is also influenced by innovative aspects of the physical and structural characteristics of the institution (2,113), for a good location, security and pleasant surroundings will generate welfare and help the client to adapt well to the change.
- (4) Finally, the way in which the institution functions (1,883) has an influence on this type of decision, inasmuch as the decision-maker wants the client to retain his/her dignity, privacy, freedom of movement and personal autonomy, in spite of the institutionalisation decision.

### 6. Final comments

From the study we can conclude that, in fact, with regard to the choice of an institution for longterm residence, there exists a relationship between factors associated with the ageing process (on the one hand) and certain innovative characteristics of the institution (on the other). However, the relationship is clearly mediated by the identity of the decision-maker. As Table 3 indicated, whoever takes the decision (be it the client him/herself, the client's spouse, or the client's child(ren) or some other close relative), is influenced by and prioritizes certain institutional features. When it is a child or close relative that decides, more variables are taken into account in the decision where the elderly person will reside. As Sousa, Figueiredo & Cerqueira (2006) have Proceedings of argued, the family occupies a fundamental place in the decision on whether an ageing parent will or will not be institutionalised. When an adult child or children opt to institutionalise, the decision is frequently underpinned by a recognition of the parent's declining autonomy and increasing dependency (Perlini, Leite & Furini, 2007), and this places greater emphasis on an institution's provision of special types of structure/facilities and ways of functioning. Following the same authors, it was also possible analyse this decision in the light of the social pressure felt by the children: finding themselves to provide the necessary care at home, they tend to look for an environment that is even more attractive than where their parent(s) lived before. In addition to physical functionality, they look for professionally-administered care and the certainty that the needs of their parent(s) will be satisfied. Family decision-makers also stress that a is an important aid to their settling in to an institutionalised lifestyle.

As is the case with all studies, a number of limitations were identified either at the outset or while the research was being conducted. First, though the size of the group to which the questionnaire was administered (residents of the Lar Hotel and the Queen Leonor Centre) was thought to be reasonable for the type of initial study the authors hand in mind, it may be insufficient to accurately reflect the opinions of residents (or of their spouses/family) in all such institutions at national level. A second limitation is associated with the difficulty of researcher access to high-quality residential facilities for the elderly, which is partly a result of the ethical stand they adopt with regard to their residents' privacy, and partly due to an organisational resistance to outside scrutiny that is a feature both of the Santa Casa da Misericórdia, and of new privately-financed ventures in this market.

The fact that relatively little research has been undertaken on innovation in social sectors, and even less on the demand for and functioning of residential institutions for the aged, constitutes a third limitation of this study. As such, the theme of social innovation is itself innovative, and suffers from both the positive and negative consequences of this status.

A fourth limitation has to do with the unprecedented nature of the research either in the Portuguese or other European contexts, which rules out comparisons between the results presented here and those of other studies.

However, the limitations sketched out above furnish new opportunities for future research, and it is to be hoped that the methods described here and the results produced will constitute an acceptable starting point for other studies. Firstly, due to the relative unevolved nature of the concept of social innovation, future studies on this theme should focus on identifying and testing more variables related to innovation. Since clients and their carers appeared to have very different conceptions of what constituted innovation and what did not, the concept As deployed in this research needs to be further developed, including a more rigorous disaggregation into its component parts than has been attempted here. Improvements in conceptual specification will have implications for the research methodologies used in the future: the collection of more detailed data on the variables associated with innovative services for the elderly may demand, for example, the use of triangulation methods (i.e. approaching the same issues from several perspectives via additional questions), or the collection of more qualitative data via a second round of interviews, or by using focus groups of clients, decision-makers and/or institutional managers. Secondly, because of the limited sample size, future studies should attempt to survey larger populations of the elderly in more institutions of this type, thereby improving the representativeness of the sample, the robustness of the results, as well as the possibilities of making well-founded inter-regional or even international comparisons.

The results of this study have various implications for the management of institutions providing long-term residential to the elderly already established in this market, among which possibly the most important relates to the need for managers to focus on the innovative aspects of the facilities and services the institutions offer. Those making institutionalisation decisions particularly stressed the value they attach to the provision of an institutional environment conducive to (a) maintaining contact with the client's social networks of friends and family; and (b) providing an innovative range of recreational and "wellness" services. In conclusion, it is worth noting that this wider range of services, constantly monitored, assessed and updated, could not be provided by the institution

itself, but rather through a network of local specialist firms. In turn, the expanded provision of such services would build a substantial and more solid market for local enterprises of many types, thereby contributing to local employment and value-added retention, and to local human resource development.

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# The Bridge Between Science and the Market – How to Build It?

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We live in a world of constant development, growth, innovation and changing needs and nonetheless cultural habits. How to sustain this constant change and how to adapt to globalisation, technological change and constant creativity and innovativeness of key human resources inside larger corporations as well as knowledge institutions is answering the concept of corporate entrepreneurship, new ventures and academic spin-off creation. Article will show the trend in the field of new venture and academic spin-off creation, involving human and social capital as key success factors. Barriers and innovative solutions will be presented on how to overcome the issue of lacking cooperation between academia and industry. Relevant best practices and experiences will be presented to be discussed as opportunities that can find the place in the region and its entrepreneurial development and regional growth.

#### Keywords

Academic spin-off, Early-Stage Financing, Knowledge-Intensive Regions, Knowledge-Intensive Companies, New venture.

### 1. Introduction

We live in a world of constant development, growth, innovation and changing needs and nonetheless cultural habits. How to sustain this constant change and how to adapt to globalisation, technological change and constant creativity and innovativeness of key human resources inside larger corporations as well as knowledge institutions is answering the concept of corporate entrepreneurship, new ventures and academic spin-off creation.

Corporate entrepreneurial advantages are ranging from tangible (e.g. physical, financial and labour resources) to intangible resources (e.g. human, social and intellectual capital). Recently the intangible character is becoming the key competitive advantage in entrepreneurial world, encompassing human as well as social capital, whereby an approach based on people is coming to the forefront of success factors. However, speaking about new ventures we can distinguish among those coming from academia and on the other hand those coming from larger corporate. In both cases two main choices need to be considered: spinning off or licensing out/selling off. Management and knowledge are here important key success factors.

Bearing in mind the need of more entrepreneurial attitude of research institutions, transferring knowledge from "producers" (public private research centres, universities) to "users" (potential entrepreneurs, firms, industry), different approaches need to take place.

In the 1990s spinning off new ventures from academic labs gained acceptance in Europe as a valid method of technology transfer. Entrepreneurship was also recognized as a key instrument of technology innovation (European Commission 1998).

Measures to be undertaken in the field of greater research results valorisation and new knowledge-based fast growing ventures creation are calling for changing the point of view and introducing more systemic approaches. An approach going from awareness rising and idea generation to research result commercialisation and exploitation in global markets is needed in order to reach higher level of knowledge exploitation and high level companies creation. This is a strategic need as the world has become more competitive as such and the market of knowledge has become more competitive as well.

### 2. New venture creation

In the second half of twentieth century innovation, new technologies and scientific research and development became an important factor in the economy. Both business sector and the non-profit society realized that gaining support for R&D departments and training more and more scientists are essential. Several new research organisations were created, universities enlarged their research abilities and the companies started to pour money into new research projects and established special departments (Raday). Such kind of environment fostered new venture forms which are more capable to utilize the cutting-edge technologies, to convert the scientific results into market success. Spin-off firms became well-known phenomenon both in academic life and in the world of corporate.

### 2.1 Technology transfer

Technology transfer refers to any process by which one party gains access to another's technical information and successfully learns and absorbs it into his production process. Technology may be codified (e.g., in blueprints) or un-codified (e.g., know-how of engineers). It may be embodied in products or disembodied in ideas. Technology ranges from choosing input mixes and output quality to organization of intermediate production stages, management, means of finance, and other elements (Maskus 2003).

The evolution of academic spin-offs took place due to the need for a transformation process. The result of academic research, the evolved knowledge cannot easily put onto the market because its complexity would be an obstacle to be instantly useful for industry. Therefore a special process is needed which is called knowledge transfer or technology transfer. The technology based spin-off firms can proceed this transformation through which the scientific knowledge is being converted into technological knowledge (Raday).

### 2.2 Characteristics needed

Managerial team at the start-up companies is usually the crucial success factor. There is widely accepted that managerial skill of an entrepreneurial team is a decisive point for venture capitalists considering to invest or not to invest, especially in case of new academic spin-off ventures.

But not only is a solid entrepreneurial team enough for success. For investors and for business idea to become a business opportunity further conditions need to be fulfilled:

- Motivation and trustworthiness of proposer
- Market potential
- Sustainability of business model from a financial point of view
- Technological position compared to the competition (competitive advantages- unique selling points)

The level of evaluative depth regarding these four areas of interest obviously depends on the maturity of the idea. There are two important phases of leading to the creation of businesses which the potential entrepreneur must be able to confront:

- The first phase of idea definition
- A second phase in which the idea is structured into a business project.

### 2.3 Investment and financing

Academic spin-off ventures are usually financed or expected to be financed by venture capitalists. Venture capitalists make the first screening and if interested the more detailed due-dilligence afterwards before investment decision.

The difficulties of new companies to getting early stage financing are due to the inability of this category of firms to provide a sound track record to investors, the low level of guarantee and a long wait (some years) before generating a positive cash flow. All these barriers evidently increase with the degree of innovation involved such as strong presence of intangible assets, not previous managerial experiences of the team, business model not well defined (higher the innovation higher the risks associated).

For all these reasons Knowledge based SMEs are not appealing for traditional financing operators so new tools aimed at supporting the equity component have been created during last years: Seed funds, Business angels, Venture capital funds.

### 2.3.1 Private-Public Partnership as a key success factor for seed and start ups funds

The creation of innovative companies is a key success factor for European growth and employment. For SMEs competing in high-technology sectors, the challenge of accessing growth capital is particularly acute particularly in the early stages of their development.

But a new knowledge based company is not appealing for banks due to the lack of a track record and of portfolio of customers and that their main assets are in the people know how. Over the last years the venture capital markets have been developed but, considering the high risk and the low returns, few venture capitalists decided to enter in the seed/start up stage.

The European commission has been encouraging the setting up of private-public partnership to manage seed funds, in order to better exploit the synergies. To sustain SMEs in the death of valley is a typical public aim but its successful achievement depends on the capability to select projects in accordance with market opportunities and business potentials, typically used by private organisation, and to accelerate their business. To have an independent private-public partnership is recognised as a key success factor for seed and start ups funds.

### 2.4 Intellectual property

Handling of intellectual property rights (IPR) is a sensitive question for both academic and corporate spin-off ventures. While the corporate spin-off can inherit a developed patenting

strategy and professional staff from its parent, this process at universities shows some laggard. There are some barriers which Universities or other research institutions can face: some research institutes do not have clear regulation of handling IPR which would cause troubles for potential investors. Another problem that some scientists are not aware of is losing their patenting opportunity if they publicise the results or ideas before filing, since publication invalidates the latter patent.

There are numerous approaches to the exploitation of intellectual property some of which are identified below (University of Toronto):

- 1. The patenting and eventual commercialization with an industrial partner of the concept/invention by the researcher either solely, or with the assistance of a third party such as the Innovations Foundation or Centres of Excellence,
- 2. Patenting, expressly for licensing to an industrial partner,
- 3. Non-disclosure, but commercialization based on know-how, possibly leading to a spin-off company opportunity,
- 4. The patenting of the concept and invention followed by the formation of a spin-off company to specifically develop the idea for the marketplace.

### 2.5 Environment for growing new ventures

For new ventures creation not only research and ideas production is necessary, the local and regional environment is a precondition for development in direction of knowledge creation and market exploitation of potential business opportunities. Regions producing new corporate and academic spin-off ventures are so called "Knowledge Intensive Regions.

### 2.5.1 What is a KIR (Knowledge Intensive Region)

Network1 based industrial (economic) system that:

- encourages openness, learning, information-sharing, co-evolution of ideas, flexibility of both labour and companies, and fast responses to opportunity and challenges.
- promotes collective learning and flexible adjustment among specialist producers of a complex of related knowledge and technologies and the market

Defining a supportive and knowledge-based environment creating new ventures further characteristic should be taken into regard:

- 1. Strong production of endogenous knowledge. A KIR is characterized by the presence of one or more basins of excellence (industries, universities, etc..) in one or more knowledge domains / research sectors. They represent a point of attraction of a Region, both for skilled people (talents) and companies.
- 2. The presence of a high quality highly mobile work force. It follows from knowledge intensity that a region cannot service a knowledge economy and move up the value-added scale without a high quality workforce. A highly mobile work force contributes to collective learning in a community. Although not allowed to transfer trade secrets, professional employees share tacit knowledge as they move from one company to another.

<sup>&</sup>lt;sup>1</sup> In a network system the functional boundaries within firms are porous, as are the boundaries between firms themselves and between firms and local institutions such as trade associations and universities.

- 3. *Ready acceptance of diversity and youth.* Presence of a large number of very young entrepreneurs, as well as many immigrant entrepreneurs. In a KIR the social and economic system emphasizes merit, so talented young people and immigrants are readily accepted.
- 4. An environment valuing entrepreneurship. Talents are highly valued in a culture which promotes and awards risk taking and an entrepreneurial attitude.
- 5. An effective habitat to turn research into economic value ECOsystem. The regional support system is the "black box", the habitat which turns knowledge into profit (for companies and society). The RSS of a KIR is providing in a strictly selective fashion, a complete and integrated chain of dedicated financial (from proof of concept to mezzanine finance) and non-financial support services, covering every single step from knowledge to market. Most of these services are made available thanks to the strong role of the private sector.
- 6. A dynamic economic texture. The presence of a dynamic and porous eco-system of firms ensures sustainability to the knowledge-based regional economic development path and provides that innovation is widely and rapidly diffused into regional economy and society.
- 7. *Nexus of relationships.* A KIR is deeply interconnected physically and virtually with the rest of the world. Institutions, businesses, research and education are run and naturally co-operate in an international perspective.
- 8. *Easily accessible and open.* A successful KIR is easy to be reached. Mobility of people feeds the flow of innovative ideas. Cultural diversity is positively affecting in a strong way the birth rate of knowledge-intensive businesses. A KIR is not defined by administrative boundaries. Anything that could be reached "commuting"<sup>2</sup> can be considered as belonging to a KIR.
- 9. *Quality of life*. Good schools for the children, good health and recreation facilities, and comfortable housing, rich surroundings.

# 3. Our best practice: I.TRAS.TE. (Innovation and Technology Transfer)

I.TRAS.TE. a model developed and experienced by META Group, awarded by MAP (Italian Ministry of Economic Development), supported by IASP, TII and PROTON, has been implemented together with University of Studies of Perugia and Sviluppoitalia (the managing Italian organisation of the Europe's largest network of incubators).

The project I.TRAS.TE. has the aim of fostering creative and innovative enterprises in order to strengthen and make more dynamic the economic texture, introducing a "Knowledge based" entrepreneurial drive. The selection of the new ventures, to obtain lasting results, is based on a "market driven" approach that regards the knowledge of the market as central to the process of analysis, closely followed by the peculiarities and motivation of the proposing team.

 $<sup>^2</sup>$  Travelling distance or time currently considered acceptable to go to work – In Italy no more than 2 / 2  $\frac{1}{2}$  hours / day.

I.TRAS.TE. foresees the creation of a system of incubator/accelerator based upon the two metropolitan centres of the region that would assure a continuous flow of information and services amongst the levels and within each level, as such:

- incubation of ideas: a virtual regional incubator that, through "antennas" placed in all the decentralized sites of the University of Perugia, that would make available to "potential entrepreneurs" and creative services devoted to the finalization of the idea;

- acceleration of enterprise: through the online linking of the incubator of the University of Perugia with the enterprise accelerator of Terni (both with the role of hub).

The mode of access to such mechanism will be represented by either the overcoming of the competition business idea (exclusively for the incubation of ideas) or the overcoming of the evaluation of "idea" in terms of market potentials and growth potentials, carried out by the relevant infrastructures.

The operational practice has shown that the fundamental assumption for the valorisation of the research's results is the identification of the most effective valorisation form with regard to the market potentials and the competencies/characteristics of the team. It thus follows that in the process of creation of start-ups that activity of Business Shaping", which is the definition of the entrepreneurial project and of the business model, acquires a crucial relevance together with its validation.

Thorough the mechanism of incubation of ideas, the aspiring entrepreneurs will be supported along such process with consultancy services and technical activity aimed at evaluating/exporting the aspects related to the market, also to the technical realization of the product and to the relative economic/financial aspects.

A distinctive element of the presented approach is the set of services for acceleration. The dynamism of the markets and the speed with which a solution becomes obsolete in creative based sectors make the reduction of the time to market as one of the key factors in the valorisation process. The services offered in the acceleration phase foresee solutions to specific problems such as the creation of a network of business contacts, at an international level, the definition of the market entry strategy, the team building and the support as business mentor to integrate creativity and business issues.

Another critical element is represented by the difficulty of obtaining capitals for the support and development of the activity of the new venture. The risks linked to the highly technological sectors and the absence of an historical record, on which the analysis of the business could be based, make rather difficult, or at least expensive, the contacts with the traditional channels of financial broking; on the other hand in order getting in contact with institutional investors, national and international funds, also private venture capitalists, is almost unthinkable for newborn enterprises especially in creative industry.

This activity develops on two levels:

- A first level destined to prepare the enterprises at encounters with investors (Service of Investor readiness, to evaluate the level of preparation of the enterprise or of the potential entrepreneur to have contacts with capital risk funds or business angels)

- A second level devoted to accompanying and present the projects to the network of investors in risk capital.

There are in fact international agreements with some financial operators willing to offer a range of alternative tools, from participation to the risk capital to the participative loans, to the traditional financing instruments supplied by the banking operators, that would fulfil the financial needs of the knowledge based spin-offs.



Fig. 1: Own source (META Group)

The modality for accessing such mechanism will revolve around the overcoming of the business idea competition (exclusive for the incubation of ideas) or the surmounting of the evaluation of the "idea" in terms of market and growth potentials, carried out in the dedicated structures.

It is foreseen the creation of a *Knowledge Exploitation Fund*<sup>3</sup> to assure that the accompanying and supporting measures are more effective and clear and to manage in a harmonious way the services dedicated to the ideas and enterprises.

The project is at the base of the course relative to the "valorisation of knowledge" that the University of Perugia, in collaboration with META Group, BIC Umbria and other local actors, has undertaken from the 1990s and that has led, amongst other things, to the designing of dedicated financial instruments, in terms of risk capital, for innovative enterprise, to the participation to European networks on innovation, to close collaboration with the other research centres operating in Umbria, to the dialogue with medium/large enterprises on these themes and to the recent creation of the Spin-off Office.

### 4. Conclusions

In an economy characterised by a high rate of competition and dynamism, the production of knowledge and innovation are driving forces in economic development. The presence of an adequate base of innovative businesses is recognised as an essential characteristic in fields of high competitiveness. Such businesses are in fact characterised by a strong acceleration, which results in the provision of work opportunities, employment and integration with socio-economic groups at an international level.

To conclude, today, to bridge the gap among research and productive world is a priority. However, evidence from Universities and other research institutions in Europe and other

<sup>&</sup>lt;sup>3</sup> Knowledge Exploitation Fund, a fund not conceived in a traditional way, is an "umbrella" containing the totality of actions and services provided by the project I.TRAS.TE.

countries indicate that the typical volume of knowledge transfer flux and research results valorisation from research centres and other knowledge institutions is relatively low.

As such, the starting point for assessing knowledge in the market is to identify and examine achievable impacts and benefits from all the intervention in this area, and in doing so to establish concrete policy recommendations.

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### Towards Better Understanding of the Social Entrepreneurship as the Precondition of Technology Transfer Process

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The overall research theme in this paper is social entrepreneurship. This is related to and motivated by the growing attention this phenomenon. The first part of the study deal with social entrepreneurship in cocept, the second – understanding od technology tranfer process. The third part initiates discussion on the role of social entrepreneurship in technology transfer as the precondition of sustainable development pursuit.

### Keywords

Social entrepreneurship, technology transfer.

### 1. Introduction

Scientific problem. Social entrepreneurship is one of the most misunderstood phrases in the nonprofit sector today. Everybody, it seems, has a different definition of what it means. However, the idea of merging mission and money filled with distaste. But the phrase "social entrepreneur" is bandied about freely these days. Here is the gist of the problem: Unless a nonprofit organization is generating earned revenue from its activities, it is not acting in an entrepreneurial manner. It may be doing good and wonderful things, creating new and vibrant programs: but it is innovative, not entrepreneurial. Only earned income will ever allow a nonprofit to become sustainable or selfsufficient. It's one thing to design, develop and implement a new program - and quite another to sustain it without depending on charitable contributions and public sector subsidies. The biggest challenge is actively developing forms of technology transfer that will directly benefit the people that needed it mostly. In some relatively rare cases, the utility of a new technology will be enough to reach all levels of society. Various forms of creativity are needed. Some are purely technical, others require social innovation - by combining modern science with the practical experienceof traditional communities. These activities should not replace conventional technology transfer. Just as countries need new forms of social entrepreneurship to meet the needs of the people, so they need new types of social technology transfer for such entrepreneurship to flourish. The objective of the paper is to discuss the preconditions of the involvement of social entrepreneurs in technology transfer processes. The methods of the research: In order to conceive the analyzed problem, general methods of scientific literature comparative structural analysis and synthesis as well as those of logic analysis were applied.

### 2. Issues on Social Entrepeneurship

The analysis of academic literature shows, that the concept of "social entrepreneurship" Has been rapidly emerging in the private, public and non-profit sectors over the last few years,

and interest in social entrepreneurship continues to grow. "In light of this, social entrepreneurship is emerging as an innovative approach for dealing with complex social needs. With its emphasis on problem-solving and social innovation, socially entrepreneurial activities blur the traditional boundaries between the public, private and non-profit sector, and emphasize hybrid models of for-profit and non-profit activities". The idea of "social entrepreneurship" has struck a responsive chord. It is a phrase well suited to our times. It combines the passion of a social mission with an image of business-like discipline, innovation. The time is certainly ripe for entrepreneurial approaches to social problems. Many governmental and philanthropic efforts have fallen far short of our expectations. Major social sector institutions are often viewed as inefficient, ineffective, and unresponsive. Social entrepreneurs are needed to develop new models for a new century [3]. Defining what social entrepreneurship is not an easy task. This is in part because the concept is complex, and in part because the literature in the area is rather new that little consensus has emerged on the topic [1], [2], [3], [4]. Though the concept of "social entrepreneurship" is gaining popularity [1] it means different things to different people. Anyway, the definition of the term "social entrepreneurship" must start with the word "entrepreneurship." The word "social" simply modifies entrepreneurship. If entrepreneurship doesn't have a clear meaning, then modifying it with social won't accomplish much, either [4]. The word entrepreneurship is a mixed blessing. On the positive side, it connotes a special, innate ability to sense and act on opportunity, combining out-of-the-box thinking with a unique brand of determination to create or bring about something new to the world. On the negative side, entrepreneurship is an ex post term, because entrepreneurial activities require a passage of time before their true impact is evident. In common parlance, being an entrepreneur is associated with starting a business, but this is a very loose application of a term that has a rich history and a much more significant meaning. The term "entrepreneur" originated in French economics as early as the 17th and 18th centuries. In French, it means someone who "undertakes," not an "undertaker" in the sense of a funeral director, but someone who undertakes a significant project or activity. Writing around the turn of the 19th century, authors use the term in this way, "The entrepreneur shifts economic resources out of an area of lower and into an area of higher productivity and greater yield." Entrepreneurs create value [3]. Later on entrepreneurs were described as the innovators who drive the "creative-destructive" process of capitalism. In his words, "the function of entrepreneurs is to reform or revolutionize the pattern of production." Contemporary writers in management and business have presented a wide range of theories of entrepreneurship [3], [4]. But the common among them is that entrepreneurs have a mind-set that sees the possibilities rather than the problems created by As most authosr notice, We should build our understanding of social change. entrepreneurship on this strong tradition of entrepreneurship theory and research. Social entrepreneurs are one species in the genus entrepreneur. They are entrepreneurs with a social mission. However, because of this mission, they face some distinctive challenges and any definition ought to reflect this. One argument for this is that only founders of socially beneficial organizations that primarily rely on earned income from paying consumers are social entrepreneurs. Others say that this definition is too narrow - that income should also include contract payments, grants and donations.

In spite of the varying definitions of *social entrepreneurship*, one commonality emerges in almost every description: the 'problem-solving nature' of social entrepreneurship is prominent, and the corresponding emphasis on developing and implementing initiatives that produce measurable results in the form of changed social outcomes and/or impacts.

In light of this, social entrepreneurship is emerging as an innovative approach for dealing with complex social needs. With its emphasis on problem-solving and social innovation, socially entrepreneurial activities **blur the traditional boundaries between the public**, **private and non-profit sector**, and emphasize hybrid models of for-profit and non-profit activities. Social entrepreneurs:

- *tackle major social issues*, from increasing the college enrollment rate of low-income students to fighting poverty in developing countries;
- operate in all kinds of organizations: innovative nonprofits, social purpose ventures such as for-profit community development banks, and hybrid organizations that mix elements of nonprofit and for-profit organizations;
- generate social value-not wealth-is the central criterion of a successful social entrepreneur. While wealth creation may be part of the process, it is not an end in itself. *Promoting systemic social change is the real objective*.
- see and *act upon what others miss*: opportunities to improve systems, create solutions and invent new approaches that create social value. And like the best business entrepreneurs, social entrepreneurs are intensely focused and hard-driving-even relentless-in their pursuit of a social vision [4];
- *change agents in the social sector:* they attack the underlying causes of problems, rather than simply treating symptoms;
- *recognize* and relentlessly pursuing *new opportunities*: the key element is persistence combined with a willingness to make adjustments as one goes. Rather than giving up when an obstacle is encountered;
- engage in a process of continuous innovation, adaptation, and learning: Entrepreneurs are innovative: they break new ground, develop new models, and pioneer new approaches. Innovation can take many forms. It does not require inventing something wholly new; it can simply involve applying an existing idea in a new way or to a new situation. Entrepreneurs need not be inventors. They simply need to be creative in applying what others have invented [3].

The proposal of this paper—meant to be understood with appropriate flexibility—is that social entrepreneurship is exercised where some person or group: (1) aim(s) at creating social value, either exclusively or at least insome prominent way; (2) show(s) a capacity to recognize and take advantage of opportunities to create that value ("envision"); (3) employ(s) innovation, ranging from outright invention to adapting someone else's novelty, in creating and/or distributing social value; (4) is/are willing to accept an above-average degree of risk in creating and disseminating social value; and (5) is/are unusually resourceful in being relatively undaunted by scarce assets in pursuing their social venture [7]. The single most important of these criteria is the first in that it serves, conceptually, to distinguish social entrepreneurship from other forms. There is no exact way of fixing the border below which the importance of social goals fails to gualify something as social entrepreneurship. It is a commitment to providing social value that marks the divide between social and their forms of entrepreneur. As in the case of the social aspect of the target concept, this list represents a catalogue from which particular users of the notion will choose somewhat selectively both as to what they include and how they weight the factors. All these characteristics preserve the distinctive status of social entrepreneurs whom we need to help us find new avenues toward social improvement as we enter the next century. However, these new avenues might be easier found and driven not only by single technologically innovative leaders, but also these ideas admitting actors.

### 2 Issues on Technology Transfer: What is The Course?

The 1960s began an unprecedented period of science and technology development, which has continued throughout the remainder of the 20th mentury. Technology transfer begins with an idea for applying an existing technology in new ways (supply push), or with an idea for improving the features and functions of an existing product by acquiring an existing technology (demand pull). It ends with a new or improved product available in the marketplace. This process spans a wide range of activity, with much of the initial and final stages thoroughly studied. However the crux of the matter—the transformation from

technology invention to product innovation—is not well documented or understood. What is technology transfer? Despite the dearth of rigorous analysis and the absence of consensus on a single definition, one can readily focus discussion by identifying the unique value of "technology transfer" that differentiates it from related activities and initially prompted coining the phrase [5]. In the management literature, technology transfer is usually considered within or across firms, such as the dissemination of information through transfers of employees from one division or country to another. Anyway, technology transfer does and should continue to represent a value-added process that encompasses a continuum of related activities from laboratory innovation through market consumption. The phrase "technology transfer" is operationally defined here as:

- (what) the novel application of existing technologies or prototype devices,

- (who) by members of multiple stakeholder groups,
  - (where) operating through research and development facilities,
    - (when) collectively viewing transfer as a feasible, attractive option,
      - (why) to commercialize an innovation,
        - (*how*) through the synergistic matching of capabilities to needs [5].

The academic literature states that technology transfer offers a "win-win" situation for the participants. By implementing an already developed (and already financed) technology in a new and novel application, the originators gain returns from a new market and the appliers meet a need while avoiding the cost of development [5], [6], [8], [9]. Technology developers in Federal, corporate and university laboratories—as well as those working in their garages and basements—are working toward an explicit goal. Whether they succeed or fail in attaining their goal, the process of discovery and invention yields new technologies offering novel capabilities. So called technology developers or the actors or even stakeholders do participate in the technology transfer process which might be described by classical model (Figure 1):



Figure 1 Simplified technology transfer process (according [10])

Some literature review the further elements of the process after a new technology is being employed in a firm [9], [11] (Figure 2):



Figure 2 New mechanism for transfering technology [9]

However, the resumptive conclusion here is that the In fact, technology transfer is only in the formative stages of a discipline. There is little systematic analysis of the process of technology transfer, and empirical data is limited to quantification of intermediate outcomes. This is to be expected from an activity that evolved through application rather than theory, and which is still more widely practiced than studied [3]. Very often the process is analysed separating the actors (federal governmental agencies, universities, corporations) and their functions as well as responsibility. There is no a standard approach to conducting technology

transfer. We lack a common framework for program evaluation purposes. What objectives are achieved and what resources are consumed in the process? Is the process efficient and effective, and how does it compare to different approaches? The questions might be answered by analyzing the technology transfer models so rarely defined in scientific literature. The essential details of the models are presented in Table 1.

Model	Expression		
Interactive model	Associated with the "product view" of innovation. This model is best for understanding the motivations and goals of the various participants, and how those evolve and change as the innovation (product view) moves along the diffusion process. The interactive model is a guide for managing change in the <i>stakeholders</i> involved.		
Linked-chain model	Associated with both "product view" and "process view" of innovation. This model is best for analyzing how the initial innovation evolves and changes as the diffusion process progresses (process view). The linked-chain model is a guide for managing change in the <i>technology</i> involved		
Emergent model	A process view that applies holistic systems analysis to the innovation and diffusion process, because the organizational context is changing along with the innovation. This model considers the interaction of innovative activities with other factors, and its implications for the contextual operating environment. The emergent model is a guide for managing change in the organizations involved.		

 Table 1
 Model of technology transfer process (according [3])

Noting that actors should employ all three models to manage the technology transfer/innovation diffusion process, to optimize chances for success it is also important to conclude that technology is widely accepted as essential for improving the economy of a nation, especially in developing countries where industrial growth has occupied a very important role. Evidences across many countries, including both developed and developing ones, have shown there is an increasing appreciation that in the long term the ability to master technology and to manage and generate technological change is decisive in determining a country's international competitiveness and capacity to grow. As world becomes increasingly interdependent, the firms in developing countries are also increasingly seeking global R&D partnerships and Science and Technology collaboration as a way to build their capacity, strengthen their core competencies and expand into technology fields that are considered critical for maintaining social and economic regeneration processes [12] closely related with the sustainable development issues. Generally it is believed, that societal development should not lead to constraints on the chances of future generations meeting their needs. Unfortunately, the current level of uncertainty about the future and about political, economic and ecological development does not facilitate decision making by public institutions, businesses or private individuals. Acting without knowing all (or at least enough) the answers may mean that we purposely shift our focus to those areas where possible solutions do not emerge despite intensive sprawl of technology transferring dynamics. The

next chapter initiates the scientific discussion on the abilities of social entrepreneurs to meet the challenge.

## **3** Social Entrepreneurship in the Technology Transfer process: Call for Discussion

Concluding that social entrepreneurship is emerging as an innovative approach for dealing with complex social needs with its emphasis on problem-solving and social innovation, *socially entrepreneurial activities blur the traditional boundaries between the public, private and non-profit sector*, and emphasize hybrid models of for-profit and non-profit activities. Whether they are working on a local or international scale, social entrepreneurs share a commitment to pioneering innovation that reshape society and benefit humanity. Quite simply, they are solution-minded pragmatists who are not afraid to tackle some of the world's biggest problems (Figure 3).



Figure 3 The object of social entrepreneurship: getting the balance (authors' own presentation)

Social entrepreneurship, seen as a field of experimentation and innovation, has the potential to contribute new insights to the discipline of entrepreneurship, and also to the wider social sector. The interfaces between corporations, universities and public institutions offer great potential for discovering new forms of collaborative value creation in support of sustainable development [1] and creation of social value. The outcomes of social entrepreneurship are social value creation. The implications of social value creation are that while a forprofit enterprise operating in aged care would be able to identify its total outcome as superior value creation. The constraint of forces comprising the environment, the social mission and the need for sustainability produces a unique form of entrepreneurial behavior that is conceptualized as social entrepreneurship (Figure 4) [12]:



Figure 4 Bounded multidimensional model of social entrepreneurship [13]

Whilst the findings confirm the central role of social mission, the role of the relentless effort for sustainability seems to be equally important and technology transfer processes here might act the crucial role (Figure 5.)



Figure 5 Social entrepreneurship in the process of sustainable development through technology transfer process (author's own epresentation)

However, seeking to pursuit the purpose, the following errors must be avoided:

- The early hype error. In the short term, marketers, promoters and eager inventors seem to overestimate the impacts of any new technology and in the long term underestimate such impacts and consequences;
- The replacement hype error the belief that new technology will replace the existing incumbent technology & that this will happen relatively fast. In reality competing technologies often coexist over a long period of time;
- The enhancement error the belief that new technology will only solve old problems & supplement existing technological systems. Instead new technologies, especially platform or core technologies often lay the groundwork for entirely new systems and new resulting systemic problems;
- The panacea error the mistaken belief that new technology will function as a panacea for various social problems
- The patterning and sense-making error the difficulty of seeing new important links between seemingly unrelated and different fields of technology, especially in cases where this novel combination of fields is precisely what will offer major accelerated development opportunities;
- The social impacts error often people who have tried to predict the future have become bogged down in the actual technology and neglected the economic and social aspects;
- The prisoners of our times error That without realizing it, people tend to be prisoners of the spirit of their times, erroneously believing that the big issues of today will also be the big issues of tomorrow;
- The decision criteria error\_-The belief that only rational economic considerations are the only factors behind that choice of one technology over another. However, for many people, seemingly irrational considerations determine such choices;
- The information gap error the information on which science and technology (S&T) foresight studies are based on is often insufficient. Technology development is not linear, transparent or fully predictable, with surprise development coming out of left field such as the secret work that is done in the military or a new star-tup working in stealth mode before it goes public with a breakthrough. Entrepreneurs have to deal with many

unknowns -complexity, uncertainty, equivocality, ambiguity, the trap of dichotomous thinking or dichotomy, contradiction or paradox and infoglut [13].

### 4. Conclusive remarks

In this paper, it was drawn the corruption, economic development, and entrepreneurship and innovation literatures to advance the hypothesis that better involvement of social entrepreneurship in of technology transfer process would allow to obtain so pursued goals of sustainable development and regeneration. It gives the managers of global corporations a unique opportunity to learn and create new collaborative efforts that are in the corporations' own economic interest, while at the same time creating social value for those who need it most. This study has advanced research in social entrepreneurship in a number of ways. The first contribution lies in the development of an empirically derived model of social entrepreneurship identifying the core behavioral dimensions of innovativeness, proactiveness and risk management. The second contribution lies in identifying the optimization constraints within which social entrepreneurs operate and thus how they sharply

differ in their operational context from for-profit entrepreneurs. Social entrepreneurship is thus identified as a behavioral phenomenon operating within constraints but promoting the economic development processes through technology transfer. The model also identifies superior social value as the outcome of social entrepreneurship that will be involved in the author's further research.

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# The Role of Innovation Zones in Regional Development

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Innovation and regional development are two topics that were (separately) very much discussed by scholars and in recent literature there have been attempts to examine how the former is connected to the latter. At the same time, different types of regional agglomeration systems have been developed and discussed such as: clusters, hubs, innovation systems and their roles in regional development. However, there is a significant gap in literature particularly concerning Innovation Zones. Thus, there is a need to look into this concept and examine the benefits that Innovation Zones can provide to the region to which they are affiliated. An essential element that all the agglomeration systems should exploit is knowledge. As current literature indicates, the fundamental drivers for regional development consist of: knowledge agglomeration, appropriation and innovative use of knowledge. Innovation Zones are agglomerations of universities, businesses, research institutes and governmental organisations that cluster together, utilise knowledge, and exploit opportunities in order to generate valuable assets to the involved parties and the region to which they belong. Location, infrastructure and legislations play a very important role in the efficiency and effectiveness of the Innovation Zones. Thus, it is necessary to examine who are the main actors of an Innovation Zone, if the efficiency and the effectiveness of the Innovation Zone conditioned by location and the prerequisites for a successful Innovation Zone.

### Keywords

Innovation, Innovation Zones, Knowledge, Regional Development

### 1. Introduction

Innovation and regional development are two realms that (separately) are very much at the centre of scholarly attention. At present, many authors tent to associate innovation to regional development and examine its role in developing specific regions. Porter [18] wrote that *"in advanced nations, future prosperity will increasingly hinge on innovation – successfully developing and commercializing new technologies, new products and new processes".* Innovation *"is an ubiquitous phenomenon in the modern economy. In practically all parts of the economy, and at all times, we expect to find on-going processes of learning, searching and exploring, which results in new products, new techniques, new forms of organization and new markets" [7] and it <i>"involve[s] continuous interactivity between suppliers, clients, universities, productivity centers, standard setting bodies, banks and other critical social and economic actors"* [7].

According to Drucker [4] innovation is the act that endows resources with a new capacity to create wealth. Innovation leads to competitive advantage, consequently bringing greater profitability [19]. Knowledge is the key source of innovation and at the same time is an essential driver for economic development [18]. Different types of agglomeration systems

Full paper for International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 such as clusters, hubs, innovation systems, knowledge zones etc. are characterized by high level of knowledge creation and transfer and significant innovation capabilities. Common knowledge groups or clusters are formed by an organized and geographical mixture of firms having similarity in highly harmonizing capabilities for common research and development [15]. The importance of the innovation systems in regional development lies in the fact that the governments, at least in the advanced nations, are supporting regional innovation as a way to boost national competitiveness [2].

There has been a tendency among countries to prepare a plan at national and regional level for development to allocate the national economy at regional stage [8]. Since 1980, the concept of clusters and network has been a central idea for the increase of competitiveness and economic growth. The creation and formation of the clusters brought a new way in doing business in traditional local and regional level. The concept of Innovation Zones (IZ) came from the development of clusters. The difference between the two is that clusters are strongly connected to private incentives, whilst on the other side the creation of the IZs derives from governmental initiatives [13]. Engaging firms and other actors in playing a role in the regional development is a complicated task. This requires a constructive environment for research and development and drive for innovation and learning. IZs are agglomeration systems of innovation and major models for creating a supportive technology based advancements, innovation, learning, and knowledge-based regional development.

### 2. Method and Purpose of the study

IZ is an agglomeration concept that is not so much discussed by scholars. As a result during this research, significant difficulties were encountered in obtaining information related to this matter. Also, it proved challenging to find information and statistical data for the IZs case studies that were used (such as employment rate of the IZ, number of business creation especially in comparison to previous years, or any statistical information specifically on innovation zones). Therefore, in this study official and academic documents and interviews were used. The interviewees are people from the academic world that deal with regional development issues and people that are employed in science parks. The interview questions aim at defining the concept of IZs and obtain information on the role of IZs in the development of the regions they belong. Also, these questions attempted clarify the difference between similar agglomeration concepts such as clusters, innovation systems and IZs in order to orientate the research towards the correct sources. Also, due to the nature of the questions (from the interviews), and particularly the answers, direct quotations by the interviewees shall not be used. Instead this paper includes the suggestions, leads and resources made available to the author through talking to the interviewers. Consequently, the resources used in the course of this study, as well as the structure and certain views have been significantly shaped by the outcomes of these interviews. This research is a part of a larger study examining the Newark IZ in New Jersey, USA and the under construction IZ in Thessaloniki, Greece. The present paper refer to the case study of Thessaloniki IZ since the latter is not operating properly yet and it is not related to the purpose of this study which is to analyze the role of IZs in regional development and define the possible benefits that they offer to the regions to which they are affiliated through the use of theories and case studies.

### 3. Regional Development

Regional development deals with the analysis of a particular region in order to formulate a planned structure of development approach for that specific area. The theoretical literature of regional development encompasses a large number of theories for the development of the regions. According to regional development literature, diminishing the regional inequalities

Full paper for International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 and gaps will result in economic development. Higgins and Savoie, (through the theory of Cumulative Causation) explain that the countries where regional gaps were large, they were increasing further and where regional gaps were small they were diminishing [8]. Further, Myrdal noted that the more advanced countries are more likely to introduce an effective welfare state, introducing the measures to reduce regional inequalities, and thus keeping the upward cumulative movement going [8]. He justifies his argument by saying *"The more effectively a national state becomes a welfare state the stronger will be both the urge and the capacity to counteract the blind market forces which tend to result in regional inequalities; and this, again, will spur economic development in the country, and so on and so on, in circular causation"* [8].

But this circular effect should be seconded by the appropriate infrastructure and acts towards accumulation of diverse players in the region. According to endogenous growth theory the economic development comes from inside of a system. *"The endogenous growth models and analyses stress that agglomeration and localization phenomena generate positive external effects that outweigh the negative effects, especially if these phenomena are accompanied by appropriate regional infrastructure investments"* [11]. This theory points out the importance of investing in new knowledge creation in order to sustain the growth [3]. The main point of this theory is that knowledge brings growth. Bringing growth to a specific regional can control and manage the different economic activities of the region.

The location of economic activities can be determined on the regional level or narrowly on some kind of specific zones. Several writers have explained the theory of location through utilisation of theories of prices, production, employment and distribution [8]. Hoover [9] explained the personal preferences of managers, scientists and engineers as vital. In this theory as he explains in his book, *"Everyone has some preference as to consumer location, i.e., where he would like to live and spend his income. For all but an envied minority there is also the question of producer location, i.e., the best place to earn an income... Most people come to prefer the kind of environment in which they have been living rather than some other social, racial or institutional atmosphere; unfamiliar climate and landscape, or change from urban to rural living or vice versa" [9]. Mobility in regional economics is important, as noted in Higgins and Savoie book, since many enterprises like to work where they were born and stay. <i>"Personal factors such as proximity to home and family location preferences features prominently in the result of location surveys*" [8]. These factors of governing mobility are of prime importance in the theory at hand from the perspective of regional development.

### 4. The role of knowledge and Infrastructure

According to Munnich, Schrock and Cook, [17] knowledge is clustering geographically not only because it is complex nature, but also because it is embedded in individuals and it is difficult to be transferred across space, be it tacit or explicit. Thus, it is necessary for this knowledge to be obtained through actual interaction with the environment in a specific time and place [6] and have the people collaborate with one other.

Knowledge infrastructure, knowledge generation and protection, knowledge agglomeration and appropriation and innovative use of knowledge are the fundamental drivers for regional development [10]. Knowledge can deliver growing profits to scale and it can be used again with almost no marginal cost [3]. Cortright [3] mentioned that in order to achieve continuous growth, it is important to reach increasing knowledge, rather than increase of capital or labour. Although the new information technology has enabled world-wide transfer of explicit knowledge, the mobility of tacit knowledge – which is important source of regional development - is not easy and the present of face-to-face interaction is essential [16].

#### 4.1 Infrastructure & Knowledge Based Infrastructure

In order for the IZs to function and survive the possible challenges, it is essential that infrastructure and especially technology infrastructure exist in the region. Technology and innovation are two very close meanings. Consequently, technology infrastructure is a characteristic a region should demonstrate in order to host an IZ. George Tassey said: "The technology infrastructure consists of science, engineering and technological knowledge available to private industry. Such knowledge can be embodied in human, institutional or facility forms. More specifically, technology infrastructure includes generic technologies, infra-technologies, technical information and research, and test facilities as well as less technically-explicit areas including information relevant for strategic planning and market development, forums for joint industry government planning and collaboration, and assignment of intellectual property rights" [5]. Considering infrastructure as generic, multiuser and indivisible enabling activity can lead us to understand the existence of 'knowledge' infrastructure [5]. The infrastructure has great significance for the economics of a country, as the industrial production is dependent on the knowledge transfer and utilization. Such knowledge can either be formal or tacit [5]. Thus, the presence of universities, research centres and any knowledge transfer or creation vehicle is necessary.

### 5. Innovation Zones

When firms; highly skilled labour; and knowledge institutions (typically universities and research facilities) cluster together [14] can generate valuable assets to the involved enterprises and their customers. Also, they can produce strong networks inside this system, and lead the region in which they operate to high level of growth. This shows that interaction between universities, companies and research institutes can have a positive effect on a region, and the industries in this region can benefit from this. In that way, the regions can produce regional innovation systems in order to accumulate innovation activities and networking and exchange tacit knowledge [12]. Innovation Zone is a kind of agglomeration systems that is characterised by high level of interaction between its actors. Unfortunately, research on European and International level showed that there is no official and specific definition for the IZs. The definition of IZ varies according to the initiatives that are created in national and regional level. The definitions of IZ that are found are known as Keystone IZs (USA compilation) or Knowledge IZs (international compilation) [13]. An IZ is a geographical area that is located close to universities and hospitals and the enterprises that belong to the IZ will be given support, financial benefits and specialized supportive consulting services [13]. "It is a geographic defined area, with specific geographic borders leading to the formation of an island of land with entry and exit points. This land can also become unique and privileged and through the institution of a special legislative framework applicable only to the Zone area" [1]. The purpose of IZ is the fast transfer of the knowledge and ideas from the laboratories to the market, in order to introduce new opportunities for economic development and creation of new employment opportunities [13].

The stages that are followed in order to form an IZ and implement such ventures are the following:

- Discussions and analysis of the competitive issues of this venture before the start of the project.
- Initiation of the venture by specialising the section of the different activities; the promotion of the venture through exhibitions and presentation of it to the interested parties.
- The implementation of this idea in order to attract more prospective interested parties
- The venture gets a more official and stable form

The actors of the IZ are categorised in the main groups of Academic (universities), Businesses (Incubators, enterprises), Government (governmental organizations) and Research (Research Institutes). The idea of the IZ is a governmental initiative and most of the actors in the IZ receive

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IZs such as those in New Jersey (IZ of Newark, Camden and Brunswick) or in Pennsylvania offer a variety of benefits for the people and the businesses that belong to the zones. The companies that are located in these zones can enjoy benefits such as opportunities that are highly related with partnerships and are coordinated by the state. Some examples are:

- The provision of a funded incubator for small firms and start-ups that can enjoy a big number of services in a technology and business related environment.
- The zones enable the relationships between the universities and the high-tech businesses and the industry researchers have the opportunity to access university labs and the students can be placed in industrial labs.
- Provision of technical assistance to the start-up, and the collaborative research facilities provide strategic cooperation.

For example the Newark IZ is located in the centre of the city of Newark, which gives it the advantage of being very close to vital infrastructure. It is also close to commercial and industrial centres and it includes governmental, education and medical facilities.



Figure 1 Newark Innovation Zone

There are some critical factors for success or failure of an IZ that are enlisted as follows:

- Existence of one or more well defined economic activities
- Existence of infrastructure of knowledge creation and provision of technological services (Universities, research institutes, laboratories, etc)
- The research activity is oriented towards the technological development and diffusion
- Existence of entrepreneurship that is oriented towards specific sectors of interest of innovation
- Strong linkages and networks (common research, exchange of personnel, common patents, relationships between customer-supplier) among the different enterprises and between them, universities and institutes
- Existence of Media infrastructure
- Existence of entrepreneurial, innovative and collaborative culture in the enterprises, universities and institutes
- Existence of investment capital and innovative funding methods
- Commitment of the government and existence of a common vision and plan of the development of the venture [13].

IZs are located in places with strategic location and essential infrastructure that plays a very important role in the development of the zones. Due to these assets that their locations have, the IZ can attract easier business activities and develop further their operation and consequently create job opportunities and sustain their population. According to location theory, the people and the firms prefer to live and work in places that are familiar with and where they have been born. Thus, IZs can maintain they population by keeping their residents in their cities. The location in

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which the IZ belongs plays an important role in the efficiency and effectiveness of the latter especially if this location contains the appropriate infrastructure and knowledge infrastructure to support agglomeration systems such as IZs.

IZs attract a large number of businesses and economic activities. These activities maintain their interactive nature by the innovative use of knowledge. In the zone that creation and transfer of tacit or explicit knowledge is essential for the growth and development of the involved parties in the zones. The agglomeration of the above mentioned phenomena creates a general positive effect. At this point it is essential to refer to the importance of the government's role in the development of the innovation zone lies mainly, on the need of financial support. Innovation zone is a large range project that needs a consistent financial commitment in order to sustain the support of new businesses and development of the zone. Finally, another important part of the government's role is the flexibility that it can perform in terms of legislations and taxes.

# 6. Conclusions

IZ is a geographical area that is located close to universities and hospitals and the enterprises that belong to the IZ will be given support, financial benefits and specialised supportive consulting services. "It is a geographic defined area, with specific geographic borders leading to the formation of an island of land with entry and exit points. This land can also become unique and privileged and through the institution of a special legislative framework applicable only to the Zone area". The purpose of IZ is the fast transfer of the knowledge and ideas from the laboratories to the market, in order to introduce new opportunities for economic development and creation of new employment opportunities.

IZs attract a large number of businesses and economic activities. These activities maintain their interactive nature by the innovative use of knowledge. In the zone that creation and transfer of tacit or explicit knowledge is essential for the growth and development of the involved parties in the zones. Based on the reviewed literature and the different regional development theories, IZs are in a position to deliver regional development by bringing together academics, businesses institutes and foster innovation and business creation. What helps them to develop and grow is not only the high level of collaboration, but also the appropriate regional infrastructure and knowledge infrastructure that is surrounding them and the privileged location in where the IZ is situated, that plays an important role in the efficiency and effectiveness of the latter especially if this location.

Finally, considering that Innovation Zones are governmental incentives, the government's commitment to its legislative support and the consistent financial reinforcement to the zone is essential driver for development not only of the innovation zones but also for the whole region in which they belong.

# 7. Further research

Quantitative analyses of the innovation zones that could bring numerical results and statistics on the direct contribution of the zones to the development of the regions they belong could prove essential not only for the identification of the real involvement of the innovation zone in regional development but it might help in improving the performances of the innovation zones. For instance, the number of the businesses that the innovation zones create and at the same time the job opportunities that are generated in the zone can show how the innovation zones are involved in the reduction of the unemployment by presenting statistical data and make a comparison to previous years. Also, a continuous quantitative research the comparison of the performance of an innovation zone over the years will actually show that if the innovation zones can bring a sustainable growth to the regions they belong.

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# **Risk Management – Claimed for Changing Challenges to Advantage**

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The main idea of this paper is risk management at the moment of changes and challenges. At the time of Global economic crisis, risk management is very important in any kind of investment. This paper includes market researching and analyzing of investment risks. There will be presented a set of properties for measures of risk, as well as the methods for risk analyses. Besides that, the paper will include the models and techniques which are used in risk management. Value at risk (VaR) is an important and widely used measure of the extent to which a given portfolio is subject to risk present in financial markets. Conditional Value at Risk (CVaR) is also analyzed, as the expected loss exceeding Value at Risk. Risk management uses many different methods for choosing the optimal investment solution or portfolio. A case study for the portfolio is performed to demonstrate how the new optimization techniques can be implemented in investment processes.

#### Keywords

Risk, Risk Management, Investment Processes, Portfolio Optimization, VaR

## 1. Introduction

At the time of Global economic crisis, risk management is very important for choosing the optimal investment solution.

Investment portfolios are nowadays characterized with lower incomes and higher value of risk. Because of these reasons, using the methods and techniques for analyzing and calculating potential risk of the investment portfolio is of the great importance for investors. Risk can be measured with different software solutions, and some of them will be presented in the paper with practical examples.

# 2. Value at Risk in Portfolio Optimization

Risk can be defined as the volatility of unexpected outcomes and generally the value of assets or liabilities of interest. Business risks are those which the corporation willingly assumes to create a competitive advantage and add value for shareholders, while financial risks can be defined as those which relate to possible losses in financial markets.

Risk exposures are typically quantified in terms of a "Value at Risk" (VaR) estimate. A VaR estimate corresponds to a specific critical value of a portfolio's potential one-day profit and loss probability distribution.

Value at Risk (VaR) is an important measure of exposure of a given portfolio of securities to different kinds of risk inherent in financial environment. By now, it became a tool for risk management in financial industry [1] and part of industrial regulatory mechanisms [2].

VaR is a simple and intuitive measure of risk. Some other frequently used, but not equally intuitive measures of risk are the variance, the semi-standard deviation and the conditional value at risk (CVaR). [3]

The CVaR measure is closely related to VaR. For continuous distribution, CVaR is defined as the conditional expected loss under the condition that it exceeds VaR. Numerical experiments indicate that usually the minimization of CVaR also leads to near optimal solutions in VaR terms because VaR never exceeds CVaR. Therefore, portfolios with low CVaR must have low VaR as well. Moreover, when the return-loss distribution is normal, these two measures are equivalent, so they provide the same optimal portfolio. [5]

The concept of mean-variance optimization, developed by Markowitz, is the cornerstone of modern finance theory and a powerful tool for efficiently allocating wealth to different investment alternatives. [6] The technique incorporates investor preferences and expectations of return and risk for all assets considered, as well as diversification effects which reduce overall portfolio risk. [7]

Calculation of portfolio VaR is often based on the variance-covariance approach and makes the assumption, among other things, that returns follow the normal distribution.

Focusing on downside risk as an alternative measure for risk in financial markets has enabled developing a framework for portfolio selection that moves away from the standard mean–variance approach.

The measure for risk depends of a portfolio's potential loss function, itself a function of portfolio VaR.

Introducing VaR into the measure for risk has the benefit of allowing the risk-return trade-off to be analyzed for various associated confidence levels.

The VaR for a portfolio is simply an estimate of a specified percentile of the probability distribution of the portfolio's returns over a given holding period. [8]

# 3. Risk Analyses in Portfolio Optimization

Modern portfolio theory aims to allocate assets by maximizing the expected risk premium per unit of risk. In a mean variance framework risk is defined in terms of the possible variation of expected portfolio returns. [4]

Portfolio optimization has come a long way from Markowitz (1952) seminal work which introduces return/variance risk management framework. [5]

Risk analyses in portfolio optimization will be presented in the software programme *"What's Best"* which is a supplement for the *Microsoft Excel*, made for creation of a great number of portfolio models. [9]

Example:

For earning the income of 15% of the invested capital, with limit that investor do not want to invest more than 75% in one lot of shares, it is needed to calculate the percent of investing in shares with minimal risk. The capital will be invested in 3 kinds of shares. [9]

First of all, the user inserts limits, which is 75%. After that, he inserts expected incomes from each share, and then how much capital he will invest. After that, the programme opens the sheet, as it is presented in the Figure 1.

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7	Asset 2	24,8% 🗖	<=	75,0%	20,0%	1,0	2,0	-0,4	
8	Asset 3	56,9% 🗖	<=	75,0%	8,0%	-0,5	-0,4	1,0	
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15	Return	15,0% 🗖	=>=	15,0%					
16	Variance	0.42							

Figure 1: Results in What's Best programme

From the Figure 1 there are visible results: In share 1 investor should invest 18.3% of capital, in share 2 he should invest 24.8% of that capital, and in share 3 should invest 56.9 % of capital, with limit 75% of investing in one share. The portfolio for this example would give the income of 15% with risk 0.42. On this way, investor can very easy calculate the risk of his portfolio.

#### 3. VaR Calculations

Calculating of VaR will be done in the *Matlab* software, and presented with example of portfolio with 10 assets:

```
 \pi = 0.0038 \cdot SJPT - 0.0026 \cdot ENHL + 0.0059 \cdot MTBN + 0.0066 \cdot ALFA + 0.0022 \cdot KMBN \\ -0.0013 \cdot EURO + 0.0042 \cdot USD + 0.9910 \cdot A2012 - 0.0055 \cdot A2015 - 0.0042 \cdot A2016
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This software can optimize the portfolio and give VaR for every day of investor's investment activities. In this example only VaR for one day will be presented.

Example:

Calculation of VaR starts with calculating the portfolio value for defined day. First of all, there will be moved vectors of daily closing prices of all 10 assets in the portfolio. [10] After that, there will be shown vectors of 11 coordinates:

SJPT = [1039 1049 1054 1038 995 999 1007 1000 1009 1011 998]; ENHL = [761 765 759 742 722 746 752 755 785 794 800]; MTBN = [7340 7772 6717 6751 6783 6800 6800 6950 6962 6760 6700]; ALFA = [8489 8000 8500 8000 7800 7800 7800 7500 7201 7016 7350]; KMBN = [28750 27000 28033 27529 27033 27000 27001 27001 27700 27000 27002]; EURO = [95.8888 96.3166 96.3022 95.9120 96.0766 96.4887 96.4440 96.2262 95.9658 96.1655 96.4499]; USD= [66.7285 67.2320 66.9882 66.6426 66.7848 67.2067 67.6705 67.3146 66.8984 66.8838 66.9884]; A2012= [89.5 89.12 89.5 89.22 89.14 89.2 89.08 89.09 89 89 88.98]; A2015= [77.45 77.89 77.89 77.57 77.47 77.48 77.42 77.43 77.31 77.53 76.921; 74.96 74.71 74.67 75 75.7 A2016= [75.69 74.96 75.7 74.5 74 73.85];

These vectors are imported in categories and formed in matrix V, as is shown on the Figure 3. In the columns of the matrix there will be given daily closing prices for all assets of the portfolio, chronologically back. Since there are prices for 11 days, form of the matrix will be 10x11.

V=										
10000*										
0.1039	0.1049	0.1054	0.1038	0.0995	0.0999	0.1007	0.1	0.1009	0.1011	0.0998
0.0761	0.0765	0.0759	0.0742	0.0722	0.0746	0.0752	0.0755	0.0785	0.0794	0.08
0.734	0.7772	0.6717	0.6751	0.6783	0.68	0.68	0.695	0.6962	0.676	0.67
0.8489	0.8	0.85	0.8	0.78	0.78	0.78	0.75	0.7201	0.7016	0.735
2.875	2.7	2.8033	2.7529	2.7033	2.7	2.7001	2.7001	2.77	2.7	2.7002
0.0096	0.0096	0.0096	0.0096	0.0096	0.0096	0.0096	0.0096	0.0096	0.0096	0.0096
0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0068	0.0067	0.0067	0.0067	0.0067
0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089
0.0077	0.0078	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0077	0.0078	0.0077
0.0076	0.0075	0.0075	0.0075	0.0075	0.0075	0.0076	0.0076	0.0075	0.0074	0.0074
Figure 3: Matrix V										

 $w = 0.0038 \quad -0.0026 \quad 0.0059 \quad 0.0066 \quad 0.0022 \quad -0.0013 \quad 0.0042 \quad 0.9910 \quad -0.0055 \quad -0.0042$ 

Function in the software:

function rez=vredport(w,V,j); [m,n]=size(w); [p,q]=size(V); y=[w(1,1)\*V(1,j) w(1,2)\*V(2,j) w(1,3)\*V(3,j) w(1,4)\*V(4,j) w(1,5)\*V(5,j) w(1,6)\*V(6,j) w(1,7)\*V(7,j) w(1,8)\*V(8,j) w(1,9)\*V(9,j) w(1,10)\*V(10,j)]; vj=sort(y) j end

Value of the optimal portfolio on one day is calculated with formula:

$$\pi^j = \sum_{i=1}^{10} v_i^j$$

Since the portfolio has 10 assets, n = 10.

*VaR* for  $\alpha = 0.1$  and  $\alpha = 0.05$  can be calculated:

- If  $n \cdot \alpha \in \mathbb{N}$ , then:  $VaR = v_{[n \cdot \alpha]+1}^{j}$
- If  $n \cdot \alpha \in \mathbb{N}$ , which is in our example, then:  $VaR = \frac{1}{2} \left( v_{n \cdot \alpha}^{j} + v_{n \cdot \alpha+1}^{j} \right)$

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After that, the new function is made:

function rez=VaR(alfa,vj,n); [m,n]=size(vj); if n\*alfa==1; VaRR=1/2\*(vj(1,n\*alfa)+vj(1,n\*alfa+1)) else VaRR=vj(1,fix(n\*alfa)+1) end

For the first day, v is:

Total value of the optimal portfolio on the first day: sum(y) = 236.7587

VaR =-1.2515	VaR =-2.0800
For $\alpha = 0.1$	For $\alpha = 0.05$
Sum(v) = 230.7307	

Calculation:

 $-1.2515 \div 236.7587 = x \div 100\% \implies x = -\frac{1.2515 \cdot 100\%}{236.7587} = -0.5286\%$ That means, with probability 90% the loss will not be greater than 0.5286%.  $-2.08 \div 236.7587 = x \div 100\% \implies x = -\frac{2.08 \cdot 100\%}{236.7587} = -0.8785\%$ 

And, with probability 95% the loss will not be greater than 0.8785%.

*Matlab* software on this way calculates VaR of the portfolio for the chosen day, which is significant for risk analyses in investment processes.

# 4. Conclusion

At the time of Global economic crisis and new challenges, there are many reasons for financial risk modeling. Stronger perception of the importance of risk management, deregulation enabling more risk taking, and technical advances encouraging both risk taking and facilitating the estimation and forecasting of risk. The motivations for market risk modeling are obvious.

Value at Risk (VaR) techniques are widely used to assess the risk exposure of investments, and software methods for risk analyses are constantly developing. According to the obtained results, risk management in investments is necessary for changing challenges to advantage, especially in conditions of global recession.

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# Vojvodina as region for creating and developing new technologies: Case Study for Mosdorfer Company

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This paper tends to present potential strategies for expansion of R&D for company Mosdorfer (Austria), which is representative of electricity supply industry and operates in global market. Worldwide R&D operations of this organization will be mentioned, with particular emphasis on different strategies. As a proposal for creating and developing new technologies for Mosdorfer, Vojvodina innovation and R&D potentials will be analyzed in details. Venture financing in region of Vojvodina could have multiply effects. The strategy of financing new technologies would relay on lowcost R&D, cost-competitive workforce, the unused intellectual capital and creativity of young professionals, as well as subsidies for investment in technology innovation and job creation. According to research of Cisco Institute, it is predicted that in the period up to 2011. Serbia would have significant increase in innovative performances, which presents good indicators for companies which want to finance the development of new technologies in the territory of Vojvodina and Serbia. In addition, Vojvodina is currently the best and most attractive region for foreign investors compared to other Europe regions, witch is shown by research of the attractiveness of a destination for investment, according to which, Serbia is ranked as the third production destination in the world. The paper presented a concrete proposal of financing the development of new technologies by company Mosdorfer, from the aspect of location of R&D sector in Vojvodina, which Mosdorfer Company could realize in the near future. Vojvodina is close to Austria, where is the headquarters of the company. We believe that this idea argumentative represents an excellent opportunity which the company could use.

#### Keywords

Investing in Vojvodina, innovation and R&D, globalization, Mosdorfer Company

#### 1. Introduction

As business becomes increasingly global, corporate innovation strategies are becoming more global as well. Multinational companies are spending a significant and growing share of their research and development money outside the countries in which they are headquartered. Resant researsch found that in 2007, the top 80 U.S. corporate R&D spenders deployed an estimated US\$80.1 billion of their \$146 billion R&D funds overseas. The top 50 European companies spent \$51.4 billion of their \$117 billion total outside the

continent. In Japan, the top 43 Japanese firms exported \$40.4 billion of their total \$71.6

billion to other countries. Mosdorfer is a company with headquarter in Weiz, Austria, with a tradition of more than two and a half centuries. In the last fifty years company is successfully operating in the domain of electro industry. Today, Mosdorfer is world-famous manufacturer of large range of parts and accompanying equipment for high, medium and low voltage networks, as well as in the field of optical cables. In addition, the company emerges as an innovative partner in the field of energy, telecommunications and rail transport. The primary goal of company is to satisfy the highest standards and to offer quality products that will provide reliable and safe distribution of electricity. Management of this company is now facing the global approach, both in terms of sales and production, as well as in terms of R & D. For many years, Mosdorfer company supported the strategy of locating the research and development outside of Austria with special emphasis on developing countries such as Serbia. Vojvodina, as the most developed region of Serbia, is a good opportunity for investment for the company such as Mosdorfer.

# 2. Globalization of R&D

Globalisation increasingly affects how companies in developed countries operate, compete and innovate, both at home and abroad. Global competition drastically shortens product life cycles, while the growing integration of different technologies makes innovation riskier and more costly. Companies more and more internationalise knowledge-intensive corporate functions, including R&D, and simultaneously open up their innovation process to collaborate with external partners (suppliers, customers, universities, etc.). This clearly has important implications for policy making, given the contribution of (business) innovation to economic growth. In order to match the growing demand for innovation from customers, suppliers, etc., with the worldwide supply of science and technology, (large) companies increasingly adopt so-called "ecosystems of innovation" across countries. They link into these global innovation networks with people, institutions (universities, government agencies, etc.) and other companies in their own or different countries to solve problems, source knowledge and generate ideas. These global innovation networks include own R&D facilities abroad as well as collaborative arrangements with external partners and suppliers, in which firms depend in various ways on the expertise of the different partners [1].

The globalization of R&D is not new; companies have been locating research and development facilities abroad for decades. IBM founded its first overseas research centre, in Zurich, Switzerland, in 1956, and Japanese auto companies have had design studios in the U.S. since the 1960s. The share of R&D facilities located outside the home markets of multinational corporations, however, has been rising steadily, from 45 percent in 1975 to 66 percent in 2005, according to a study from 2006 [3]. That share continues to increase: Between 2004 and 2007, global multinationals increased their total R&D sites by 6 percent, and of those new sites, 83 percent were in China and India. They also increased R&D staff by 22 percent; 91 percent of that increase was in China and India. To gain further insight, it was closely examined the global innovation footprints of the top 100 R&D spenders, along with the top 50 companies in each of the three highest-spending industries: auto, health care, and computing and electronics. The 184 companies in this group support more than 3,400 facilities in 47 countries around the world. Together, they spent more than \$350 billion on R&D in 2007. That amounts to 71 percent of the total spend and 57 percent of all privatesector R&D spending. On average, just 45 percent of these companies' total R&D spending occurred inside their home countries [2].

Moreover, companies that invest wisely in a multinational innovation footprint are gaining far better returns on their R&D investment than companies that exclusively keep their laboratories at home, or that fragment them across a wide variety of locations. The study

found that the companies are spending an average of 55 percent of their innovation dollars outside their home country, demonstrating how international the practice of innovation has become over the past several decades [2]. All the biggest companies are now multinational, and their R&D footprints reflect the need to succeed in the global economy to compete against nimble and fast-growing local and international operators, win share in unfamiliar new markets, understand the customers in those markets, recruit talented scientists and engineers, and capture the best ideas from around the world. Fully 91 percent of this year's Global Innovation 1000 already conducts innovation activities outside the countries in which they are headquartered.

Opponents of globalization stress that moving of R&D in transition economies is "export" of high-paying science and engineering jobs to low-cost countries (LCCs). However, cost reduction is not the most important of the several reasons that multinationals are moving their R&D facilities abroad. Furthermore, it is receding in significance. The underlying reasons are more complex and multifaceted. They include:

- Lower costs. The initial impetus for conducting research and development overseas was
  often to save money, in part by replacing higher-paid "home-country" engineers with
  lower-paid replacements in LCCs. However, analysis shows that lower engineering labor
  rates explain only one-third of the move to site R&D facilities overseas. Labor costs are
  rising rapidly in many LCCs as demand for skilled engineering and other talent grows. In
  India, for example, the wage rate for high-end service workers was 53 percent of the
  equivalent rate for U.S. workers in 2005. In 2008, the percentage had risen to 65
  percent, and it is projected to rise to 77 percent in 2012 and 90 percent in 2020.
- Access to talent. Many companies are heading overseas in search of access to the burgeoning numbers of talented engineers and scientists around the world, and to the ideas that they are generating. The number of skilled engineers is increasing rapidly, not just in India and China but in many other countries, and their importance at every stage of the innovation value chain, from ideation to research to product development and testing, is growing. Global companies are learning quickly that specific countries are gaining specific skills (automotive engineering in India, electronics in China), and they are chasing that talent accordingly.
- *Market proximity and insight*. As companies sell their products and services in markets around the world, they find it valuable to site R&D closer to those growing markets.

However, not all global innovation strategies are created equal. An international footprint for R&D, in itself, is no guarantee of improved performance. To succeed, companies must develop R&D strategies that are carefully aligned with overall corporate strategy and appropriate for the business environments in which they operate. Then they must execute those strategies through careful management of their far-flung R&D empires. Companies that approach their innovation footprint this way tend to perform better on a variety of performance indicators.

As the evidence from these top innovation spenders shows, when corporations move to globalize their R&D efforts, there is much to gain. The research and engineering talent to be found in emerging markets is growing rapidly in sophistication, training, and skills, a trend that will accelerate as these markets become more developed. Companies seeking new sources of ideas are sure to gain from that growing talent pool. And as those emerging markets evolve and grow, they will become more attractive to companies looking to do business there. That in turn will make it incumbent on them to understand those markets and develop more products locally, if they hope to remain competitive with other global competitors as well as with increasingly sophisticated local players. Simply globalizing one's innovation footprint, however, will not guarantee success. Companies must be careful about where to deploy their R&D resources, keeping in mind where the best talent can be found and which markets they want to enter. And there are operational challenges in performing

R&D overseas: Too much fragmentation of effort, for instance, can undermine the large investments in infrastructure and technology that a global footprint requires, and can cost companies greatly in lost collaboration. The virtues of a global innovation strategy are real, but so is the need to execute that strategy intelligently and to track the benefits. Given these factors, it is no wonder that cutting costs is fast receding as the primary motive for sending R&D overseas [2].

On the other hand, developing countries have switched reluctantly from inward-looking strategies with a large role for the government to market-friendly strategies that force them to face a new multilateral milieu, one in which they have little experience and with which they are often poorly prepared to cope. Institutions continue to remain largely independent and national [4].

In general, there are now two opposing views regarding the impact of Transnational corporations (TNCs') R&D on the host countries [5]. One view considers inward R&D-related FDI to be beneficial to economic growth, by providing technology and managerial skills, which in turn create indirect positive effects for the host country at a lower cost. These positive effects include technical support to local suppliers and customers and contract jobs from foreign R&D units to local R&D organizations, etc. The counter view argues that R&D activities by foreign firms tend to tap into unique local R&D resources with little or no benefit to the host country. Concentrating on problems of little relevance to the local economy, they may be a little more than disguised "brain-drain", diverting scarce technical resources from more useful purposes [6]. Also, the cost factor may be that such R&D activities may create islands of high-technology enclaves with little diffusion of knowledge into the economy. However, over the long term knowledge and skills cannot be isolated. The mobility of researchers, the need for local procurement of persons and materials etc. are bound to diffuse technologies throughout the economy [7].

# 2. The advantages of investing in Vojvodina (Serbia)

AP Vojvodina is the northern province of Republic of Serbia which occupies an area of 21 500 km2 which represents 24.3% of the total area of Republic of Serbia. According to the census in the year 2002 Vojvodina had 2 031 992 inhabitants [8]. With approximately one fourth of the population and area of Serbia, Vojvodina contributes roughly 40% of Serbia's GDP [9].

AP Vojvodina is the member of the Assembly of European Regions of the Parliament of the EU, as the first, and so far the only region that became a member whose country was not at that time member of the EU or the Council of Europe. Furthermore, Vojvodina is the co-founder of the regional council of the DKMT (Danube-Kris-Mures-Tisa) Euro-region, besides Vojvodina, also encompasses several counties from Hungary and Romania, and whose task is cooperation in regional economic, cultural and ecological development.

Education in Vojvodina has a long tradition and is highly developed – from elementary, through middle and higher education, all the way to doctoral studies. The existence of the entrepreneurial University of Novi Sad, established in the early sixties, has created a dynamic environment that yielded an ever expanding community of high-tech companies. More than 20 companies, spin-outs of the University-based research, are now operating with more than 800 developers, a turnover approaching 16 million EUR, and with an annual growth rate of more than 30%. Several international companies have already established their development offices in Vojvodina, or are currently seeking ways to do it.

Labour market in AP Vojvodina is characterised by high unemployment, large hidden unemployment, low share of employment in the private sector and insufficient labour force mobility. Unemployment has long-term, structural and transitional characteristics. The rate of employment had a declining tendency from 2005 to 2006, while it reached the level of 42,6%

in 2008 [8]. The unemployment rate in AP Vojvodina has decreased in the period between 2005 and 2008, by 5,7 percentage pints. In 2008 this rate was 14,2%. The average unemployment in the European Union is 7,9% (according to Eurostat). Most unemployed persons, in 2009, were registered in the age group between 25 and 29 years, 24.767 of them, which is 12,4% from the total number of unemployed. Figure 1 shows unemployed persons per industry and educational level [8].



Figure 1 Unemployed persons per industry and educational level [10]

An optimal ratio between labour costs, productivity and quality of the workforce provides an attractive basis for successful business in Vojvodina. Labor costs in Vojvodina in 2009 are shown in figure 2. One of the priority and key factors in making an investment decision for present foreign energy suppliers in Vojvodina was the availability and experience of the labour force in this branch of industry. As well as the experience and know-how of energetic companies in the region, the University of Novi Sad offers education for 40,000 students, with specific programs adapted to the needs of investors in Vojvodina. The presence of high quality research and educational institutions for electrical and mechanical engineering at the University of Novi Sad provide support for investors in this sector. Also, the highest percentage of English, German and Hungarian speaking people in the country is based in Vojvodina. This exceptional value of the workforce in Vojvodina is already being used by many international components suppliers [10].

NET Salary (EUR)	%	332.17*
Personal Income Tax	12.00	48.06
Contributions (employee)	17.90	83.01
GROSS Salary	463.24	
Contributions (employer)	83.01	
TOTAL COST	546.25	

Source: Statistical Office of Republic of Serbia

Figure 2 Labor costs in Vojvodina in 2009 [12]

The high-tech sector in Novi Sad is organized in a virtual Science & Technology Park which serves as a meeting point and coordinates actions of its members. A high-tech Incubator is currently being established, to speed up the process of creating new R&D based companies. The University of Novi Sad, with its students and teaching staff, is continually supplying the market with young talent [9]. One of the fourteen Integrated Regional Development Plan of Vojvodina (IRDP) measures is the Building Business Incubators Project (BBI) designed to establish and maintain business incubators in the region of Vojvodina (Novi Sad, Zrenjanin, Subotica) to significantly support the socio-economic development process in the region, considering the development of new businesses as a key factor for the future economic growth of the region. Development of Novi Sad business incubator will be the first project

component of the Science and Technology Park in Novi Sad. The BBI measure especially supports:

- IRDP Strategy 1.1: "Development of SMEs sector"
- IRDP Strategy 2.3: "Improving the R&D and business cooperation"

For manufacturing companies seeking to invest in emerging markets, low production costs are essential. Other factors then come into play, including the location's risk premium, its distance from key export markets (as the Model assumes 50% of production is exported) and the local corporation tax rate. According to rankings of the Manufacturing Index developed by The PricewaterhouseCoopers Egypt and Bulgaria emerge as the leaders in the group in 2008, followed by Serbia, India and Vietnam [11]. Many regions of the world are represented in the top ten: Africa, Eastern Europe, Asia and Latin America. The results for Serbia, the third-placed country, in the Manufacturing Index, illustrate the impact that significant changes in country risk premia can have on index rankings. However, Serbia was placed 25th in 2004 and its move up the rankings to third place in 2009 essentially reflects the fact that its political risk, an element contained within the country risk premium applied in the model, has more than halved over the intervening years. Another point to note is that Serbia's corporation tax is set at a low level of 10% [11].

According to research of Cisco Institute, it is predicted that In the next five years, nearly 60% of the 82 countries studied are likely to improve their innovation performance. Overall, between 2007 and 2011, it is expected a 6% increase in innovation performance on average for the 82 economies in the ranking. This increase will be achieved because of rising R&D spending and ongoing improvements in the quality of IT and communications infrastructure. It is also predicted continuing improvements in most of the indirect or environmental drivers of innovation. Despite some moves towards protectionism and anti-competitive practices in a few areas, most economies are benefiting from greater economic openness, improved IP rights and better conditions for financing innovative investments. According to study Serbia will have the greatest growth from 2002. till 2011. (of 18 points) in innovation performances in the region and progression of 6 grades in rank (from 67 up to 61). [14]

Country	FDI inflow in tausend \$
Austria	2,633,585
Greece	1,687,437
Norway	1,556,700
Germany	1,477,990
Netherlands	1,063,757

Figure 3 Net FDI in Cash by Country of Origin for the Period 2001 – 2008 in % [13]

As it noted in Figure 3, Austria is the largest foreign direct investor in the Republic of Serbia. A large part of the investments made so far was conducted in the region of Vojvodina, and thus there is a rich experience of Austrian companies in domain of different industries. Precisely this fact can be of great importance for Mosdorfer company witch could in easy and fast way get the experience from Austrian colleagues and significantly relieve their potential enter to the market.

In order to balance regional development and to increase the inflow of direct investments that have a favourable impact on the job creation and transfer of new knowledge and technologies, Government of the Republic of Serbia is offering funds for investment projects in the following sectors: manufacturing, research and development and internationally marketable service sector. Any legal entity registered on the territory of the Republic of Serbia has right to receive these funds for investment projects in all industries, except for projects in the areas of agriculture, tourism, catering/hotel industry and trade.

Investments into research and development sector that have the minimal value of €250,000 and securing at least 10 new job positions in the period of three years following the allocation of funds. Available funds: from €5,000 up to €10,000 for every new job position created. For investment projects of special importance for economic development of the country, in the electronics industries and ICT amounting to more than €200 million and providing at least 1,000 workplaces, the Republic of Serbia can offer financial support of 25% of the investment amount. Other tax incetives are: 10-year corporate profit tax holiday for investment over €6.5 million and 100 new employees, Corporate profit tax credits up to 80% of the fixed assets investment, Carrying forward of losses over a period up to 10 years, Accelerated depreciation of fixed assets, 5-year corporate profit tax holiday for concessions, Salary tax exemptions for employees under 30 and over 45 years, Annual income tax deductions up to 50% of the taxable income, Social insurance contributions exemptions for employees under 30 and over 45 years, Annual income tax deductions up to 50% of the taxable income, Social insurance contributions exemptions for employees under 30 and over 45 years, Annual income tax deductions up to 50% of the taxable income, Social insurance contributions exemptions for employees under 30 and over 45 years of equipment based on foreign investment, Salary tax base deduction in the fixed amount of €60 a month

# 3. Case Study for Mosdorfer Company

The supply of innovative manufacturing techniques and the development of future-oriented products by the Mosdorfer company have roots that stretch right back to the 14th century. The first mention of a sword smith's shop was made over 600 years ago - and the organisations command of technological development has gone from strength to strength ever since. Throughout these centuries, the smithy and its associated metalworking were focal point of the company's activities, which was mentioned by the name "Mosdorfer" for the first time in 1712. This tradition of metal processing is also the basis of the company's advances in manufacturing techniques and of the quality of Mosdorfer products. Today's visionary thinking and innovative research are preparing the company for its decisive role in the market of the future [15].

Mosdorfer's product range of fittings for the telecommunication sector is relatively new. Due to the legal opening of the market there was a boom in transmission of information via existing overhead lines. Mosdorfer was able to adapt to the market in time and transferred its experiences in the field of technical highly developed and reliable fittings for fibre optical cables. Substantial tests within the in-house climate and oscillation laboratory support the company offering fittings for different types of cables for thousands of kilometres at home and abroad.

Whether it's about of direct investments or joint ventures, Mosdorfer company employs 320 workers worldwide, in addition to the existing 120 employees in Austria. Modern visionary thinking and implementation of innovative research, combined with the positive working atmosphere and business climate in the company, are of crucial importance for the company and its position in the market in the future.

The specificity of Mosdorfer produce is the high coverage of market niche in the wide market the electric power distribution equipment, so the 87% of production is outbound for export. Customers are also specific. Most customers are national electro distributive companies, mainly in the majority state-owned, with public procurement, which have specific requirements and procedures. Thus, different levels of development in countries, economic power and cultural differences require careful accession segmentation, targeting and positioning in each market segment.

As a company which produces high quality products and which invests a lot of its money into R&D activities, potential expansion strategy in the area of Vojvodina can be considered by company's management. Much potential, especially when speaking about qualified manpower, lays in this region.

# 4. Conclusions

The rapid pace of globalization over the past several decades has created a complex and highly dynamic business environment; every corporation must bring to its market strategy a multinational perspective. Corporate R&D represents a significant part of that shift. Therefore, companies around the world have already invested heavily in aligning their innovation efforts with the global strategies they have adopted to pursue profitable growth.

Vojvodina is the engine of Serbia's economic development and host region to some of the most significant foreign companies such as Lafarge, Stada, ATB Austria, Tarkett Sommer, Dräxlmaier, Linde AG, Lohr, Erste Bank, Credit Agricole and many others. Vojvodina is proud to be recognised as a place to make profit, as some of the above investors are already reinvesting to expand their production capacities. The Government of Serbia has done a great deal to improve the legal framework in order to make the investment climate more favourable. Corporate profit tax has been brought down to 10%, among the lowest corporate profit tax in Europe.

Mosdorfer company operates globally with different strategies for different markets. Depending on market conditions, the company creates a different strategy for each region in which production, sale or R&D is carried out,

Strategy for R&D would be most relied on domestic investment in talented professionals, competitive labour costs, and subsidies for the R&D and creating a new jobs. Vojvodina is currently the best and most attractive region for foreign investors compared to other regions of Europe.

Mosdorfer company has R&D sector which constantly gives solutions for new products. Since Vojvodina is very attractive location for foreign investors, beside sectors for production and distribution, the company could also move a part of R&D sector in Vojvodina, where it could find high-educated researchers and realize some strategies for the global market.

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# Budgeting – A Tool for Improvement of Operations of Small and Medium Enterprises

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The budget is one of the most commonly used tools, primarily for planning and controlling the conduction of business. Its importance lies in turning managerial attention towards the future, as well as anticipating and resolving potential problems and threats on the one hand and exploitation of opportunities and chances on the other hand. A good budget can be a difference between financial success and insolvency, and the basis for the success of the budget is in its relationship with the company's strategy and operations.

In the time of constant changes, challenges and an increasingly open competition, most small and medium enterprises are faced with two main problems: lack of financial resources necessary for the realization of goals of its founders and a lack of knowledge, both in the field of managerial practice, and in the domain of business process modeling. This paper will demonstrate the role and importance of the budget as the primary management tool with which the companies set goals, determine the need for resources and sources of funds, and summarize the expectations of management regarding future results of the company. In addition, the paper will show what types of budgets there are and how the budgeting process is done in order to facilitate small and medium enterprises to model and standardize their operations while still maintaining flexibility and ability to generate new ideas necessary to create and maintain competitive advantage.

#### Keywords

Budget, budgeting, master budget.

#### 1. Introduction

Planning is a process of determining aims and finding ways for their realization. This process is necessary for survival and development of all business entities, including small and medium enterprises. Plans can be classified into strategic and operational. Strategic plans are products of top management and they define general goals of an organization. [1] They refer to the long-term period and to a wider range of activities of the company. Operational plans (budgets) are derived from strategic goals, which a company has to achieve in every fiscal year, that is to say, within the shorter period of time.

# 2. Budget and types of budget

The main task of top management or the owner of a company is to define long-terms goals of company as well as strategy that will allow the goals to be attained. Successful companies manage to establish a clear link between strategies and operations and to form strategic plans which cover the period from several years to several decades of five or more years as well as short-term, operational plans, that is, budgets derived from them. Such companies, therefore, plan to generate long-term goals and chosen strategies into quantitative projections in the form of budget. In other words, they plan activities for a set of successive, shorter periods of time, which will allow the long-term goals to be attained.

Budget can be defined as "quantitative expression of a proposed plan of action by management for a future time period and is an aid to the coordination and implementation of the plan". [2]

Budgeting has several significant functions, such as: planning function, allocation of resources, communication and coordination of activities of company's segments, motivation of managers and control function.

There are different types of budget, such as fixed and rolling budget, incremental budget, zero-based budget, master budget.

Fixed budget refers to the given fixed period of time, usually for one year. On the other hand, "rolling budget is a plan that is continually updated so that the time frame remains stable while the actual period covered by the budget changes." [3] Practically, if we form rolling budget for one year, and after one month we add one month after the period expires so rolling budget always includes a period of one year. All these things allow us to have the budget containing accurate and up-to-date information. The disadvantage of this type of budget is considerable amount of time needed to form it.

Incremental budget starts with "the budget from the previous period and achieved results as well as with expectations in the future when defining the budget for the following period." [4] The advantage of incremental budget lies in the fact that we take into consideration both expectations in the future and past experience while forming it. However, managers often take the results from the previous period when forming it and then simply add certain percentage of increase neglecting the evaluation of market.

Zero-based budgeting identifies the costs that are necessary to implement agreed strategies and achieve goals, as if the budget-holder were beginning with a new organizational unit, without any prior history. [5] Practically, this type of budget starts each new budgetary period from zero, which requires deeper analysis of each item in the budget; also, its forming requires more time.

# 3. Master budget

The master budget is a comprehensive expression of management's operating and financial plans for a future time period (year, quarter, month) that is summarized in a set of budgeted financial statements. [6] It is prepared for whole company and it encompasses a set of partial budgets of all organizational segments.

The two basic parts of master budgets are operational budget and financial budget. Operational budget results in budgeted income statement, whereas financial budget includes cash budget, capital budget and budgeted balance sheet.

While developing master budget it is necessary to observe strategic goals, predict the condition of macro-economic environment of the company and the industry where the company belongs to; also, it is necessary to form more detailed plans of sales according to market, territories, customers and products and prepare production budgets and

manufacturing costs budget, which are in accordance with the predicted sale, then to prepare the budgets of non-production costs, budgeted balance sheet, capital budget, cash budget and budgeted balance sheet.

#### 3.1 Sales Budget

The ending point of forming the sales budget is predicting the amount of products that a company will sell in the future period of time and defining planned purchase price. Managers project a plan of sale expressed in physical units on the basis of collecting the data about the volume of sale realized in the previous periods and maximum size of production capacities and on the basis of assumptions about predicted future economic business conditions and solvent demand, business operations of competitors and demands of buyers. Afterwards, planned purchase price of product should be defined so physical plan of sale will be turned into a plan of gross sale income. The leading companies define "the prices of their products within the limits that determine general economic conditions, regulation of prices by government or society, customs and intensity of competition" [7] paying attention to the size of costs per production unit and expected profit margin. The other companies accept the prices defined by market leaders or government.

It should be taken into consideration that the planned gross income will not be achieved as a whole as some customers will return their products, demand discounts or they will not be able to pay off their debts. Planned net sale income is obtained by subtracting the amount referring to the returned products, discounts and bad debts from planned gross income.

#### 3.2 Production Budget

Production budget is formed according to projected sale for the future period of time, which means that the range of production depends on the range of sales. As has been mentioned, sale is defined either by demand or production potentials of the company.

The demands that a company faces sometimes shows seasonal oscillations. In this case the company may decide to adapt its production to demand, which includes unequal use of capacities and probable increase in total costs in average. The other option of the company is to ignore the oscillations of demand and equally use its capacities, which results in piling the inventory and increase in costs of storing and maintaining the inventory. "The efforts to make production more constant makes sense only if the total savings of production costs are higher than additional costs of inventory." [8]

In addition to the current demand and when defining the range of production for the future period we may consider starting and ending inventory so we get the production budget in the following way:

Production budget (piece) = projected sale in the current period (piece) + desired level of ending inventory in the current period (piece) – starting inventory from the previous period (piece).

#### 3.3 Direct Materials Budget

When forming direct materials budget, the starting point is production budget expressed in physical units and planned materials spent per unit of product expressed in physical units. The planned materials spent per units to be produced is usually determined by engineers when projecting the products and these figures are included in the document known as technical specifications.

#### Material for units to be produced (expressed in physical units) = production budget \* planned materials spent per unit of product

Total material to purchase expressed in physical units is defined by the range of production and planned inventories and it can be obtained in the following way:

Total material to purchase (expressed in physical units) = material for units to be produced + desired ending inventory budget – beginning inventory budget

Ideally, companies can get necessary materials directly before the production because turning working capital into inventories will be minimal. There are, however, the reasons why a company wants to buy a larger amount of materials than it needs in the immediate future, and they include possibilities to get rebates on amount, the intentions of a company to buy larger amounts of material before the prices go up, protection of a company from expected shortages on the market or from unreliable suppliers. When supplying the materials we have to pay attention to the period of time which passes between sending an order form and getting the materials so the materials will be available in the company when they are needed. Due to this period of time, companies usually keep the minimal inventory needed for continuity of the process of production.

In order to transform total material to purchase from physical into price units it is necessary to predict the prices for buying direct materials. It is clear that the historical prices cannot be valid in the future due to the changes on the supplies market so they are determined on the basis of past experience, conversation with suppliers, estimation of future economic conditions on the supplies market etc.

Projected purchase (in price units) = total material to purchase (in physical units) \* planned price of materials per unit

Projected purchase defines the amounts, types and value of materials which should be supplies as well as the time when they should be obtained.

#### 3.4 Direct Manufacturing Labour Costs

"Direct manufacturing labour costs depend on the level of salaries, method of production and plans for employment" [9] and they are proportionate to the dynamic range of production.

Direct labour for manufacturing one unit of product is expressed in direct hours of labour per unit of product. The estimation of direct hours of labour necessary for producing one unit of products is usually made on the basis of the study of steps, which means that the process of production is divided into steps necessary for carrying out the operations and measuring time necessary for carrying out these steps. By adding time necessary for conducting particular movements, we get the norm or standardized time necessary for each operation. Having determined direct hours of labour per unit of product we may calculate total direct labour hours necessary for realization of the plan of production.

Total direct labour hours = production budget (in physical units) \* direct hours of labour per unit of production

Then the total direct labour hours are turned into the plan of costs by planned costs of direct labour per hour. Of course, the costs of direct labour per hour vary depending on the qualification of the employees, their experience and position.

Total costs of direct labour (in price units) = total hours of direct labour \* costs of direct labour per hour (in price units)

#### 3.5 Manufacturing Overhead Budget

Manufacturing overhead budget represents the costs formed within the production department and they can not be associated with particular products at the moment of forming

or planning. It is necessary to divide manufacturing overhead costs into variable and fixed. Variable manufacturing overhead costs include costs of indirect materials, indirect labour, costs of heating, lightening, production maintenance, whereas fixed manufacturing overhead costs include lease costs for premises, depreciation, insurance etc. Therefore, manufacturing overhead budget includes the production budget, except direct material budget and direct manufacturing labour costs.

Variable manufacturing overhead costs refer to the range of production, whereas fixed costs are predicted in the total amount within the production department.

Total projected manufacturing overhead budget (in price units) = fixed manufacturing overhead costs + rate of variable manufacturing overhead budget \* direct hours of labour necessary for planned range of production

The rate of variable manufacturing overhead budget is based on the direct labour hours which are used as the basis of allocation, and we get it when we divide total variable manufacturing overhead budget by direct hours of labour necessary for production of planned range of production.

#### 3.6 Cost of Goods Sold Budget

Cost of goods sold budget contracts and shows the costs that should be made in order to manufacture a product. It includes direct materials budget, direct labour budget and manufacturing overhead budget.

#### 3.7 Selling and Administrative Budget

Selling and administrative budget refers to planning the costs formed at the level of sale and management. It can include the costs of salaries of administrative and sales staff, heating costs, lightening, telephone, renting, advertisement, travelling, commission and other costs at the level of sale and administration.

In the long-term period these costs depend on the success of the company and sale of the company. In the periods of achieving worse results selling and administrative costs regularly decrease, whereas in the periods of expansion these costs go up.

When budgeting selling and administrative costs we start from their level realized in the previous period and correct them in accordance with planned changes of activities of the company or define them in the fixed amount on the basis of the decision of management.

#### 3.8 Budgeted Income Statement

Budgeted income statement for the observed period represents combining the data from sales budget, production budget, direct materials budget, direct labour costs and selling and administrative budget so the amount of planned net income may be obtained. Budgeted balance sheet can be divided into shorter time periods, types of products, buyers and territories so we can implement the process of control in a simpler and more efficient way. Net income after taxes can be obtained in the following way:

Operation income = net income from sales – costs of goods sold – selling and administrative costs

Net income after interest and taxes = operation income – interests – taxes

#### 3.9 Capital Budget

Capital budget is a long-term plan; it refers to the purchase of equipment, buildings and properties as well as to the investments in research and development. This budget is derived from long-term goals and selected strategy of the company. In order to choose concrete investment, it is necessary to consider all the available alternatives and choose the project that fits best in the selected strategy and offers the highest rate of income.

#### 3.10 Cash Budget

Cash budget shows planned receiving and giving cash within the given period of time. It is necessary for a company because it points out to the surplus or deficit of cash. When forming cash budget for the planned period, we define the expected income on the basis of debt collection from buyers or on the basis of other sources of funds and we add starting balance of cash from this period. The income from debt collection is obtained starting from the sales budget and the contract/agreement which is concluded with our customers, who define the terms of their payment.

Then the expected costs for materials, labour, taxes etc are subtracted from the total expected income. They can be seen from appropriate partial budgets which we have made beforehand. Facing the inflow and outflow of cash we get the balance of cash which points out whether there is the surplus or deficit of money after the period. If we have the surplus of money at the end of the period, financial manager may decide to invest this surplus in the financial instruments on the money or capital market. On the contrary, negative balance of cash at the end of the period refers to the fact that the company must plan financing from other sources, such as bank loans.

#### 3.11 Budgeted Balance Sheet

Budgeted balance sheet is, as cash budget or budgeted balance sheet, the final product of the process of budgeting. It refers to the expected financial state, that is to say, planned level of means and sources of funds at the end of the budgeted period.

It is obtained on the basis of plans that have already been composed so the amount of cash can been seen from cash budget, and the receivables are calculated on the basis of sales budget and the conditions of debt collection agreed with customers beforehand. The inventory of raw materials and final products are defined on the basis of ending inventory in direct materials budget and production budget. Fixed assets are determined on the basis of previous balance sheet and budgeted activity within the planned period. Debts to suppliers depend on the planned range of supplies and contracted conditions of payment to suppliers and they are calculated starting from projected purchases in direct materials budget. The amount of initial investment of capital is taken from the previous balance sheet and is corrected for the amount of budgetary activities in the planned period. Retained earnings from the previous period can be seen from the previous balance sheet, and net income from the planned period can be taken from the budgeted income statement.

Budgeted balance sheet can be analyzed from the aspect of liquidity, turnover, rent and financial structure. It represents a tool of financial control because it allows the achieved balance sheet to be compared with budgeted balance sheet and it refers to potential problems and areas to which we should pay attention to.

# 4. Conclusions

In the period of constant changes, more intensive competition and great technical and technological advancement, all companies and especially small and medium-sized enterprises must adopt necessary knowledge and useful tools which will facilitate their business operations, modelling of the processes, anticipating and solving potential problems, using the chances and creating and keeping the competitive advantage. One of these tools is a short-term plan, that is to say, budget.

"It is necessary to plan the business operations of the company constantly because the plan is the medium or instrument that enables the owner and/or manager to observe the pathway to the concrete achievement of the desired level of profit." [10] Although many factors within and outside the company may influence the company not to achieve the set goal, we can say that it is better to have a bad plan than none because it allows us to notice if the business operations are not good. This is especially true for small and medium-sized enterprises, since they have limited financial resources and are very vulnerable in times of trouble.

# Example

The company XYZ is involved in production of baskets. We will prepare master budget for January, February and March for this year for the Company XYZ on the basis of the information provided by managers of different departments.

The Sales manager has projected sales of 3,000 units in January, 5,000 units in February and 6,000 units in March. Projected selling price is 40.00 EUR/pcs. Also, returned products and discounts is to be 1% of projected sale and uncollectible sales is to be 2% of projected sale. On the basis of this information we can prepare Sales Budget.

	January	February	March	Total
Projected Sales (pcs)	3,000	3,500	6,000	12,500
Unit Price (EUR)	40	40	40	40
Gross Total Projected Sales (EUR)	120,000	140,000	240,000	500,000
Returned Products and Discounts				
(EUR)	1,200	1,400	2,400	5,000
Uncollectible Sales (EUR)	2,400	2,800	4,800	10,000
Net Total Projected Sales (EUR)	116,400	135,800	232,800	485,000

**Table 1** Company's XYZ Sales Budget in EUR for the Three Months ending, March 31, 2010.

Production manager has provided the following information. Ending Inventory is to be 15% of the next month's production need (rounded to the nearest 10). April's projected sales are 5,000 units and December's 2009 Ending Inventory was 1.000 units.

 Table 2 Company's XYZ Production Budget for the Three Months ending, March 31, 2010.

	January	February	March
Projected Sales (pcs)	3,000	3,500	6,000
Ending Inventory (pcs)	530	900	750
Total Units Needed (pcs)	3,530	4,400	6,750
Beginning Inventory (pcs)	1,000	530	900
Projected Production (pcs)	2,530	3,870	5,850

Manufacturing manager has estimated that each unit will require 5 grams of material. Material in Ending Inventory will be 15% of the next month's needs.

 Table 3 Company's XYZ Direct Materials Budget for the Three Months ending, March 31, 2010.

	January	February	March
Projected Production (pcs)	2,530	3,870	5,850
Material per Unit (g)	5	5	5
Material for Units to be Produced (g)	12,650	19,350	29,250
Plus Material in Ending inventory (g)	2,900	4,390	3,750
Total Material Needed (g)	15,550	23,740	33,000
Less Material in Beginning inventory (g)	4,800	2,900	4,390
Total Material to Purchase (g)	10,750	20,840	28,610
Unit Price of Material	2.20	2.20	2.20
Projected Purchase (EUR)	23,650.00	45,848.00	62,942.00

December's Ending Material Inventory was 4,800 grams and projected cost of material is 2.20 EUR/gram. We prepare Direct Materials Budget.

Personnel manager has estimated that we need 0.7 hours of Direct Labour per unit and that Direct Labour Costs are 8 EUR/hour. Direct Labour Budget follows.

 Table 4 Company's XYZ Direct Labour Budget for the Three Months ending, March 31, 2010.

	January	February	March
Projected Production (pcs)	2,530	3,870	5,850
X Direct Labour Hours	0.70	0.70	0.70
Total Direct Labour Hours	1,771	2,709	4,095
X Direct Labour Cost (EUR)	8	8	8
Total Direct Labour Cost (EUR)	14,168	21,672	32,760

The Facilities Manager has estimated that Variable Overhead Rate will be 5 EUR/Direct Labour hours and Fixed Overhead Rate will be 5,000 EUR/month and we can make Manufacturing Overhead Budget.

**Table 5** Company's XYZ Manufacturing Overhead Budget for the Three Months ending, March 31,<br/>2010.

	January	February	March
Direct Labour Hours	1,771	2,709	4,095
Variable Overhead Rate (EUR/h)	5	5	5
Projected Variable Overhead (EUR)	8,855	13,545	20,475
Projected Fixed Overhead (EUR)	5,000	5,000	5,000
Total Projected Overhead (EUR)	13,855	18,545	25,475

The Accounting Department Manager has projected monthly costs of salaries to 5,000 EUR, rent 1,200 EUR, advertising 1,200 EUR, telephone 350 EUR, other costs 500 EUR. On the basis of given information we can prepare Selling and Administrative Budget.

**Table 6** Company's XYZ Selling and Administrative Budget for the Three Months ending, March 31,2010.

	January	February	March
Salaries (EUR)	5,000	5,000	5,000
Rent (EUR)	1,200	1,200	1,200
Advertising (EUR)	1,200	1,200	1,200
Telephone (EUR)	350	350	350
Other (EUR)	500	500	500
Total Expenses (EUR)	8,250	8,250	8,250

fable 7 Company's XYZ Cost of	Goods Sold Budget for the Three	e Months ending, March 31, 2010.
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	January	February	March
Projected Direct Materials (EUR)	23,650	45,848	62,942
Projected Direct Labour (EUR)	14,168	21,672	32,760
Projected Manu. Overhead (EUR)	13,855	18,545	25,475
Total (EUR)	51,673	86,065	121,177

 Table 8 Company's XYZ Budgeted Income Statement for the Three Months ending, March 31, 2010.

In EUR	January	February	March	Total
Sales	116,400	135,800	232,800	485,000
Cost of Goods Sold	51,673	86,065	121,177	258,915
Operating Expenses				
Selling & Administration	8,250	8,250	8,250	24,750
Net Income From Operations	56,477	41,485	103,373	201,335
Net Income Before Taxes	56,477	41,485	103,373	201,335
Federal Income Tax	5,600	4,100	10,300	20,000
Net Income	50,877	37,385	93,073	181,335

It is projected that 80% of sales is collected in the month in which sales were made and 20% will be collected next month. December's sales were 10,000 EUR. We prepare Schedule of Accounts Receivable which will help us to determine Cash Receipts in Budgeted Income Statement.

 
 Table 9 Company's XYZ Schedule of Accounts Receivable in EUR for the Three Months ending, March 31, 2010.

	January	February	March	Total
December Sales	2,000			2,000
January Sales	93,120	23,280		116,400
February Sales		108,640	27,160	135,800
March Sales			186,240	186,240
Total	95,120	131,920	213,400	440,440

It is projected that 80% of Accounts Payable will be paid in the month in which purchases were made and 20% will be paid in the next month. December's payables were 75,000 EUR. We can prepare Schedule of Expected Cash Disbursement which will help us to determine Direct Material Cash Payments in the Budgeted Income Statement.

 Table 10 Company's XYZ Schedule of Expected Cash Disbursement in EUR for the Three Months ending, March 31, 2010.

	January	February	March	Total
December Purchases	15,000			15,000
January's Purchases	18,920	4,730		18,920
February's Purchases		36,678	9,170	
March's Purchases			50,354	
Total Cash Disbursements per Month	33,920	41,408	59,523	33,920

Company has 40,000 EUR cash balance for the beginning of January. It pays dividends in March in the amount of 6,000 EUR. Also, company has to pay 10% Income tax in March. These information enables us to make Cash Budget.

	January	February	March
Cash Balance, Beginning	40,000	64,927	106,972
Cash Receipts	95,120	131,920	213,400
Cash Available	135,120	196,847	320,372
Cash Payments			
Direct Material	33,920	41,408	59,523
Direct Labour	14,168	21,672	32,760
Manufacturing Overhead	13,855	18,545	25,475
Selling & Admin Expenses	8,250	8,250	8,250
Income Taxes			20,000
Dividends			6,000
Total Cash Payments	70,193	89,875	152,008
Cash Balance, Ending	64,927	106,972	168,363

Table 11 Company's XYZ Cash Budget in EUR for the Three Months ending, March 31, 2010.

From the beginning Balance Sheet we can see that Land is 160,000 EUR, Buildings 150,000 EUR, Depreciation 37,988 EUR, Retained Earnings 91,340 EUR and Capital Stock 225,000 EUR. This enables us to make Budgeted Balance Sheet.

Table 12 Company's XYZ Budgeted Balance Sheet for the Three Months ending, March 31, 2010.

Assets		Liabilities&Equity		In EUR
Current Assets		Liabilities		
Cash	168,363	Accounts Payable	12,590	
Accounts Receivable	46,560	Total Liabilities		12,590
Raw Materials	8,250			
Finished Goods	15,080	Equity		
Total Current Assets	238,253	Common Stock		225,000
Fixed Assets:		Retained Earnings	91,340	
Land	160,000	Net Income	181,335	
Building	150,000	Retained Earnings		272,675
Less Depreciation	(37,988)	Total Equity		497,675
Total Fixed Assets	272,012			
Total Assets	510,265	Total Liabilities and Equity		510,265

\*\*\* Finished Goods = Ending Inventory (Production Budget) multiplied by cost of unit Cost of unit = 2.2 g material x 5 grams + 0.7 hour x \$8/hour + 0.7 hour x \$5/hour=20.10 EUR

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# **Change Management in Modern Organizations**

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Organizations continue to change in response to major shifts in the environment and as a result of internal, planned efforts to achieve greater profitability, quality, and effectiveness. Yet many organizational change efforts fail or do not fully meet stated goals or objectives, resulting in a variety of negative outcomes, including sunk costs, organizational ineffectiveness, customer dissatisfaction, low morale, high turnover, and wasted resources.

#### Keywords

Change management, organization, project management

#### 1. Introduction

Organizations can survive in a dynamic environment only, if their speed of learning and changing meets the dynamics of their environment [1]. Therefore organizations have to build up complexity, in order to cope with the complexity of the environment. Change management allows building up and reducing complexity as well as dealing with the dynamics of organizations.

The term "change" relates to an important and basic development. Changes are of different intensity and speed, and can occur at the individual, the group, the organizational, or the societal level [2]. Change has a strategic dimension, as it is "the movement of a company away from its present state toward some desired future state to increase its competitive advantage" ([3], p. 486).

Traditional life cycle models of organizations define situations, in which changes are required. The organizational growth model from [4] e.g. differentiates the leadership crisis, the autonomy crisis, the red tape crisis, and the development crisis, as reasons for organizational growth. It is assumed, that changes (in the form of growth) are caused by crises.

Similarly Pümpin and Prange [5] and Bleicher [6] relate their phases of the organizational life cycle (pioneer, market development, diversification, acquisition, cooperation, and restructuring phase), to crises situations. The management literature obviously focuses primarily on growth scenarios, decline as a development scenario of organizations does not seem relevant.

From a systemic point of view reasons for changes can either be interventions from the relevant environments (e.g. shareholders, clients, suppliers) of an organization or its internal dynamics, based on the self-organizational capabilities of a social system. Self-organizational processes of a company are e.g. strategic planning and controlling, monitoring the environment, etc.

The company that survives has to change. These changes may be greater or lesser extent, but must be directed towards a common goal - a new improved state of the whole system.

#### 1.1 The new concept of change implementation

Propositions underpinning our research and discussion evolved from a non-conventional, emerging perspective of utilising a project concept in implementing organisational change. Empirical evidence presented here shows that a significant number of contemporary organisations, consciously or unconsciously, institutionalise the implementation of change as a project. In order to evaluate the findings and propose some ways for improvement of employed methods and techniques, and to avoid further confusion over expanding on new terminology, we adopted the notion of project as a generic form of change implementation. Consequently, it was necessary to conduct a deeper analysis of contemporary dynamics in theory and practice of project management in order to support research design, data analysis and both generalisation and customisation of findings.[11]

As opposed to traditional definitions of projects which, generally, limit the scope for investigation of project-related processes to monitoring and control of cost, time and quality, the 1990s have seen the expansion of the project management body of thought to include a much wider range of management issues specific to projects in all types of organisational and industrial settings.

In the marketplace, there is evidence of a degree of rivalry between Project Managers and Change Managers concerning who should be managing business change. And these are not the only contenders. Corporate executives and senior managers, are generally the change owners, and although they may engage the assistance of both Project Managers and Change Managers, generally see themselves as taking the leading roles in major organisational changes and transformations. As such endeavours are most likely to take the form of programs, comprising multiple projects across the organization, Program Managers are seen by some as being most likely to be responsible for managing organisational change initiatives [13].

There is a popular view in the project management community that Project Managers are managers of change or change agents [14], but others consider that projects or programs that require significant amounts of behavioral and organisational change and demand high levels of interpersonal skill, astuteness and sensitivity and a fundamentally different approach to the candid, direct, and rational style valued in competent Project Managers. They also suggest that Project Managers, or Project Managers promoted to Program Manager roles are not always suited to the demands of organisational change projects. They need to learn skills and capabilities beyond those required to manage a typical project in order to drive change.

In practice the role of the Change Manager has emerged from a different disciplinary background to that of Project Managers. Project management can be seen as having its origins in engineering with a focus on planning and control while organisational changes a discipline has grown from the Organisational Development field and places significant emphasis on the behavioural aspects of managing change. This leads to the recognition that there are two distinct bodies of knowledge underpinning the practices of the Project Manager and the Change Manager. The project management body of knowledge is well defined in standards and guides produced by the project management professional associations. The field of organisational change and development is less well served in terms of professional and representative bodies [14] and practice standards but arguably much richer in terms of theoretical foundations. Consideration of both fields suggests that Change Managers coming from organisational development backgrounds may lack the technical and administrative discipline of project management, while Project Management gualifications offered by the professional associations and even the majority of academic institutions do not require Project Managers to demonstrate practice or underpinning knowledge in organisational development or behavioural aspects of change.

Scientific techniques of project planning, monitoring and control have been major obsessions of generations of project managers. It is the feature which project management discipline

inherited from its engineering origins together with the assumption that the stages of project life cycle are universal and will unfold in a rational-linear manner, provided the techniques of monitoring and control are effectively applied. However, it has become clear that different types of projects require different approaches to the management process and different individual skills to cope with associated, specific levels of ambiguity and uncertainty in start-up and implementation phases. Scholarly work and empirical evidence in recent years have illuminated a delicate issue of differentiating between project goals (the ultimate benefit or purpose of the project) and delivery objectives (the outcome or product of project effort according to the specification, and within time and cost constraints). There has been little understanding of a dynamic link between specification of project objectives (deliverables), the design of methods for achieving them, and the ultimate benefit of the project deliverable - the project goal, which justifies the reason for project initiation in the first place.

One of the most comprehensive definitions of projects is proposed by Turner and Cochrane [7] as: an endeavour in which human, material and financial resources are organised in a novel way, to undertake a unique scope of work of given specification, within constraints of cost and time, so as to achieve unitary, beneficial change, through the delivery of quantitative and qualitative objectives.

This definition embraces the realities of four distinctive categories of projects in modern organisations, namely:

- engineering;
- new product development;
- system development; and
- organisational change projects.

As levels of ambiguity and complexity vary among the four project types and throughout their life cycles, project managers and project leaders need to be equipped with skills necessary to negotiate, manage and decrease uncertainty around objectives and methods definition in project start-up and implementation phases. Organizations continue to change in response to major shifts in the environment and as a result of internal, planned efforts to achieve greater profitability, quality, and effectiveness. Yet many organizational change efforts fail or do not fully meet stated goals or objectives [8], resulting in a variety of negative outcomes, including sunk costs, organizational ineffectiveness, customer dissatisfaction, low morale, high turnover, and wasted resources. As we face a time of unprecedented pace and magnitude of change, we need to more fully understand organizational change processes to ensure the effective and efficient implementation of organizational change.

## 2. Problem Solving for Continuous Improvement

By defining projects as temporary organizations, the formal establishment of a project , its integration into the overall company organization, and the development of a project specific culture is emphasized. The perception of projects as social systems further promotes the context orientation in project management. The relationship of a project to company strategies, to the other projects performed simultaneously, to the relevant social environments, and to the business case of the investment initialized by the project become a concern. "Social" project controlling, i.e. the controlling of the relationships to relevant project environments and the relationships in the project organization, is considered in addition to controlling the hard project facts (progress, schedule, costs). The objects of consideration in the project costs but also the project objectives and the project income, the project organization, the project culture, as well as the project context dimensions, relationships to the relevant so the relevant environments, to other projects, and to the company strategies, as well as the business case. Proceedings of International Conference for

The project start is the most important project management sub-process, because in it the basis for the other project management sub-processes is established. The project plans, the project communication structures, the relationships to relevant environments, etc, are developed and defined in the project start process. For each project management sub-process the objectives, functions, methods, responsibilities, and deliverables can be described, which allow to measure the quality of the project management process.

A project needs an appropriate degree of complexity to be capable, to relate appropriately to its environment. It is a project management function, to build up and to reduce the project complexity. The differentiation of project roles, the creation of sub teams as well as the consideration of different functional disciplines and hierarchical levels in the project team, are organizational possibilities for building up complexity. The application of different project management methods (i.e. the work break-down structure, the schedule, the cost- and resources plan, the risk analysis, the project environmental analysis, etc.) offers different perspectives of the project. This "multi-method approach" further contributes to the development of the project complexity.

A reduction of project complexity occurs by the application of project management standards and by agreements. Let us take a look at a simplified picture of how an organization plans and manages its work.



Figure 1 A model of how an organization sets targets and manages its work.

The process starts with the management team creating a set of objectives that will meet the needs of the business and satisfy the key stakeholders or shareholders. Next, a set of strategies must be developed that describe the plans to be put in place to ensure that these objectives are met. When these plans are implemented, projects are defined and executed, operations managed, resources assigned, time-scales agreed and ownership allocated. Various systems measure accomplishment of the plans – milestones achieved, products delivered, money spent etc. Results are fed back and compared against the plans. As necessary, changes are made to the plans, strategy and even the objectives as necessary, reflecting the organization's progress in achieving its overall business plan. It all appears straightforward, but many businesses are unable to implement their plans effectively. They cannot cope with change – and it isn't clear where and why the process is breaking down. The most important issue to recognize, and the reason why some organizations cope with complexity and change while others struggle inefficiently is that resources – the key to the organization actually implementing its plans and achieving its goals – are usually shared

across operations activity and project work. Management by projects is about successfully handling this complexity. And this is extremely important to an organization's success because what usually determines the success or failure of an organization is not how brilliant the strategy is, it's how well the plans get executed.

Companies invest in infrastructure changes, in new products or services, in new markets, in the organization, or in their personnel. A project or a programme might involve initializing such an investment. Therefore, an investment decision is often the basis for the decision to pursue a project or a programme. We must assure the alignment of an investment with the company strategies. Process management allows project managers to contemplate changes and ask, "Should there be an application development function in this organization?" New concept of change implementation doesn't mean tinkering with what already exists or making incremental changes that leave basic structures intact. ... It means asking the question: 'If I were recreating this company today, given what I know and given current technology, what would it look like.' ... It involves going back to the beginning and inventing a better way of doing work.



Figure :2 Model of modern project oriented organizations

The "better way of doing work" is, of course, a new methodology. How does management encourage the staff to work with a new methodology? By rolling it out in a process management tool. Thus, the cycle is complete — process improvement needs better estimating, better estimating needs meaningful project history, project history needs a standard chart of accounts, a standard chart of accounts must come from a methodology, a methodology needs to be automated with a process management tool, and a process management tool provides the basis for process improvement.

# 3. Conclusions

Projects can provide an impetus to overcome resistance, allowing the change to build up a momentum and they can be used to pilot a new structure [10]. But it is never the whole change to be managed by one project. Each change process requires a different organization for its performance. There are decision gates between the processes, by which the strategies regarding the next processes are decided on. By performing sequential processes by projects leads to a chain of projects. According to Gareis [11] the reasons for managing by chains of projects are:

• to assure operational project objectives,

- · to provide project-specific organizations,
- to consider project-specific relevant social environments,
- to assure the adequate personnel qualifications for each project, and
- to allow for project-specific evaluations.

To cope with this differentiation the following integrative measures are required in order to manage by chains of projects:

• promoting overlapping personnel assignments,

• assuring consistency in holding the roles change owner and change manager during the all change projects,

- · developing an overall business case for the change, and
- assuring a consistent management culture.

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# **Value Creation in Business Networks**

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A value network is a complex set of social and technical resources. Value networks work together via relationships to create social goods (public goods) or economic value. This value takes the form of knowledge and other intangibles and/or financial value. Value networks exhibit interdependence. They account for the overall worth of products and services. Companies have both internal and external value networks. The network value system: integrated demand and multi-layered supply chains. They have attempted to meet all the changes identified within the new economy. Network value system management has focused on moving products and services downstream towards the customer..

#### Keywords

Industrial clusters, organization, supply chains, business network

#### 1. Introduction

Successful clusters are made up of companies that are constantly seeking innovation. Innovative companies not only seek to develop new products, but also are looking for all types of innovation in process improvement. This innovative capacity is a combination of innovation and imitation. Continuous innovation is the ability of the cluster to generate key innovations in products, processes, designs, marketing, logistics, and management. Almost all the clusters we visited have significant innovative capacity and place a priority on continuous innovation. This characteristic is particularly important when placing low and moderate income residents into jobs. It provides a work environment where different approaches and new ideas are valued often allowing a lower level employee to make a significant contribution.

In competitive environment success of an organization is a function of industry attractiveness, its relative position in the industry, and the activities (strategy) it undertakes to remain ahead of others ([7] and [9]). Mintzberg explained that strategy is evolutionary, organic process and is unpredictable; [15] explained that core competence gives an organization competitive capability and remains central to its strategy planning process. Small and medium organizations (SME) encounter different kinds of problems such as resource limitations (especially human and financial resources), and market information [16], they face competition within and between large organizations [4].

Quality improvement in a firm's must encompass much more than just machinery or technology improvement. Technology is a much more complex bundle of knowledge, with much of it embodied in a wide range of different artifacts, people, procedures and organizational arrangements. These embodiments of knowledge include at least: product specifications and designs; materials and component specifications and properties; machinery and its range of operating characteristics; together with the various kinds of knowhow, operating procedure and organizational arrangement needed to integrate these elements in an enormously variable range of different production systems. Moreover, as these elements of technology are highly interconnected, improvement in something as "simple" as product quality may require changes to be made across several linked elements

of the bundle, e.g., in machine hardware or operating procedures, the organization of production flows, or the specification and treatment of materials.

Second, there is no sharp distinction between innovation and diffusion. Very few components of production technology are simply acquired "ready-made" and then brought into use according to standard "recipes" which are identical to, and replicated from, previous applications. Even in cases where the introduction of some element of new technology involves a fairly close approximation to such noncreative technology "adoption," the interactions with other elements of technology in the production system typically requires creative problem-solving and innovative re-configuration of at least some elements in the overall production system. Furthermore, firms do not acquire the capabilities to generate these creative changes spontaneously merely from the experience of doing production, as implied by notions of learning curves. Indeed, studies of infant industries have demonstrated that the performance of production systems may not increase at all over time, and can easily stagnate or decline over the long-run.

Third, external sources of technology are not limited to machinery suppliers. Customers, for instance, may be much more important sources of technology, providing not just knowledge about product specifications but also a wide range of other elements (e.g., operating procedures and know-how, or knowledge about materials properties).

It is clear we need new lenses and tools to succeed in this current economic environment — understanding of how people, process and technology really work together to create both social and economic value.

Tools used in the past to analyze business value creation, such as value chain and process models, are simply too slow, inadequate, or inappropriate to address this new level of business complexity. Instead of that, company has to find way to create quality management system in a multi-layered supply chain.

Strong value creating relationships support breakthrough innovation, quality management and organizational resilience. The value network approach helps individuals and work groups better manage their interactions and address operational issues, such as balancing workflows or improving quality of the process or product. It also scales up to the business level to help forge stronger value-creating linkages with strategic partners and improve stakeholder relationships.

A value network is a complex set of social and technical resources. Value networks work together via relationships to create social goods (public goods) or economic value. This value takes the form of knowledge and other intangibles and/or financial value. Value networks exhibit interdependence. They account for the overall worth of products and services. Companies have both internal and external value networks.

The network value system: integrated demand and multi-layered supply chains. They have attempted to meet all the changes identified within the new economy. Network value system management has focused on moving products and services downstream towards the customer. Typically the multi-layered supply chain is coordinated by manufacturing companies or dominant resellers who use in-house manufacturing and distribution facilities to achieve market-based objectives such as market share volumes and customer penetration.

Demand chain management changes the emphasis towards "customization", responding to product and service opportunities offered by specific customers or customer groups sharing particular characteristics. It is crucial to segment customers intelligently in order to offer more targeted and personalized products and services. The preference is to outsource rather than own the functions and processes that facilitate and deliver value. Focus is on asset leverage and communication through distributed assets and outsourcing.

### 2. Challenges for business network

At a first glance, the establishment of value networks seems to provide a promising future for relationship marketing concepts [1]. As companies reduce their degree of vertical integration and begin to rely on a network of specialized companies for supporting operations, they tend to contract with suppliers who are able to cooperate in a relationship context [2]. Understanding customers' processes and value propositions is therefore vital for suppliers, as is a climate of shared relational norms and mutual trust. Academic research, however, also cautions against the naive application of relationship concepts, which proved valuable in the context of rather stable buyer–seller relationships, to be applied to a dynamic value network context.

In his study of value networks in the hard disk drive industry, Christensen [3] showed how network dynamics destroyed the value propositions of established relationships. The establishment of new product architectures, for example, the introduction of the personal computer, led to the establishment of new organizational architectures in value networks. Each new architecture bred a new dominant supplier of hard disk drives, who drove the then incumbent out of the market. The surprising conclusion shown by Christensen's work is that the suppliers were driven out of the market mainly because they actively listened to their most important customers and implemented a standard textbook approach to buyer–seller relationships. Furthermore, the incumbents had all of the technologies in their R&D pipelines, which shortly after materialized in the competing value networks, but which they themselves were not able to apply due to the implied restrictions of their existing relationship context. Seemingly, their rather narrow relationship approach was what eventually drove them out of the market. The notion that being customer-driven is no equivalent to being market-driven is neither new to traditional nor to relationship marketing concepts ([5] and [6]).

In contrast to early visionaries who saw an uninterrupted growth of relationship concepts induced by the increasing significance of value networks, management and academic research face the following challenges:

•Gaining a clear understanding of the essence and the scope of relationship management and a clear definition of the concepts used: In a value network, the interaction leaves the stage of the dyad, giving way to multiple relationships with different and sometimes conflicting goals and a growing range of roles performed by participating companies, including multiple tiers of connected suppliers, resellers, and influencers. In such a complex context, the growing interest in concepts like relationship marketing and CRM somehow adds to the confusion rather than providing a clear understanding of problems, tasks, and concepts for how to manage in this complex network context.

•Adapting relationship strategy to network contexts: Traditional buyer–seller concepts focus narrowly on the value created in a dyadic buyer–seller interaction. As corporate actors are likely to multiply in a network context, each strategy has to take into account the structure and dynamics of value networks. Customer portfolios have not only to reflect the lifetime value of the set of relationships a company is engaged in, but also to account for its position in the overall network. Furthermore, as competition is always present within networks, a dominant goal is to reach a formidable value position within the network.

•Adapting the customer interface to the growing complexity of marketing channels: As the touch points to customers and partners involved in the marketing process multiply, the customer interface has to enable the company to interact through different sets of marketing channels with different partners. While the technical means of reaching a customer have multiplied, the integration of these contact points in the framework of a coherent strategy has become more complex.

•Develop core competencies for reaching a unique selling proposition in the value network: Whereas functional integration was the main focus in the context of buyer-seller relationships, value networks call for the dynamic evolution of a company's capabilities. As Proceedings of

network competition forces companies to focus on activities that they can perform in the most effective and efficient way, the identification and cultivation of core competencies become the central tasks of management.

## 3. Clusters and value chains

The distinctive contribution of global value chain analysis, as developed initially by Gereffi [7] and developed further by a group of researchers who met together in Bellagio in September 2000 [8], lies in three main points. Firstly, it analyses how these dispersed production and distribution systems are co-ordinated. In particular, it suggests that in addition to coordination through market mechanisms and through vertical integration (the firm), global markets are increasingly coordinated through the formation of networks of firms. This sometimes involves complex co-ordination of activities (product design, process specifications and timing) between firms with no ownership links. The development of divisions of labour within these networks means that firms are frequently neither "complete" nor producing finish products. Secondly, global value chain analysis recognizes and emphasizes the role played by non-manufacturing companies - designers, retailers and branders — in the construction of globally-dispersed production and distribution systems. It distinguishes between different types of value chain governance and examines their consequences for knowledge flows, access to developed country markets and upgrading opportunities. Thirdly, the analysis considers the different ways in which firms within global value chains can upgrade. However, it is important to recognize that global value chains display a variety of different "governance structures" (or forms of co-ordination). In fact, the way in which the activities at different points in the chain are co-ordinated varies considerably, not only between chains but also at different points in the same chain. What linkages might exist between local firms and the global economy? The Italian industrial district literature emphasizes two main linkages: arm's-length market relationships and vertical integration. Arm's-length market relationships occur when products are standardized, or easily customized to particular buyer requirements, or designed by the producer without co-ordination with specific buyers. The purchasers of such products are "design takers": the design of the product is in the hands of the producer. In the case of finished products destined for consumers, the agents buying these products from clusters are most likely to be wholesalers, traders selling to a variety of customers and retailers (particularly small retailers or consortia of small retailers). By contrast, vertical integration involves direct co-ordination of activities within the firm. The most obvious form of this is through foreign direct investment into clusters. However, firms in developing countries may invest into developed country clusters, either in order to guarantee their position in these markets or in order to gain access to the knowledge base of other clusters. For example, some companies in the Sialkot surgical instruments cluster have established trading firms in the Tuttlingen cluster in order to facilitate access to German and global markets [10]. However, trade is also co-ordinated through networks of legally independent firms using a variety of transactional relationships. Thirty years ago, Richardson [11] referred to this as "the dense network of co-operation and affiliation by which firms are inter-related". Global value chain research suggests that such relationships can increasingly be found in international trade. It is possible to distinguish two particular forms of such relationships. On the one hand, network relationships involve greater interaction between buyers and sellers, usually based on the sharing of competences, which allows a product to be manufactured which neither company alone would have the ability to design and/or make. In this case, cluster firms will tend to have long-term, complex relationships with the network partner.

Arm's-length market relationships: describes a relationship where there are potentially many buyers and sellers for equivalent products, even though particular buyers and sellers may engage in repeat transactions. This implies that the producer either makes a standard
product or designs the product without reference to the needs of any particular customer. The customer is a "design taker". It also implies that there is no transaction-specific investment required by either party to the transaction.

Network relationships: occur when the supplier and buyer combine complementary competences. They may jointly design the product,, using their different competences, and transaction-specific investment will be made. This type of relationship is particularly evident when both buyer and supplier are innovators, close to the technology or market frontiers, but it also arises when firms focus on their core competences and outsource important activities to suppliers.

Quasi-hierarchical relationships: occur when one party to the transaction (usually the buyer) exercises a high degree of control over the other. This often includes specifying the design (or the general specification) of what is to be produced and also process parameters such as quality systems, materials, etc. The introduction of monitoring and control procedures and the transmission of product design features requires transaction-specific investment.

Hierarchical relationships: occur, firstly, when the buyer takes ownership of the producers in the cluster or establishes its own companies within the cluster, or when firms in the cluster integrate forwards, establishing production or distribution facilities in other countries..

But why would companies want to develop quasi-hierarchical relationships? Such relationships are costly, requiring asset-specific investments in relationships with particular suppliers. Such investment also increases the rigidity of supply chains by raising the costs of switching suppliers. Nevertheless, many instances of such chain governance are evident. Humphrey and Schmitz [12] argue that buyer specification of product design is most likely to arise when the buyer has a better understanding of the demands of the market than the supplier. This requires explicit co-ordination of the value chain if the response to these.

## 4. Conclusions

All firms have either explicit or implicit strategies, and the economic development of a region depends on the soundness and execution of the many strategies of the firms that make up the region's driver industries. Those establishments succeed or fail based on a mixture of production prices that reflect input costs, products that reflect development and innovation, and management practices. At question is the length of time the virtuous circle of industry birth, cluster economies, innovation, and rents lasts. How long before rents are competed away in the product market by cheaper substitute products and in the labor and land markets by places that offer lower factor costs? How do the industrial, institutional, and social structures of regional economies influence innovation? Where in the product cycle does the firm begin to internalize cluster economic development or deter it if the industrial and social structures of the region ossify, innovation and development are thwarted, and the existing competitive advantage of the region is whittled away by more innovative regional economies.

Cluster enables high-performance production, and provides optimal use of capacities and great flexibility of the entire system. Such systems enable the production in small series with very low costs. Since there is a large number of small and medium-sized enterprises, any changes in processing, shaping or any changes of material are solved within a few enterprises either by replacement or purchase of a small number of machines or by including in the cluster some companies with required developed technology, and by doing so we achieve a very fast reaction to any disorder or any changes. It means that the processes of development are carried out simultaneously, because each company gets the task to develop a part of a product for which they are specialized, and doing so we achieve the development of shorter duration, and increased number of different combinations available for utilization.

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# Entrepreneurship and Crisis Management – Two Sides of the Same Coin

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Global recession, as well as recession on local markets, makes the optimal decision making even more difficult – particularly deciding on whether to start a business or to end it. At the time of crisis, entrepreneur is expected to be even more proactive towards the environment and even more effective in decision making. Insights based on statistical analysis of major regional and local business associations' data were supposed to prove our hypothesis that crisis could have a positive influence on entrepreneurship and business climate. They were also supposed to be of practical value when it comes to transforming the negative context of the crisis into entrepreneurial opportunities. Unfortunately, the available data showed insurmountable inconsistencies and proved to be totally unreliable. We had to find an alternative way. And we found it: recent, concrete, and carefully chosen good examples from Serbia and other countries will prove our hypothesis, whereas the most prominent factors at play in those concrete situations will offer a review of relevant issues for enterprises in the time of crisis.

#### Keywords

Entrepreneurship and Crisis Management; Relevant Issues for Enterprises in the Time of Crisis: Culture, Creativity and Innovation, Collaboration and Solidarity, Long-term Planning.

"The only true crisis is the crisis of competence." - Albert Einstein

#### 1. Introduction

If Serbian business ambience were a restaurant, crisis management would occupy the table by the kitchen door which nobody wants, where everybody only reluctantly and briefly takes a seat.

Although the word *crisis* in Serbian, as in most languages, has ambivalent meanings – disturbance, mess, turning point (for bad or for good, particularly in medical context), in everyday usage it has almost exclusively negative connotations. It is associated with failing economy, poverty, political instability, threat, indefinitely postponed personal plans, etc. It is not only Serbian specialty, though; it seems majority of cultures interpret crisis similarly. Yet some of the others see it in a different light.

The English word *crisis* originates from the Greek word *krisis*, which literally means *decision* (from *krinein*, to decide). It has been used in English since the 15th century for, among other things, "an unstable or crucial time or state of affairs in which a decisive change is impending; especially: one with the distinct possibility of a highly undesirable outcome" [1]. *Crisis* also refers to "a crucial stage or turning point in the course of something" [2]. But what *crisis* properly means is – the "ability to judge" [2].

It is interesting to look into the alternative meanings of the translation of the word *crisis* in various languages e.g. access, attack, blizzard, famine (Albanian); fracture, rupture, watershed (Hebrew); brunt, paroxysm, shortage (Bulgarian); bend, change, curve (Finnish); decision, estimation, judgement (Greek); a favourable crisis in sickness (Scottish) [2].

What a pity it is so difficult to compare Japanese with European languages! Having in mind that Japan has navigated crises so successfully in numerous occasions, the whole cloud of meanings around the word *crisis* would have been extremely interesting to discuss – had it not been for other words which have equally rich and interesting clouds of meanings. The other thing is: the words in those clouds do not seem to be associated only by meaning (as we expect) but also, it seems, by the key syllable e.g. crisis, classic, client, climax, cloud, collider, cookie, crime story, criteria, crown, cushion, quake, quality, quantity, quarter, quartet, quartz, quasar, queen, question, quick, quintet, quiz, quota etc.

It has been mentioned quite often that in Chinese the word for *crisis* also means *opportunity*. It would have been interesting; it might have been an insight into intricacies of Chinese culture, possibly even a secret ingredient of China's prosperity – but we have not come across any confirmation of that. The only reference we found associated *crisis* with *disturbance* [2].

Culture is obviously a relevant issue in the time of crisis – although our philological arguments in favour of the view indicate only culture's general understanding of the term. Further on, our examples will be much more specific and direct.

Entrepreneurship implies some sort of continual crisis caused by continual change which brings varying but continual risk. Any point can become a turning point, particularly if business rules often change, if they are not properly founded or respected. Therefore the need for continual crisis management. On the other hand, crisis management implies enterprise, even when it refers to something other than business e.g. crisis management in case of natural disasters. Which all leads to our title: *Entrepreneurship and Crisis Management – Two Sides of the Same Coin.* Before being accused of discussing the obvious, we should point out how surprisingly wide-spread is the opposite, old understanding of crisis as a mistake in the presumed continuity of business.

## 2. What Success Has To Do With It

In our world of uncertainty, relativity, and compromise, risk is the basic factor of business, and conducting business in spite of the risk and in harmony with it is the basic precondition of success. Lamenting over the regrettable destiny of business whereas all the development trains thunder by leaving us on the platform of a neglected provincial station, is maybe touching but does not offer any solutions. Prone to mind-travelling into past, into the safer and more benign economic ambience, Serbian entrepreneurs often neglect the fact that fiasco of an enterprise has only two possible causes – either poor management or wrong business idea.

Traditional view that success inevitably relies on consistency, regularity, stability, and foreseeability contributed a great deal to Serbian management's loss of orientation. Existing paradigm promoting order and stability focuses on improving whatever companies do well – therefore blocking alternatives [3]. What we obviously need is a strategic turn from adaptive behaviour (i.e. doing things better) towards innovative behaviour (i.e. doing things differently).

Crisis is a source of true challenges for those who are not afraid of risk. Managers who are fascinated with challenges but do not pay attention to crisis are a bit like proverbial doctors who are fascinated with illness but do not pay attention to patients. Ignoring crisis is not a habit of only Serbian management. Opposition to change is a general tendency – based, it seems, on the lack of talent. Perceiving talent as nothing else than aberration from a canon

(Danilo Kiš) and understanding that creativity thrives precisely on inconsistencies (R. W. Emerson), one may conclude that we obviously need a step out of the box i.e. we should finally recognise crisis as an opportunity. However, in the time of crisis, Serbian managers still tend to react either arrogantly or with panic.

Entrepreneurship which embraces change has innovation as its key feature. Innovation is followed by risk – a shadow-like phenomenon: sometimes bigger, sometimes smaller, but always there. Success implies quick recognition of problems, obstacles, blind allies, and particularly possibilities (which, preferably, no-one else sees); it implies foresight, knowledge, and, above all, creative solutions. Routine is the obvious foe of entrepreneurial success whereas the obvious friends are inventiveness, adaptability, and creativity.

## 3. Crisis as an Opportunity

At the time of crisis, entrepreneur is expected to be even more proactive towards the environment and even more effective in decision making. Insights based on statistical analysis of major regional and local business associations' data were supposed to prove our hypothesis that crisis could have a positive influence on entrepreneurship and business climate. They were also supposed to be of practical value when it comes to transforming the negative context of the crisis into entrepreneurial opportunities. Unfortunately, the available data showed insurmountable inconsistencies and proved to be totally unreliable.

For example: *Global Entrepreneurship Monitor* ranks Serbia quite well – as 16th out of 42 countries, and claims that survival rate of new enterprises after the first 40 months is extremely high – 10 out of 12! [4] However, it can be heard from various sources that 85% of new enterprises does not survive the first year, but there are still some 4,000 new enterprises more than the failed ones. It can also be heard that almost 65% of all the enterprises (small, medium or big) are illiquid or blocked and that more than a half of them has been blocked for more than a year!

Since it was unclear who recorded what and how exactly the data were collected and interpreted, statistical analysis did not seem to be such a good idea.

We had to find an alternative way – relying on the proclaimed *friends of entrepreneurial success* (inventiveness, adaptability, and creativity) the best we could – and we found it. Recent, concrete, and carefully chosen good examples from Serbia and other countries will prove our hypothesis, whereas the most prominent factors at play in those concrete situations will offer a review of relevant issues for enterprises in the time of crisis.

#### 3.1 Example 1: Solidarity and Collaboration – Simpo and Kopaonik (Serbia)

*Simpo*, a successful furniture company from Vranje, offered a partnership to *Kopaonik*, a failing wood processing company from Kuršumlija, whose workers have been on strike for weeks, blocking the local road in attempt to attract attention of Ministry of Economy and Regional Development. *Simpo* offered help with restarting production, technology improvements, ecological standards, and market access. *Kopaonik* will start producing hardboard for both *Simpo* and European market since its production in EU has been diminishing. [5] A true solidarity in the time of global crisis (atop of continuing local one) and an interesting example of South–South cooperation in Serbia.

#### 3.2 Example 2: Social Responsibility – Lafarge BFC and MARS (Serbia)

Lafarge Beočin Business Park is a unique example of public–private partnership in both Serbia and South East Europe. It is the first socially responsible non-profit project initiated by Lafarge BFC cement factory in order to attract investors, create jobs, increase export, and

contribute to the general development of the region. In partnership with Municipality of Beočin and with support of Ministry of Economy and Regional Development and government of the Vojvodina province, *Lafarge Beočin Business Park* offers outstanding conditions to potential investors: land by the Danube (European Transport Corridor 7), possible extension with direct access to a port, technical infrastructure, and business support. Its first investor is MARS, a process equipment producer, whose plant is to be assembled by June 2010 when the first 50 workers will find a job. Another 100 workers is to be employed by the end of the second year, with the total investment of 2.3 million euros. [6] So the vision is starting to realise.

#### 3.3 Example 3: Creativity and Innovation – Putevi Srbije and Mihailo Pupin Institute (Serbia)

Public company *Putevi Srbije* and the leading Serbian research and development institute *Mihailo Pupin* introduced electronic payment system on ten main toll booths from Belgrade to Niš, covering 80% of the traffic on that part of European Transport Corridor 10. The new system with tags should speed up the traffic (as there is no need to stop at the toll booths) and should eliminate scams and corruption (since the payment is automatical). The system already operates from Šid to Belgrade. It is one of the most advanced electronic payment systems in Europe (the same as in Spain, Portugal, and France), designed by *Mihailo Pupin Institute* and produced by Serbian companies following European standards, which will be mandatory from 2014. All the contractors and sub-contractors were Serbian companies and the total cost for the ten toll booths equipment was 12 million Euros. The system is already exported to Montenegro and Congo, with very good prospects for further commissions. [7] So it can be done. And it has been done before.

#### 3.4 Example 4: Long-term Planning – Strategy of Local Growth (Japan)

On the first day of 2010, Japanese government presented a long-term economic strategy aiming at average growth rate during the next decade of more than 2 percent. Japan's GDP should rise to 4.91 billion Euros by the 2020/2021 fiscal year. More than 4 million jobs should be created: 1.4 million related to environmental protection, 2.8 million related to health, and 560,000 related to tourism. All this is to be achieved by creating demand in those sectors. Japanese economy will achieve growth during the next fiscal year, for the first time in three years. After this year's minus 2.6 percent, the estimation for the next year is 1.4 percent. The strategy should be finalised by June 2010, after discussing all the financial details and deadlines. [8] Even such a brief agency report conveys Japanese good sense, responsibility, and vision – not to mention the timing of the government's announcement (January 1st) which radiates commitment and determination.

#### 3.5 Example 5: Long-term Planning – Strategy of Global Growth (China)

According to both Chinese and German sources, China took the lead from Germany and became the world's largest exporter with 1,200,000 million dollars in 2009. [9] China will become the world's largest economy not in 2041, as predicted last year by a group of American economists, but much earlier – in 2027. Leading economists from *Goldman Sax* estimate that China is presently the third economy in the world, only a bit smaller than Japanese. [10] A possible shift in strategy of China's global growth was mentioned back in December 2008, when *Chinese Investment Corporation* (a 200,000 million dollars fund) announced that more of its investments would be redirected to developing countries. According to the director of the fund, the consequences of the global crisis might be more

severe in the developing world; its population might suffer in the future and would need help. On the other hand, the risk with certain financial institutions is unacceptable. [11] Comparison with China may sound pretentious, but positioning on the global scene is not less important for a small country like Serbia, on the contrary.

## 4. Conclusions

With our review of relevant issues for enterprises in the time of crisis we conclude this brief analysis. It is all common sense: neither company nor country, no matter how big or small, should wait for a crisis to start contemplating its culture – its collective spirit, solidarity, and collaboration, its open-mindedness, creativity, and innovativeness, its vision, commitment, and capability for long-term planning. But it is never too late to start, even in the time of crisis. Besides, the most dramatic change often occurs precisely where the situation had been apparently absolutely still for ages – as when a long held spring suddenly pops up.

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## Entrepreneurial Innovation as a Factor for Development of SMEs from the Subsector of Poultry Raising in the Republic of Macedonia

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The innovative enterprise is one of the trends in Europe, whose aim is to achieve better economic results and better interpersonal relations among staff members through innovative approach towards the management and administration. Innovation is a crucial part of the entrepreneurial process. Still, new ideas are of little value without another kind of entrepreneurial ability – the ability to identify and even create opportunities for market realization of the idea as value created products, services or processes.

The aim of this work is to try to explain the understanding of the entrepreneurial innovation and indicate to its importance for the development of SMEs from the subsector of poultry raising in the Republic of Macedonia. All production capacities in the subsector of poultry raising (farms for production of consumer eggs, farms for production of broiler meat, farms for raising of ostriches, slaughter-houses for poultry meat etc.) belong to SMEs. The results of this research indicate that the entrepreneurs from SMEs in the poultry raising sector are rather limited during their choice of innovation strategies. They lack entrepreneurial knowledge, financial means and as a result are limited regarding forecasts. Entrepreneurs do not keep written strategic plans, but are short term oriented and often apply ad hoc solutions. However, seen the domestic demand for poultry meat, the fact that 80% of the poultry meat is imported, the raising of ostriches for export and similar facts indicate that that is a need and opportunity for innovations and entrepreneurship in the subsector of poultry raising in the Republic of Macedonia.

#### Keywords

Effects of the innovations, entrepreneurial innovativeness, innovative enterprise, obstacles to introduction of innovations, SMEs from the subsector of poultry raising

#### 1. Introduction

When speaking about innovation one primarily has changes on mind. They are usually technological changes, changes relevant to the product or service and the changed method of production and provision, which means change of the process. (Fig. 1)



#### Figure 1 Dimensions of the innovation space.



Source: Tidd J., Bessant J., Pavitt K. Managing Innovation – Integrating Technological, Market and Organizational Change. John Wiley & Sons Ltd. West Susex, England, 1997. p. 7

The second dimension of the changes is the degree of the novelties, from the minor changes, incremental improvements, through radical changes that involve change of our considerations and the way of use of the product. Sometimes such changes are quite usual for certain sectors or activities (such as in the case of poultry raising), and sometimes they are so much radical that they change the foundations of our society. Radical innovations are rather rare and more risky.

The enterprise has to keep its competitiveness on the market and always timely introduce novelties i.e. to innovate. The innovation is a new product (an innovation that increases the demand) or new technology (innovation that reduces costs). Both kind of innovations are approached by own development (vertical transfer of innovation) or through buying of licence or technology (horizontal transfer of innovation).

Innovations differ by the range, nature and degree of novelties (Tab. 1)

Variable	Influence upon the management of information
Sector	Various sectors have different priorities and characteristics – high tech, quantity intensive activities, scientifically intensive activities
Size	SMEs differ by their access to resources – due to which they have to develop connections
National system of innovations	The environment in different countries in terms of institutions, policies is more or less supportive
Life cycle (technology, activities)	Different phases of the life cycle demand different views towards innovations – difference between the activities with new technologies and mature, `old` enterprises

**Table 1** How certain variables influence upon the management of information.

Source: Tidd J., Bessant J., Pavitt K. Managing Innovation – Integrating Technological, Market and Organizational Change. John Wiley & Sons Ltd. West Sussex, England, 1997. p. 29

The table above demonstrates how certain variables, like the activity, the size of the enterprise, the environment where it acts and the phase of the life cycle have impact upon the management of the innovations. In some activities the innovation is critical for survival while it is not the case in some less intensive activities. The acquisition of needed resources is critical for SMEs. The environment where the firms act do support or hamper the innovation.

As the subsector poultry raising in the Republic of Macedonia is composed exclusively of SMEs, some of the characteristics of SMEs are of interest to be dealt with in this work.

Small and medium sized enterprises basically differ from the large ones not only by the income levels, the number of employed staff and value of assets, but also by the style of management. It also applies to the innovation i.e. development of new products.

Small and medium sized enterprises have some features that separate them from the large ones and demand different processes of management. Because of these characteristics simultaneous work of the major number of SMEs is rather more risky than the large ones. Limiting factors are:

- Only one person is the most important in the enterprise and that is the owner (entrepreneur). His/her attitudes and values have impact on all of the work in the company, which means that the decisions in the company are individual to a significant degree. There is a risk connected with the overdependence on one person who cannot be expert in all fields.
- Major part of SMEs hardly influences their market. The price of their product is regulated by the market where they face powerful competitors. The risk of failure is considerable and the competition strategy is of prime importance.
- SMEs deal mostly on one market or on limited markets, probably with a limited range of products or services. It means that the field of work is limited for the enterprise and less strategic than for the large enterprises. They are hard to diversify their risks of work.
- SMEs primarily depend on small number of buyers, which means that they are rather vulnerable in case of losing a buyer.
- SMEs face hardship in raising capital, which seriously limits the choice of strategies. The search for financial means for major number of firms that want to grow is mainly a strategic issue.

The major problem SMEs are facing is the lack of resources, as they cannot offer sufficiently high salaries to researchers, which is also an obstacle for presence at numerous existing markets. Because of that SMEs appear as leaders mainly on markets that are in the phase of creation.

The characteristics of SMEs that impact the innovation processes are:

- Lack of resources financial means, staff etc.
- They are too dependent on certain innovation.
- Obstacles for appearance on existing markets.
- SMEs have advantages in the early stages of inventive work and by less expensive but still radical innovations.
- Lack of technological knowledge.
- Lack of highly educated staff, combined with the resistance of the entrepreneur to employ them.
- Defiance towards education.
- Defiance towards external advisers and assistance.

## 2. Material and methods of the work

Subject to research of this work is the entrepreneurial innovation as a factor for development of SMEs from the subsector of poultry raising in the Republic of Macedonia. Several methods which are usually used in economic analyses are applied in this work, like:

- Method of generalisation and signalization.
- Method of analysis and synthesis.
- Method of induction and deduction.

In view of authentic information, relevant secondary data are used from the following sources:

- State Statistical Ofice of the Republic of Macedonia.
- Ministry of Agriculture, Forestry and Water Economy.
- Ministry of Economy, and
- Agency for Support of the Entrepreneurship in the Republic of Macedonia

#### 3. Research results and discussion

The subsector of poultry raising in the Republic of Macedonia saw an immense fall in the early '90s of the last century, when the number of poultry dramatically fell from 5.7 in 1990 to 2.25 million units of poultry in 2008. The commercial poultry industry, i.e. the current SMEs mainly originate from the former state poultry raising farms that were privatised during the process of transformation of the social capital. They owned 837.000 units of poultry in 2008, which presents a decrease of more than 205.000 of units which was the case in 2004, when SMEs owned 1.042.000 units of poultry.

The SMEs from the subsector of poultry raising are mainly oriented to production of eggs and secondarily to poultry meat. The poultry population consists of several kinds of domestic birds like hens, turkeys, geese and ducks. However, the hen is a dominant type.

The production system of consumer eggs is intensive. When the export market for eggs was reduced the subsector was affected by too large capacities, inefficiency, high number of staff and high input prices because of which a large number of production capacities had to be closed down or transferred to production of broilers. Currently there are 15 large farms with the capacity of 50.000 to 100.000 broilers / turnover and 50 family farms with the capacity of 3.000 to 10.000 layer hens per year that are mainly sold on the domestic market, covering the needs in full and export a smaller part of the production.

The raising of broilers includes 12 large farms for broilers and 30-35 small farms. Larger farms have the capacity for 20.000 broilers/turnover or 120.000 per year, or the total capacity of all 12 farms is 1.440.000, while the smaller ones have the total capacity of around 1 to 1.2 million broilers / per year. The average capacity is around 5.000 to 7.000 broilers per turnover.

Until recently there was no production of poultry meat in the Republic of Macedonia, except the exploited layer hens that are slaughtered about the end of their productive life for further production. The consumption of poultry meat in the Republic of Macedonia is 11.0 kg. which is half of the average in EU-25, where it is 22.9 kg. per capita. The domestic consumption is growing rapidly and it is increased by more than 10% per year, as a result of the raised population but also because of the consumption per capita. The current domestic production of poultry meat is not sufficient to cover the domestic demand. In 2008 the import of poultry meat amounted to 37.467.000 dollars, expressed in value, and the quantity of 25.927 tons. The import of poultry meat is only 10% of the value. All this indicates that there is a very strong potential for rise of the broiler production and probably a trend of increasing fresh products by marginally higher prices in comparison to the imported frozen meat. However, parallel with the increased production of poultry meat more slaughtering capacities are needed. Currently, there are only two slaughtering houses, with the total capacity of 2 million poultry units per year, something that is a limiting factor for the development of the production.

An interesting development of the subsector 'poultry raising' is the new business of raising of ostriches. Currently there are more than 45 businesses breeding around 800 ostriches. The association of these businesses, particularly around the placement of the product (due to the distant markets) is an imperative measure for the growth of this business.

Table 2 presents the SWOT analysis of the subsector 'poultry raising'.

Strengths	<ul> <li>Raised productivity (adequate environment, management, equipment etc) of the specialized farms (whose number is increasing) and their good integration in industry.</li> <li>Enterprises for eggs and poultry meat are</li> </ul>
	integrated in the production from the farm to the market.
	<ul> <li>Autonomy in the production of eggs</li> </ul>
Weaknesses	• Low productivity of small poultry farms due to the interbreeding with low productivity, inadequate nutrition (the food is based on maize and is expensive for family farms), obsolete farm equipment.
	• Family farms for laying hens have to organize and integrate
	• There are no standards for placement on the market and establishment of the price based upon the assessment of the bodies on the slaughter line.
	Generally, slaughtered animals have low weight before being dressed.
_	• There are only two slaughter houses in the country (with the total annual capacity of 2 million birds), which presents a limitation for the development of production of boilers.
Opportunities	Raised domestic demand for poultry meat (particularly fresh).
	• Since 80% of the poultry meat is imported there is potential for development of the poultry breeding sector regarding the prospective market (substitution for the import).
	<ul> <li>Increased production of food for poultry.</li> </ul>
	Raising of ostriches.
Threats	In the absence of adequate market regulations there is considerable import of cheap frozen poultry meat.
	<ul> <li>The production of eggs is suppressed by unfavourable market prices.</li> <li>Various diseases</li> </ul>

Table 2 SWAT analyzes of the subsector 'poultry raising'

Source: IPARD: National programme for agriculture and rural development 2007-2013, pp. 157-158.

The majority of innovation strategies are directed towards the problem of management in large companies, with complex organization, where the coordination and integration of different resources and skills is important. Still, participants from the SMEs in the subsector of poultry raising in the Republic of Macedonia must be aware for their place in the market, their technological directions and have to build their area of work and organizational process. They have to use their own features which are characteristic for the SMEs, which are mainly of organisational nature (advantages): better communication, fast decision making, high level of commitment of the staff and the pro-novelty attitudes. These are the reasons why the SMEs do not need formal strategies. However, SMEs from the subsector poultry raising have to establish their own innovative strategies around their accumulated knowledge, which is characteristic of the enterprise. It means that it is important to establish what is characteristic and of core importance for the enterprise which will distinguish them from the competition. The poultry raising as activity offers numerous opportunities for that (for instance: the organic production, branded production). It is not the very product in technical terms, but the characteristics of the product which are recognised by the customers. Such abilities enable the enterprise access to the market. Innovation strategies have also to consider the environment, which is complex and constantly changing and which is uncertain due to the current and future development of the technology, the threats from the competition and market (and non-market) demands.

## 3. Conclusions

All production capacities in the subsector 'poultry raising' (farms for production of consumer eggs, farms for production of broiler meat, farms for raising of ostriches, slaughter-houses for poultry meat etc.) belong to SMEs. The results of this research indicate that the entrepreneurs from SMEs in the poultry raising sector are rather limited during their choice of innovation strategies. They lack entrepreneurial knowledge, financial means and consecutively are limited in view of forecasts. Entrepreneurs do not keep written strategic plans, but are short term oriented and often apply ad hoc solutions. However, SMEs from the subsector of poultry raising in the Republic of Macedonia also need to establish their own innovation strategies around the accumulated knowledge which is characteristic for the enterprises. Their own innovation primarily on the domestic market seen by the domestic raised demand for poultry meat, the fact that 80% of the poultry meat is imported, raising of ostriches for export and similar facts indicate that that is a need and opportunity for innovations and entrepreneurship in the subsector of poultry raising in the Republic of Macedonia.

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## The Role of Inter-firm Networks and Clusters: A Proposed Framework in Transition Economies

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Clusters are constructed mainly of inter-firm networks. Frequently, companies are starting clustering activities unintentionally, by building and strengthening the supply chain. Bringing together producers, suppliers, transporters and sellers, and sustaining all of them in the cluster, should be a strategic resource. These clusters posses a socioeconomic business culture linking certain fundamental conditions that are drivers of economic growth within nations. The objective of this research paper is to analyze the characteristics and nature of clustering models in former transitional economies and propose a framework that could be adopted in the R. of Macedonia. The paper draws of the various aspects related to cluster structure such as cluster models and topology, relevant stakeholders, motivational factors for being part of the cluster and by presenting a number of cluster success stories from the South East European (SEE) region. The methodological approach consists of a literature review through a number of in-depth case studies as well analysis of the political, economical, regulatory and social issues and business related to cluster classifications and models. Also a quantitative analysis of data collected from a survey of the major stakeholders, such as Information, Communication and Technology (ICT) industry representatives, government representatives, academia representatives and the donor community. The key findings include: that Macedonian ICT industry shows understanding and readiness to become seriously involved in activities initiated on behalf of the ICT Cluster; moreover, all of the potential cluster participants are showing readiness both in terms of resources and capacities to work on the further development of the ICT Cluster. A framework outlining the structure of the ICT cluster for R. Macedonia is proposed. The author conclude based the results of the survey, that dialog between the ICT industry and the Government should be set on a higher level (public private dialog enabled), in order for Government representatives to become aware of the readiness and potential of the ICT Cluster development.

#### Keywords:

ICT Industry and Regional clusters, economic growth, entrepreneurship, innovation, SEE region

## 1. Introduction

While the Western European countries have well established dynamic economies with high GDPs and standards of living, the Eastern European ones who have recently emerged from the collapse of the communist states are struggling to find ways that foster high levels of productivity and innovation in order to achieve sustainable economic growth and accelerate their transition from centrally planned economies into free market economies. To narrow down this gap and completely integrate their economies with their Western European neighbours, the Eastern European countries are facing many challenges in their attempt to achieve a rapid economic Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 growth. In its transition from a socialist regime, R. Macedonia has been through many social instabilities, economic embargos and collapsed export market and has felt the effects of the Balkan wars of the early 1990's. Regardless of all those challenges, the Macedonian Government has undertaken numerous radical and bold actions in the past several years to jumpstart the country's recovery. There are many issues still to be resolved in the areas of institutional legislation framework, financial institutions, education and adequate human resources, government policy and infrastructure challenges. Even though R. Macedonia is mainly agricultural country, there are several other industries that have been rapidly growing in the past several years. These include the textile industry, tourism and Information and Communication Technology (ICT) industry. The Information Technology (IT) industry has been identified as one of the fastest growing industries. According to the International Data Corporation (IDC) the IT industry reached an annual growth rate of 19.9% or US \$73.29M in 2005 and US \$ 163.63M only three years later in 2008 [1].

The primary focus of the study was the ICT industry in R. Macedonia, its development in the past few years and the challenges it faces in becoming a cluster. The type of clustering model needed to promote and stimulate the economic growth of the ICT industry in R. Macedonia is the primary focus of this research study. A range of different methodologies have been utilized in research of clusters. Lack of standardized methodology is partly due to heterogeneity of cluster research field covering a range of disciplines and streams, including neoclassical economics, (new) geographical economics, economic geography, evolutionary economics, regional development, industrial relations, management, sociology and culture. Ketels et al [2] in their Global Cluster Initiatives Survey (GCIS) report that about 1,400 cluster initiatives were identified world wide, further noting that the vast majority of cluster initiatives are found in advanced economies. They also highlight that cluster initiatives in developing and transition economies are considerably younger than in advanced economies. Based on the GCIS survey, they find that in terms of organizational performance, cluster initiatives results' are overall best in transition economies. Similarly, analyzing clusters in Croatia, Redzepagic and Stubbs [3] stress that a notion "one size fits all" will need to be replaced with more flexible policies. Franicevic and Bartlett [4] also point out that knowledge and skills needed to run networking programs efficiently are largely missing in transition economies.

The concept of clusters, as developed by Michael Porter (1998), has rapidly become the focus of economic competitiveness, theory and policy. The Porterian cluster [5] was used as an instrument for accelerating the economic growth. This particular type of cluster was the focal point and it was additionally modified with participation of all necessary stakeholders to achieve optimal results [6]. This study is the first of its kind in R. Macedonia primarily since it took into consideration all key stakeholders in the ICT industry. They were consulted on their experiences and opinions regarding the future development of the ICT cluster. The results from this study do not only represent the position of one stakeholder, but rather the position and involvement of all necessary parties in order to secure the ICT cluster's further success.

The paper begins with a detailed overview of cluster models and topologies and presents several cluster strategies in former transition economies. It also presents the reasons why the Porter's cluster concept was chosen as a starting point of this study. The methodology explains the means by which data was gathered and analysed based on a sample from the industry representatives, government representatives, academia representatives and the donor community. This is followed by a presentation of the main results as well as the proposed ICY framework for the R Macedonia.

## 2. Literature Review

#### 2.1. Clusters

A cluster represents a group of independent companies with close collaborations with other public institutions and academia in order to accelerate product development and market

- the escalation of innovation and competitiveness of companies;
- the formation of special skill set through continuous exchange of knowledge;
- exchange of valuable information among cluster members enabled by already established trust;
- attraction of new foreign direct investments;
- general enhancement of the economic climate in one country.

In most cases, cluster settings are informal and unstructured. This is often the case when they are created using the bottom up approach (the initiative is started on behalf of the companies instead of the government). In this type of situations, industrial associations and economic chambers, scientific institutes and others have the opportunity to play a great role in the initiation phase. The clusters initiated based on this type of framework are usually the successful ones.

"Cluster is a geographically concentration of interconnected companies and institutions in a particular field, linked by commonalities and complementarities" [11]

In order for the European Union to bring this concept closer to all European countries, [12], [13] it widened Porter's definition of clusters, stating that clusters are groups of independent companies and relevant institutions which are also:

- Cooperating and competing at the same time
- Locally focused in one or several regions i.e. clusters are rarely created in global terms
- Specialized in one area, are connected with similar technologies and posses needed skills
- Either traditionally connected or based on certain science and technology
- Clusters can be institutionalized with cluster facilitator or totally informal
- Clusters also have particularly positive impact on:
- Innovations and competitiveness
- Creation of skills and exchange of information
- Growth and development of business dynamics on a long-term basis [14].

The characteristics similar to all clusters are interaction, co-operation and coordination between cluster participants that are in a geographic proximity of each other [15]. Although is impossible to replicate clone regions or nations, or any other knowledge cluster, there are many lessons that can be learned how to improve the competitiveness of regional locations.

#### 2.2. Cluster Models and Topology

According to the empirical evidence from many studies, apart from this one, it has been concluded that there are characteristics common to all clusters but at the same time there are characteristics unique to each cluster. [16] Some of these characteristics are composition (setting of stakeholders), human capital, localities, trust between cluster members and flexibility. Markusen [17] argues that classification of cluster models depends on several variables such as: the ability of certain localities to attract investments; the sustainability of human capital; whether the Governmental actors are influenced nationally or regionally; and the impact of the multinational companies. According to Enright [18] cluster classification is made based on the development stage that the cluster is in. Furthermore, Enright emphasizes the importance of the presence of social capital within the cluster, upon which he believes the cluster stage development depends on. The author proposes five classifications which are:

- 1. Working clusters well developed cluster
- 2. Latent clusters include many companies, however does not have a satisfactory performance due to the lack of interactions and trust among them
- 3. Potential clusters clusters in birth stage
- 4. Policy-driven clusters clusters created based on the requirements of some Governmental policy
- 5. Wishful thinking clusters initiative started, however failed due to external factors such as bureaucracy and policies.

#### 2.3. Innovation and Competitiveness as Crucial Cluster Success Factors

Creation of competitive advantage is achieved by continuously stimulating and improving the necessary means in the work process of a certain entity. This creates and increases the value, tangible and intangible assets of a certain company or cluster, which are greatly needed for the cluster to sustain and achieve further success. The environment, in which innovation and competitiveness are developed, is analyzed by a concept, introduced by Porter [19]. The Porter's diamond, represents the setting which affects the development of competitive advantage both in positive and negative ways. The four broad determinants that affect productivity and innovative capacities are: factor conditions, domestic demand conditions, related and supported industries within the country, and firms' strategy, structure and rivalry among domestic firms. Porter also identified two other influences such as Government and Institutions for Collaborations (IFCs) [20]. Each cluster diamond is unique, as is the structure of each cluster and is highly affected by the approach that each region practices towards business competitiveness. Factors that can mainly foster innovation are related with factor (input conditions), such as availability of skilled workforce, or can be boosted by informal communication with related supporting industries, such as communication with suppliers [21]. The change in the demand level can also affect dramatically the innovation and especially the competitiveness. Finally, the rivalry between companies might also be innovation booster.

## 3. Cluster Strategies in Former Transition Economies

#### 3.1. The Case of R. Macedonia

The first cluster creation initiation in R. Macedonia was introduced with the Macedonian Competitiveness Activity (MCA) Project, sponsored by USAID (United States Agency for International Development), in 2001 [22]. The project was managed by two consulting companies. Under the framework of these projects four clusters were formed: Tourism, Wine, Lamb and Cheese and Information and Communication Technology (ICT). It was crucial that the consultants brought within the framework of these projects were able to create incentives and gather certain number of ICT companies' representatives. They created an environment where the participants were able to start communicating, exchanging information and finally cooperating. When the moment was right, an industry association named Macedonia ICT Chamber of Commerce (MASIT) was created, at the end of 2001. Another very important fact from that period is that consultants not only communicated with the business community representatives, but they were also raising awareness and promoting the creation and benefits of the clusters, between the other stakeholders, i.e. financial institutions, Government representatives and Academia representatives. Once the project was finished in 2006 there were not any plans for continuation of the ICT cluster as well as with the other clusters [23]. MASIT took the initiative to continue operating the association but without

continuation on the public private dialogue. Finally, in 2008, the Ministry of Economy prepared a support program and Strategic plan for 2009 – 2011, where clusters were provided with certain minimal amounts of financial support. [24].

#### 3.2. The Case of Slovenia

The Cluster Pilot programme in Slovenia has shown that policy makers and regulators can affect the entire process to be implemented in certain economy, by applying specific mechanisms, thus covering all the relevant participants. The Slovenian case highlights that continuous ongoing communication, at all levels and among actors is a prerequisite for successful implementation. Through very clear policy strategy, targeting the right mix of actors (top level management of companies; representatives of the Research and Development (R&D) institutions and qualified public administration representatives), identification of joint objectives, the commitment and the momentum were the most important aspects in the Slovenian case. The Ministry of economy, through its policies between 2003 and 2006 has supported establishing 16 national and 26 regional clusters, which have additionally set up complete supply chains. It also has trained public administration staff to act as cluster development promoters. Finally, the cluster development process in Slovenia was guided by bottom-up approach and by the principle of learning by doing. Although this principle has not always had a clear path, it allows constant adaptations on behalf of both the policy makers and the cluster participants. [25]

#### 3.3. The Case of Estonia

The case of Estonia has shown that the Governmental support is not always crucial for the creation of a stable and successful cluster. Having very clear objectives, strong market demand, technical knowledge, personal relations and innovative solutions, put a young cluster in a very strong position. Catching the momentum, the fast transition from socialism, opening all domestic markets towards the international competition and collecting numerous Foreign Direct Investments (FDIs), were also some of the additional conditions that brought Estonia to the stage of being a model for good clustering experiences [26].

## 4. Methodology

This objective of the study was to investigate the following question: What kind of clustering model is needed to promote and accelerate the economic growth of the ICT industry in Republic of Macedonia?

#### 4.1. Study Design

In order to fulfil the aim of the study and address this question, a quantitative analysis of data and a web-based survey was carried out among four major different communities determined to be relevant in an ICT cluster setting. Those are: ICT industry representatives, Government representatives, Academia representatives, Donor community (and financial institutions, if applicable).

The overall aim of the survey was to gain clear overview of the development phase in which Macedonian ICT industry and the ICT cluster are at the moment. A personal email was sent to the respondents inviting them to visit the web site and participate in the survey. The survey was constructed in a form of questionnaire containing multiple choice answers, from which interviewees were able to choose one, or where needed to be more précised, they were able to choose more than one choice. Some of the questions were overtaken and rephrased from

some analyses designed based on Red Book for Clusters, created by Solevell et al. [27] where possible, questions were formed as statements and answers provided were representing *Likert-style rating scale*. In these cases, most of the answers are representing a range of "very strong disagreement" to "very strong agreement" on the specific statement. [28] There was also another group of questions, which were utilized for descriptive research, using statements expressing opinion and/or certain behaviour. There were 8 subgroups of questions, each covering specific themes including: types of clusters existing in R. Macedonia; cluster structure, objectives and participants; ICT industry development and readiness in R. Macedonia; financial and technical support for Macedonian ICT cluster; ICT cluster leadership, facilitation and human capital. A 44-item structured electronic guestionnaire was developed.

All of the questions contained in the above survey were constructed in order to answer the basic research questions in support of this study and to provide its author with valuable information in regards to certain issues, primarily made on behalf of the potential ICT cluster participants. In addition the content was made in an informative way, so that respondents do not only give their answers but to be provoked to start thinking on issues they otherwise do not acknowledge. Most of the stakeholders were given the opportunity to state their view of the benefits, they will get if they become part of the cluster. Through the survey, issues such as competitive advantage and innovativeness were directly discussed with stakeholders and the level of capacity for innovativeness and competitiveness were also tackled. Finally, issues such as cluster financing, sustainability and facilitation through this survey were discussed with respondents.

#### 4.2. Data Collection

Data collection developed in two phases. In the first phase, the pilot, the questionnaire was distributed in 5 different participants (ICT industry representatives, Government representatives, Academia representatives, Donor community and financial institutions, if applicable) in order to get feedback for the questionnaire. The feedback was positive and the questions considered simple and understandable, short and clear in their meanings. The questionnaire was available, either in electronic form or in hard copy accompanied by explanatory leaflet. The duration of this phase was two weeks. No serious changes in the original questionnaire have been done, except some re-phrasing in a number of questions. In the second phase, the final version of questionnaire was available only through the web site's electronic version. The duration was three weeks. An electronic invitation was sent to more than 131 potential participants in either their personal or professional emails. The number of respondents in this phase was 66 (response rate = 50,3%).

#### 4.3. Results – Finding of the Study

#### 4.3.1. ICT Industry Readiness and Capacities

Based on the results from the survey, it can be concluded that the ICT companies are ready to start the development of the ICT cluster concept. This industry is growing rapidly and many of these companies have experienced a significant growth in the past 3-5 years. At this point, they are not only ready and interested, but are also able to provide human resources from their companies who will be responsible for handling the ICT cluster's activities. Nowadays, many of the companies in R. Macedonia are heavily investing in R&D and employee training. These companies have established strong cooperation among them and are demonstrating a satisfactory level of mutual trust. Seventy six percent (76%) of respondents answered positively that ICT companies have capacities and potential to start

mutual Research & Development (R&D) centres, technology parks or other projects, through which they will work on exchanging information and knowledge and create competitive advantage for certain product or service in niche markets. The respondents highly agreed that cluster concepts tend to produce innovation advantages, efficiency benefits and high mobility of labour and other resources. The respondents showed awareness that one of the cluster's objectives should be promotion of new technologies and innovation, which will increase the chances of cluster success. The results from the survey report that the ICT industry shows understanding and readiness to become seriously involved in activities initiated on behalf of the ICT cluster.

#### 4.3.2. ICT Cluster Structure, Objectives and Participants

Due to the fact, that through this survey, relevant stakeholder representatives were contacted, the author composed their view on the ICT cluster development and the potential benefits of an ICT cluster formation and success. 91,6% stated that it is important for cluster members to have vision, mission, clear objectives, clear framework of shared ideas, and clear procedures of resolving conflict of interest. Most of the respondents are aware that this activity requires a great deal of volunteer time, i.e. relevant ICT industry players' interest and involvement is crucial for success, especially in the beginning. When respondents were asked whether Governmental bodies should choose cluster participants, there was disagreement expressed. This way, it was once again proved that concepts such as clusters should be created on bottom-up approach bases, where companies will consider the cluster as their creation. The Institution for collaboration (IFC) - MASIT, is seen as a major driver of the ICT industry. Many of the respondents see MASIT as potential ICT cluster facilitator. Academic institutions have also expressed their readiness, and in the open discussion question, stated that they are not only ready to get involved in research projects, but they are also ready to listen to the need of the ICT industry and to accordingly adapt their curricula. The representatives of the donor communities are primarily coming from USAID, which is one of the strongest supporters of the ICT industry. At the same time it is one of the most prepared consultants when clustering as a concept is in question. They are aware that they should be part of the cluster by having a catalytic role, but will not be directly involved in decision making processes. Finally, the Governmental support towards clustering is assessed as either not sufficient or unknown (people do not have information what exactly is the Governmental support towards clustering). It appears that the Governmental role in the entire cluster concept is the weakest.

Based on the results utilized from the survey, nearly all of the potential cluster participants are showing readiness both in terms of resources and capacities to work on the further development of the ICT cluster. The only note here is that Governmental support should be stronger both financially and in terms of incentives.

#### 4.3.3. ICT Cluster Financing and Facilitation

Financing is one of the major obstacles, for the development of the ICT cluster, especially from ICT companies' point of view. It should not be neglected that Macedonian ICT companies are still very young and in constant need of financing. The fact that in this survey, they stated they are investing in R&D purposes is one big step forward. As previously mentioned, the support provided on behalf of the Ministry of economy is very minimal, especially for the ICT cluster which is in stage between initiation and growth. There is visible support on behalf of the donor community, however, not sufficient for fast growth of the cluster. Multinational companies (MNCs) are also seen as one of the major investors in the development of the ICT cluster, not only in financial terms, but also in terms of transfer of

know-how and technologies. The support of the MNCs in R. Macedonia in the ICT industry is still poor. Based on the answers, it was clearly shown that the other bodies that should support the clustering, except of the Ministry of economy are: ICT companies, Ministry of Information society and Agency for promotion and entrepreneurship, Donor community, Financial Institutions and the Academia. When it comes to facilitation, most of the respondents claimed that the potential facilitator should either come from the ICT industry itself, or from the IFC - MASIT. Some of the major activities of the ICT cluster facilitator are coordination of basic and advanced research, innovative and R&D projects, building of the ICT brand, export promotion strategies, working on competitive advantage and exploring niche markets. All this is necessary for the ICT industry to become more competitive and experience quick economic prosper. Finally, 90,1 % of respondents have positive opinion that MASIT can even be SEE ICT Regional Cluster facilitator. The dialog between the ICT industry and the Government, should be set on a higher level (PPD enabled), in order for Government representatives to become aware of the readiness and potential of the ICT cluster development. The possibilities for support and other incentives and benefits should be broadened. Once the prosperity of the ICT industry is visible, the Governmental bodies will receive their "return on investment" by being main supporters of the success story.

## 5. The Proposed ICT Cluster Framework

Since the most important research question of this paper was: What kind of clustering model is needed to promote and accelerate the economic growth of the ICT industry in R. Macedonia. In order for the ICT cluster to start actively working and producing results, the structure should consist of all of the stakeholders mentioned many times throughout this paper. Figure 1, illustrates the proposed ICT cluster framework.



Figure 1 The Proposed ICT Cluster Framework

However, as it can be noted on the figure, it is not important only for the stakeholders to be present, but also for the right conditions to exist. According to the survey as well as to the literature review, the variable that lacks mostly at this moment is clear objective, mutual idea and focus of the potential cluster participants. Financial and infrastructure support are two complementary variables to the first mentioned. Last but not least, is the issue of facilitation of the cluster, which should be decided urgently upon all the other variables have been resolved.

#### 5.1. Recommendations

Based on both, the primary and secondary analysis, following recommendations must be considered, in order for the ICT cluster to prosper and accelerate the economic growth in R. Macedonia: from the industry point of view - The momentum of readiness of most of the ICT companies should be utilised and clear focus and objectives should be set. If this is achieved, the cluster initiative will make sense and fast results such as commercialisation of product, might be achieved; from government point of view - Public Private Dialog should be set on a higher level in order for Government representatives to be made aware of the readiness and potential of the ICT cluster development. The possibilities for support and other incentives and benefits should be broadened. Once the prosperity of the ICT industry is visible, the Governmental bodies will receive their "return on investment" by being main supporters of the success story. Policy paper for cluster development is urgent, and an immediate Action plan should become part of it. Leaders of the Actions within that Action plan should be people from the industry; from academia point of view - academia representatives should be more involved in R&D projects, on which it will work together with industry representatives and students. Teaching curricula should be adjusted toward market needs and should be enriched according to market trends, thus the students will start to acquire relevant competences and know-how; and from the Donor community point of view - donor community should continue following the development of the ICT industry and to support whenever they can, in terms of financials, infrastructure, consultancy and transfer of knowledge. The four recommendations named above are valid only if mutual trust and collaboration between ICT companies exist on a satisfactory level. However, though some argue that cluster initiatives can be an important tool to increase the level of trust [29], it is still an open guestion to what degree can institutional support produce trust in the SEE region[30, 31].

## 6. Conclusions

In terms of practical implications this study contributes to the knowledge in region by providing a framework for the development of an ICT cluster. In this study we have proposed a framework of an ICT cluster ovation system for R. Macedonia. The present study revealed some important findings, but is not free of methodological limitations. Firstly, very few people in R. Macedonia are directly acquainted and involved in the cluster development issues. The targeted audience of interviewees of 66 people was either slightly or highly informed in the cluster issues. In addition, it should be noted that the questionnaire is not addressed to the consumer or demand side. It is focused on the supply side and the interest of the ICT cluster creation from the producer's point of view. Moreover, it would be interesting the specific study to be expanded toward the demand side as well.

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# Measuring Intellectual Capital in SMEs in a Transitional Economy

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To survive in the global economy small and medium enterprises (SMEs) have to improve their products and processes exploiting their intellectual capital in a dynamic network of knowledge-intensive relations inside and outside their borders. There is established evidence to suggest that SMEs face different knowledge management challenges to lager firms. SMEs have understandable resource constraints, and hence have to be creative in working around these limitations in order to manage knowledge. The research discovered that SMEs do not manage knowledge the same way as larger organizations. The common motives for knowledge management in SMEs seem to be growth, change and renewal. But bigger companies seem to be more interested in measuring and exploiting existing resources. There is emerging theory and practice concerning knowledge management in SMEs as a hole, SMEs may not, however, be an homogeneous group when addressing knowledge management. The study's objective was to investigate whether there are different group of relevant indicators within SMEs. The research reported on this paper represents ground-breaking work on several counts: while a number of studies have looked at indicators of intellectual capital, very few have targeted SMEs and even fewer, if any at all, have examined SMEs in transitional economies.

#### Keywords

Indicators, intellectual capital, knowledge management, SMEs

## 1. Introduction

Although intellectual capital and knowledge management are obviously not the same thing, it is usually considered that they are two very linked notions, two branches of the same tree ([1]). Accordingly:

- Intellectual capital is considered to be a stock, and knowledge management to be a flow which increase that stock
- Knowledge management is done because Intellectual capital exists. Intellectual possessors are viewed as "knowledge workers" ([2]) or "knowledge companies or organisations" ([3]). Those workers and organisations need, use, create and disseminate knowledge more than others.

In the following analysis, intellectual capital and knowledge management will thus be considered jointly.

Find an universal measuring system of "intangible" asset as intellectual capital is a complex problem. Measurement approaches of intellectual capital of organisations (Edvinson and Malone [4], Sveiby [5], Roos *at al*. [6], Bontis [7], Andriensen [8]) differ in objectives, methodology and solutions and none of them is not sufficiently effective. Despite the existing problems with intellectual capital reporting and lack of standard in the reporting, there is an increasing interest in it which is rooted in business planning activities, specifically in business forecasting.

While financial capital reflects the organisation's history and achievements of the past, intellectual capital represents the hidden organisational potential for future growth. Intellectual capital is the combination of the human, organisational and relational resources of an organisation ([5]):

- Human capital is defined as the knowledge that employees take with them when they leave the firm. It includes the knowledge, skills, experiences and abilities of people. Some of this knowledge is unique to the individual, some may be generic. Examples are innovation capacity, creativity, know-how and previous experience, teamwork capacity, employee flexibility, tolerance for ambiguity, motivation, satisfaction, learning capacity, loyalty, formal training and education
- Structural capital is defined as the pool of knowledge that stays with the firm at the end of the working day. It comprises the organisational routines, procedures, systems, cultures, databases, etc. Some of them may be legally protected and become Intellectual Property Rights, legally owned by the firm under separate title. Examples are organisational flexibility, a documentation service, the existence of a knowledge centre, the general use of Information Technologies, organisational learning capacity, etc.
- Relational capital is defined as all resources linked to the external relationships of the firm such us customers, suppliers or R&D partners. It comprises that part of Human and Structural Capital dealing with the company's relations with stakeholders (investors, creditors, customers, suppliers, etc.), plus the perceptions that they hold about the company. Examples of this category are image, customers loyalty, customer satisfaction, links with suppliers, etc.

## 2. The benefits of intellectual capital reporting

Intellectual capital report show the company's initiatives to build up, develop and increase the efficiency of its intangible resources.

Since the early '90s, when a pioneering reports on intellectual capital were published, numerous approaches (concepts, methodologies) of reporting on intellectual capital are developed.

The three approaches that are most used are:

- IAM- Intangible Asset Monitor ([9])
- Danish Government Guidelines ) ([10])
- EU MERITUM Guidelines

#### 2.1 IAM - Intangible Asset Monitor

Implementation on the Intangible Asset Monitor and regular reporting of results in the form of an "Intellectual Capital Report" can be considered to provide, among others, the following benefits to an organization ([9]):

• Increased transparency of existing knowledge competencies,

- Increased transparency of missing knowledge competencies,
- Identification of innovation and improvement opportunities,
- Improved basis for decision making and strategy development,
- Support in developing intangible assets,
- Improved marketing to stakeholders,
- Improved rating results in accordance with Basel II,
- More accurate calculation of corporate value,
- Improved product/service quality.

#### 2.2 Danish Government Guidelines

In November 2000 the Danish Agency for Trade and Industry as part of the Ministry of Trade and Industry published "A Guideline for Intellectual Capital Statements" ([10]) as the result of an extensive research effort into the creation and implementation of Intellectual Capital Reports. Concepts are put together Danish Agency for Trade and Industry, Copenhagen Business School, Aarfhus School of Business, Arthur Andersen Business Consulting and the 17 companies that participated in the conception of the concept.

Danish Guidelines is a general model, designed as a strategic management tool. Directive include a detailed description of the Danish concept of assessment (calculation) intellectual capital, as well as the ways that companies can make intellectual capital reports. Danish guidelines include 3 elements:

- The story of knowledge
- Management challenges, including indicators and specific actions
- Report

#### 2.3 EU MERITUM Guidelines

In April 2001 the European Union published the results of the three year study "Measuring Intangibles to Understand and Improve Innovation Management (MERITUM). (Contract n°: SOE1-CT98-1104 Project n°: PL 980334). In June 2001 the report "GUIDELINES FOR MANAGING AND REPORTING ON INTANGIBLES (INTELLECTUAL CAPITAL REPORT)" was presented. From the abstract: "These Guidelines attempt to provide a common framework for the measurement and management of intangibles as well as to suggest criteria for the disclosure of information on the intangible determinants of the value of the firm"([11]). This method was developed in cooperation between several European countries, through joint projects funded by the EU Commission and the project involved eminent researchers from 4 Nordic and other European countries.

EU MERITUM Guidelines describe ways in which companies can identify, measure its intangible resources and to make reports on them. Directive proposed to measure and manage executed in 3 phases:

- Phase identify
- Phase measurement
- Phase monitoring

This method suggests that reporting should include a vision of the company, an overview of intangible resources and activities and a system of indicators.



Figure 1 "EU MERITUM Guidelines" ([9])

#### 3. Intellectual capital indicators

"There is a large number of intangible influencing factors which affect the efficiency and effectiveness of performance and the success of an organization. They are a part of the organization's intellectual capital" ([11], p.22), called influencing intellectual capital factors.

Key influencing intellectual capital factors are those that have the greatest influence on production processes and strategically defined business success.

An indicator is a roughly estimated representation of an object, or "an absolute or relative benchmark which serves to describe a circumstance. The comparability of benchmarks is dependent on them being clearly defined themselves, on their always being calculated in the same way and on an interpretation framework being available" ([11], p.28).

Relevant intellectual indicators represent key influencing intellectual capital factors, thus representing the most important aspects of a company, visualizing the crucial knowledge processes that create value and increase intellectual capital. Relevant intellectual capital indicators should fulfill the following technical criteria: precision, objectivity, timeliness and simplicity ([12]).

In the previous paper ([13], [14]) authors provide an appropriate model for intellectual capital reporting in transition economic system of Serbia. The key influencing factors of intellectual capital were identified and consequently the relevant intellectual capital indicators within the observed economic system were defined. The group of selected relevant indicators for measuring intellectual capital in organizations in Serbia differs from typical relevant indicators due to specific of the environment. Most of the literature on measuring and reporting intellectual capital and its application, until recently, has been centred on large organizations. Pertinent issues in small businesses have to a large extent been neglected. However, small businesses do not necessarily share the same characteristics as large ones. There are certain unique features of small businesses that need to be understood before measuring of intellectual capital implemented in their environment. Proceedings of International Conference for

This paper aims to redress some of this imbalance in the literature by putting measuring intellectual capital into the context of small businesses. It looks at their characteristics, and their key problems and issues, all associated with relevant indicators for measuring intellectual capital. Recognition of all these elements is crucial in order to provide a well-suited intellectual capital reporting approach for small businesses.

While a number of studies have looked at indicators of intellectual capital of organizations, very few have targeted SMEs and even fewer, if any at all, have examined SMEs in transitional economies. The goal is to draw attention to the research whether there are different groups of relevant indicators within SMEs in Serbia, country in transition from non-market to market economy, apart from the existing global transition from the industrial to the knowledge economy.

## 3. Conclusions

Therefore, the most important challenges of scientific research areas are: a unique name, a common set of definitions that will be generally used, more empirical research and attempt generalizations measurement systems and models for assessment and monitoring of intellectual capital. Experiments and empirical research in the field of intellectual capital are of inestimable values for the further development of this area and the convergence of different approaches. It will certainly still a lot of time to reach consensus on the best model for measuring and reporting on intellectual capital. Until then, scientists and companies around the world should continue with empirical research in the field of measuring intellectual capital, the publication of results and transfer their own experiences to others in order to increase the number of individuals and organizations interested in research in measuring and managing intellectual capital, particularly in SMEs.

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# Effective management of intellectual capital and organizational success in SMEs

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The paper addresses a vital subject in the increasingly competitive environment in which small and medium-sized enterprises (SMEs) are now operating. These organizations need new, dynamic frameworks, intellectual capital frameworks allowing both investors and organizational members to determine full value while at the same time nurturing innovation and development. A key reason for measuring intellectual capital is to recognize the range of hidden assets and strategically develop them to achieve organizational ends. Some studies suggest that SMEs might be able to shift into higher growth by applying a comprehensive knowledge management approach incorporating all intangible assets equally. The authors recognise the critical importance of these issues for the SMEs sector in Serbia and they present a number of valuable insights gained by leading experts in practice, research and consulting.

#### Keywords

Intangible assets, Knowledge management, Organizational growth, SMEs, Sustainable development

#### 1. Introduction

It is becoming increasingly recognised that the most important and sustainable source of competitive advantage is the effective use of intellectual capital and it is widely accepted that the most important elements that constitute the notions of Intellectual capital and Knowledge management have a significant and positive impact on the economic and social situation of the countries and regions in which they are present.

This end result is associated with the effectiveness of the learning mechanisms and arises from a wide variety of sources, including from relationships with customers and suppliers. These factors are rarely explicitly referred to in the company's formal reporting system and 'intellectual capital' frequently risks being ignored by managers -- often with disastrous consequences for the long term future of the organisation.

All organizations need to identify and measure the effectiveness of their critical success factors and the main value of whole knowledge management approach is that it emphasises (re-emphasises) that a critical success factor for any organisation is the effective development and use of the all intangible assets in it. The knowledge management concept explore a new meaning for management, which also rediscovers the importance of people development for long term organisational performance. This problem can be resolved by transforming organisations into learning organisations that can effectively build their intellectual capital.

Do it before your competitors do, or you are likely to be at a substantial disadvantage. In the long run we should all benefit from a greater focus on effective use of the intellectual capital of everyone in the organisation and society in general. Unfortunately the adjustment processes are likely to continue to be painful, especially for those who have left it late to address the issues raised in this new concept.

The key questions are: Where does intellectual capital really arise in your organisation? And how is it effectively developed and used? The critical point to recognise is the link between effective management of intellectual capital and organisational success -- however measured.

## 2 Nature of the knowledge economy

For the last 50 years, economics and development practitioners have viewed the accumulation of physical capital as central to economic growth. However, the evidence is that technological advancement reflecting the accumulation of knowledge is more important. Today new opportunities have emerged to use knowledge for more rapid development, i.e. the economic progress has been knowledge driven.

According to the Organization for Economic cooperation and Development (OECD), a knowledge economy is one which production, distribution and use of knowledge are the main drivers of growth, wealth creation and employment for all industries.

Therefore, given the changing dynamics underlying national economic performance, it is not surprising that some less developed economies with significant assets in ICT knowledge and internet related experience are hoping to leapfrog more developed economies ([1]).

The knowledge economy is emerging from two defining forces: the rise in knowledge intensity of economic activities and the increasing globalisation of economic affairs ([2]).

The changes brought about by the knowledge economy have had a great impact on the learning process. Changes in work patterns and mobility and increased emphasis on skills and competences demand that knowledge workers adopt learning as a survival tool ([3]). In the learning economy, individuals, organisations and countries will be able to create wealth in proportion to their capacity to learn and share innovation. The very livelihood of organisations depends on their ability to expand their intellectual capital base.

## 3. Decomposition of intellectual capital

Edvinsson and Malone ([4]) expresses the various component of market value on the basis of the following model:

Market value = Financial capital + Intellectual capital.

The key determinants of hidden organisational value, or organisational intellectual capital, are human and structural capital:

Intellectual capital = Human capital + Structural capital

Human capital is the combined knowledge, skill, innovativeness and ability of the organisation's individuals to meet the tasks at hand, and includes values, culture and philosophy. It also includes knowledge, wisdom, experience, intuition and the ability of individuals to realise organisational tasks and goals. Human capital is the property of individuals, it cannot be owned by the organisations.

Structural capital signifies the knowledge assets that remain in the organisation when it does not take into consideration human capital. Unlike human capital, structural capital can be owned by the organisation and can be traded.

In recent years structural capital has been reconceptualised and decomposed into two main constituents:

Structural capital = Customer capital + Organisational capital.

Costumer capital represents the value embedded in the relationship of the firm with its customers. In the context of organisational intellectual assets, it is referred to as market capital to signify the market and trade relationships the organisation holds within the global markets with its customers and its suppliers.

Organisational capital represents organisational capabilities in the form of hardware, software, database, organisational structure, management attention and procedures, patents, trademarks and everything else in the organisation's capabilities that supports individuals' productivity through the sharing and transmission of knowledge. Organisational capital consists of two components:

Organisational capital = Process capital + Renewal and development capital.

Process capital connotes organisational processes, activities and related infrastructure for the creation, sharing, transmission and dissemination of knowledge for contributing to individual knowledge workers' productivity. This component represents the organisation's intellectual assets that support its present activities, including the transformation of knowledge from human capital to structural capital. Such assets include information systems, laboratories, technology and procedures.

Renewal and development capital is that component of intellectual capital reflected in the organisation's capabilities and actual investment for future growth, such as research and development, patents and trademarks.

While financial capital reflects the organisation's history and achievements of the past, intellectual capital represents the hidden organisational potential for future growth ([1]):

- Process capital and customer capital are components upon which the organisation's present operations are based.
- Renewal and development capital determine how the organisation prepares for the future.
- Human capital lies at the crux of intellectual capital. It is embedded in the capabilities, expertise and wisdom of the people and represents the necessary lever that enables value creation from all other components!

In taking into account the above organisational criteria needed to effectively utilise intellectual capital it becomes pertinent to ask the following question: Do modern Serbian enterprises exhibit the potentials needed to unlock their human capital in order to attain intellectual capital development?

## 4. Relation between intellectual capital and knowledge management

Although intellectual capital and knowledge management are obviously not the same thing, it is usually considered that they are two very linked notions, like the two faces of the same coin, or two branches of the same tree ([5]). Accordingly:

• Intellectual capital is considered to be a stock, and knowledge management to be a flow which increase that stock

• Knowledge management is done because Intellectual capital exists. Intellectual possessors are viewed as "knowledge workers" ([6]) or "knowledge companies or organisations" ([7]). Those workers and organisations need, use, create and disseminate knowledge more than others.

In the following analysis, intellectual capital and knowledge management will thus be considered jointly, because it will be assumed that when an organisation has some levels of intellectual capital, it tends to have some levels of knowledge management, and vice versa. A clear understanding of the concept is useful both to develop a theory about intellectual capital at the regional level and to help regional decision-makers to activate and drive regional development dynamics based on the exploitation of their regions' knowledge assets.

## 5. Impact of knowledge management on the success of SMEs

There is established evidence to suggest that SMEs face different knowledge management challenges to lager firms. SMEs have understandable resource constraints, and hence have to be creative in working around these limitations in order to manage knowledge. The research discovered that SMEs do not manage knowledge the same way as larger organizations.

Salojarvi ([8]) explores the motives of Finnish SMEs in managing their intangible assets, and describes their knowledge management methods. The selected knowledge-active SMEs are compared both with big knowledge-managing companies and other similar SMEs that are not active in knowledge management. The common motives for knowledge management in the selected knowledge-active SMEs seem to be growth, change and renewal. The motives differ quite much from those of bigger companies, they are often more interested in measuring and exploiting the existing resources. Thus, knowledge-active SMEs seem to represent more dynamic approach to knowledge management than big companies, they are focused more on innovation, product development, trust and networks. These factors were not perceived as important by similar non-knowledge managing SMEs.

The authors of the paper [9] examines the impact of intellectual capital on the competitive performance of Russian small innovative enterprises (SIEs). The research targeted in this study ultimately attempts to measure antecedents and consequents of effective intellectual capital management in small innovative enterprises (SIEs) in the transitional Russian economy.

Given the increased interest in intangible assets as a source for company growth as well as company growth itself as a performance variable, only a few studies have been made on the relationship between knowledge management and company growth. The research presented in [10] made a contribution to the research of the impact of knowledge management on the financial success of companies. Higher levels of Knowledge management maturity were found to correlate positively with long-term sustainable sales growth in 108 Finnish SMEs.

## 6. Conclusions

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Management activities labelled "knowledge management" have become ubiquitous during the last decade, but researchers have not yet been able to prove conclusively that knowledge management activities create value. Although knowledge management activities take place also in SMEs, only few SME managers call them "knowledge management". Since the collective consciousness, and shared experience and meaning have an impact on ability to change, and thus, also on the competitive advantage, SMEs should be able to enhance their performance by a more conscious and systematic approach to knowledge management. Since the growth is considered as one of the key performance measures in industry, the results obtained in [10] can significantly stimulate the interest of managers of SMEs for this Proceedings of International Conference for Entrepreneurship, Innovation and topic. A central challenge of the growing company is maintaining flexibility and innovativeness, and in the same time introducing systematic processes. Overcoming this challenge is one of the factors that characterise successful company, and strategic knowledge management might enhance meeting this challenge in the growing SMEs.

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## **Creativity and Prospection: Creating and Exploiting Opportunities for International Entrepreneurship**

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This paper explores an entrepreneur-firm-opportunity framework and advances an opportunity-based approach to international entrepreneurship. The role of the entrepreneur in the formation of international opportunities and the subjective dimensions of entrepreneurial creativity and a new construct of 'prospectivity' are The firm - through its capabilities - is located as the vehicle for examined. internationalisation and opportunity exploitation. The 'opportunity' construct is reexamined and the notion of the 'entrepreneurial opportunity' clarified. The paper shows how the entrepreneur orchestrates the dynamic interplay between firm capabilities and market opportunities to form entrepreneurial opportunities, leading to dimensions of opportunity formation processes and a typology of entrepreneurial opportunity processes (opportunity discovery, development, construction, and creation). Finally, the paper outlines how conceptualising internationalisation as the formation and exploitation of international entrepreneurial opportunities, and applying the opportunity-based approach to international entrepreneurship, can lead to a better understanding of the phenomenon of firm internationalisation.

#### Keywords

Entrepreneur; entrepreneurial opportunity; firm capability; international entrepreneurship; opportunity discovery; opportunity creation

## 1. Introduction

The proliferation of 'little heroes' in international markets has attracted strong interest in international entrepreneurship [1]. To explain the process of firm internationalisation, Johanson and Vahlne [2] advanced a 'stage' model that described firm internationalisation as a gradual, incremental process with firms evolving through stages as they acquire experiential knowledge. Bilkey and Tesar [3], Cavusgil [4], and Czinkota [5] propounded alternative internationalisation models – characterised as 'innovation-related' – by Andersen [6]. The stage and innovation-related models of internationalisation, while gaining considerable support, have also drawn criticism [7]. Cannon and Willis [8] questioned the assumptions of incremental, step-by-step internationalisation, arguing that many internationalising firms often jump stages to hasten the internationalisation process. Reid [9] found existing models too deterministic and suggested a contingent view of internationalisation. McDougall, Shane et al. [10] pointed to the failure of the stage-model and innovation-related models to account for the rise of international new ventures (INVs) that not only skipped stages of internationalisation but went international from inception.

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Another approach explores the drivers of firm internationalisation. Both stage and innovationrelated models see a lack of experiential knowledge and the uncertainty associated with internationalisation as leading to a gradual pattern of firm internationalisation. Yet, the phenomenon of INVs that internationalise at or near inception, without obvious experiential knowledge, casts doubts on this theory. The role of resources, following the resource-based view [11], has been explored by Kundu and Katz [12] and Westhead, et al. [13], who showed that firms with greater resources have a higher likelihood for internationalisation. But there is also evidence that highly-resourced firms do not necessarily internationalise on the one hand, and some firms with insufficient resources have overcome this constraint by harnessing networks and alliances, on the other [14]. The network approach [15,16] has sought to show that internationalising firms build relationships with other independent firms that belong to a common network. Yet, this approach has also failed to account for firms that have internationalised without the benefit of networks [10].

Other studies have focused on the entrepreneur to explain internationalisation. These studies have concentrated on the objective elements of the entrepreneur such as education, experience from living abroad, internationally-oriented jobs [16], international work and educational experience [17], age, place of college education, and foreign language skills [18]. However, a study of Cavusgil and Naor [18] showed age, education, place of college education, and foreign language skills to be poor discriminating variables between exporters and nonexporters. Andersson et al. [19] also found no support for the link between the age of the entrepreneur and international activities.

In this paper, we recognise the achievements of existing approaches, and also their limitations. We explore an entrepreneur-firm-opportunity nexus or framework and advance an opportunity-based approach to international entrepreneurship. In particular, we will explore the role of the entrepreneur in the formation of international opportunities and examine the subjective dimensions of entrepreneurial creativity and prospectivity. We will also situate the firm - through its capabilities - as the vehicle for internationalisation and opportunity exploitation. We will re-examine the 'opportunity' construct and clarify our notion of the 'entrepreneurial opportunity'. The paper will also show how the entrepreneur orchestrates the dynamic interplay between firm capabilities and market opportunities to realise entrepreneurial opportunities, leading to dimensions of opportunity formation and a typology of entrepreneurial opportunity processes. A final section on the opportunity-based approach to international entrepreneurship will outline how the process of internationalisation may be conceived as the formation and exploitation of international entrepreneurial opportunities. We will show how the application of the opportunity-based approach to international entrepreneurship both builds on the drivers approach and can lead to a better understanding of the firm internationalisation phenomenon.

## 2. The Entrepreneur-Firm-Opportunity Nexus

Shane and Eckhardt [20] propounded an 'individual-opportunity' nexus in entrepreneurship. This follows Shane and Venkataraman's [21 p. 218] argument that 'entrepreneurship involves the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals'. These scholars, like Stevenson and Jarillo [22], view opportunity cognition and exploitation as being at the heart of entrepreneurship. Di Gregorio, et al. [23] suggested the extension of the individual-opportunity nexus framework to international entrepreneurship studies. But they focused on how international new ventures are created instead of accounting for the roles of both the entrepreneur and the firm in internationalisation. It is probably safe to say that a framework that integrates the entrepreneur, the firm, and opportunities in international entrepreneurship studies is missing. Such a framework becomes all the more important if Oviatt and McDougall's [24, p. 540]

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definition of international entrepreneurship as the 'the discovery, enactment, evaluation, and exploitation of opportunities – across national borders – to create future goods and services' is to have even wider acceptance.

Advancing an *entrepreneur-firm-opportunity* framework, we argue that the entrepreneur, the firm, and opportunities are crucial to international entrepreneurship. Cognition and formation of opportunities is only the beginning of the entrepreneurship process and is the domain of the entrepreneur [21,25]. The entrepreneur is also responsible for the decision to internationalise and to pursue international opportunities. For entrepreneurship to take place, the opportunity must be exploited [21], through new [26] or existing organisations [27,28]. The firm is needed for opportunity exploitation because of its capability to turn opportunities into market outcomes [29].

## 3. The Nature of Entrepreneurial Opportunity

Notwithstanding the voluminous literature on opportunities and entrepreneurship, there remains some dissatisfaction with the current state of research on opportunities [30]. One problem is the less than robust use of the 'opportunity' construct, where 'opportunity' is used by researchers without defining and explaining what they mean by it or in what sense they are using the concept [31]. It is common for entrepreneurship writers to define 'opportunity' in various ways. We will, therefore, begin by clarifying our notion of entrepreneurial opportunity. Opportunity is defined by Webster's New World Dictionary [32] as 'a combination of circumstances favourable for the purpose'. In the context of the firm, the combination of circumstances favourable for the purpose of forming economic value resides: 1) within the firm from which the potential economic value is formed; and 2) in the market where the economic value is realised. The entrepreneurial opportunity may thus be said to require the combination of two circumstances that are favourable for the formation of the economic value: firm capabilities and market opportunity. Firm capability and market opportunity independently considered merely represent nascent, elements of opportunities. It is the combination of firm capability and market opportunity that gives rise to an entrepreneurial opportunity. Since what is deemed favourable is relative and idiosyncratic, what might be favourable to one firm might not be to another. This allows us to define an entrepreneurial opportunity as 'the creative combination of firm capability and market opportunity for the formation of economic value'.

## 4. Opportunity Discovery and Opportunity Creation

Are opportunities like mountains 'just waiting to be discovered and exploited', or are they mountains to be built, ask Alvarez and Barney [33, p. 11]? Opportunity discovery has dominated the economic literature on opportunity processes [30,33]. Hayek [34], Kirzner [35-37], Shane and Venkataraman [21], and Shane and Eckhardt [20] all employ the paradigm of opportunity discovery, with varying degrees of qualification. It is Kirzner's alert entrepreneur who gets credited with discovering opportunities. Under the 'discovery theory', the failure of some to discover opportunities results from alertness not being uniformly distributed in the population [35-37].

A different view, which has generated increasing interest, emphasises the 'subjective' entrepreneurial process of opportunity creation [38]. The 'creation theory' (or 'creative view' of Venkataraman [39]) 'assumes that entrepreneur's actions are the essential source of these opportunities – they build mountains' [33, p. 15]. Endres and Woods [38] argue that this points to the need for a more 'subjectivist' orientation. For Lachmann, an Austrian economist with such a subjectivist orientation, social phenomena are 'the outcome of human

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action guided by plans (even though these often fail) and prompted by mental acts' [40, pp. 22-23]. The entrepreneur forms mental images of an 'unknown though not unimaginable future' [41, p. 59] that 'leads to creative, spontaneous acts' and not just 'passive responses to external stimuli' [42, pp. 169-170]. The entrepreneur creates 'by conjecture and reasoned imagination... the things on which hope can be fixed' [43, p. 246].

The creation approach acknowledges that 'entrepreneurial opportunities often have to be "created" by using the entrepreneurial imagination to *embody* human aspirations in concrete products and markets' [44, p. 9] and that entrepreneurial activity creates realities [45]. Kirzner [35, p. 56] himself acknowledges that 'the human agent can... in fact *create* the future'. But how exactly are opportunities created? In the next section, we suggest a framework for opportunity creation that recognises that entrepreneurial opportunities are created by the interplay of firm capabilities and market opportunities, the interplay being strongly shaped by the entrepreneur.

## 5. Dimensions of Entrepreneurial Opportunity Processes

Our definition of entrepreneurial opportunity is ontologically-neutral in that it does not assume that nascent opportunities or firm capabilities exist. It does denote that entrepreneurial opportunities are created by the dynamic interaction – driven by the entrepreneur – between firm capability and market opportunities, which either exist or are created by the entrepreneur. Firm capability refers to the capacity of a firm to undertake some task or activity [46] and involves 'adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment' [47, p. 515]. Firm capability is distinct from firm resources [48]. Resources 'are inputs into the product process' [46, p. 118] and require firm capability for them to be integrated to strengthen a firm's ability to compete [48].

Market opportunities, on the other hand, may emerge from a variety of sources: exogenous shocks, market disequilibrating factors, production-enhancing factors, and entrepreneurial activity that creates new entrepreneurial opportunities [49]; the unexpected, incongruities, process needs, changes in industry or market structure, demographic changes, changes in perception, mood, and meaning, and new knowledge [50]; etc. The dynamic interplay between firm capabilities and market opportunities – orchestrated by the entrepreneur – can be depicted in a 2 x 2 matrix of opportunity cognition and creation: opportunity discovery, opportunity development, opportunity construction, and opportunity creation. We call this a *typology of entrepreneurial opportunity processes* (below):

		Market Opportunities		
		Current	New	
Firm	Current	<b>1</b> Opportunity Discovery	<b>3</b> Opportunity Construction	
Capability	New	<b>2</b> Opportunity Development	<b>4</b> Opportunity Creation	

*Opportunity discovery* (quadrant 1) entails the perception of an actualised entrepreneurial opportunity consisting of firm capabilities and market opportunities that already exist. The

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rapid internationalisation of CBA, a New Zealand firm, into Australia was facilitated by the presence of strategic partners in Australia that were ready to distribute its products in that country [14]. *Opportunity development* (quadrant 2) involves the development of new firm capabilities to pursue a current market opportunity, such as an export order or market demand. IXI, a desktop windowing computer software for UNIX operating systems, exemplifies this process. IXI founder, Ray Anderson, perceived a need in the international market for a desktop windowing computer software for UNIX operating systems [10] and led the development of IXI's firm capabilities to deliver on that need.

*Opportunity construction* (quadrant 3) involves the construction by an entrepreneur of a new market opportunity that is within the firm's current capability to pursue. It can best be described as trying to construct a new market opportunity for what the firm is able to meet. SPEA Software AG, a manufacturer of computer graphic boards, internationalised in this manner by venturing abroad without waiting for orders from foreign customers [10]. It already had the firm capability to produce computer graphic boards and went on to construct the market for its products.

*Opportunity creation* (quadrant 4) involves the creation of both new firm capabilities and a new market opportunity. This process may come close to what Lachmann describes as an entrepreneurial process to 'create *ex nihilo*' [51, p. 240]. U-Haul, the largest rental fleet company in the world, traces its beginnings this way when its founder, L.S. Shoen, built the first U-Haul trailers from his garage which led to the creation of the do-it-yourself moving industry [52].

# 6. Creativity and Prospection

Aside from entrepreneurial alertness, Kirzner [35, p. 58] cited entrepreneurial creativity – 'the unpredictable, the creative, the imaginative expression of the human mind' as central to opportunity discovery. Creativity, an important characteristic of entrepreneurs [53-55], involves 'the ability to develop new ideas and to discover new ways of looking at problems and opportunities' [56, p. 9]. It is also instrumental in opportunity creation through the creative imagination of combinations of firm capabilities and market opportunities to form entrepreneurial opportunities. Creativity 'extrapolates from context, sifts out and disregards elements from the confusing welter of experience that would otherwise distract effort and blur focus' [57, p. 59].

Creativity is also related to an entrepreneurial attribute we call prospectivity – 'the ability to create an imagined future'. Prospectivity is Lachmanian in that it 'consists in first creating, by conjecture and reasoned imagination on the basis of mere suggestion offered by visible or recorded circumstance, the things on which hope can be fixed' [43, p. 246]. Prospection is aimed at the future which 'is to all of us unknowable, though not unimaginable. The formation of expectations, is an act of our mind by means of which we try to catch a glimpse of the unknown' [41, p. 59]. Prospection is important in international entrepreneurship since it allows the entrepreneur to overcome the constraints of experiential knowledge and uncertainty that are central to stage- and innovation-related models of internationalisation. That which the entrepreneur does not know can Prospection also drives the entrepreneur to pursue international be creatively imagined. opportunities despite limited resources and firm capabilities. Prospection involves the creation of the means to create the imagined future. To a great extent, what fails the test of reason is sustained by the moving and inspiring power of prospection. Prospectivity may be associated with self-efficacy [58] and entrepreneurial orientation [59], especially the dimensions of autonomy, risk-taking, and proactiveness. Prospectivity can involve cognitive bias which Baron [60] has observed as often leading to excessive optimism and overconfidence. It can be hypothesised that entrepreneurs who organise INVs, despite their limited or lack of prior international experience, engage in prospection.

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# 7. Opportunity-Based Approach to International Entrepreneurship

In IE studies, the opportunity-aspect of internationalisation has received limited attention [1]. Johanson and Vahlne [61, p. 167] themselves recently acknowledged that 'the opportunity side of the internationalization process is not very well developed in our earlier papers.' However, this neglected dimension of internationalisation may provide new insights and better understanding of the process of internationalisation. We address this gap by advancing *opportunity-based approach* (OBA) to international entrepreneurship which argues that the process of internationalisation itself may be conceived as the formation and exploitation of international entrepreneurial opportunity determines. This suggests, for instance, that the locus of an entrepreneurial opportunity determines whether opportunity exploitation takes place domestically or internationally. To view domestic entrepreneurship and international entrepreneurship as distinct phenomena is to create a false dichotomy. In addition, viewing internationalisation as the pursuit of international entrepreneurial opportunities indicates that the location of the opportunity determines the choice of foreign market for opportunity exploitation. An export order from Amsterdam would mean that internationalisation takes place in that country. The presence of strategic partners in Serbia would suggest opportunity exploitation in that country.

Conceptualising internationalisation under the OBA as the exploitation of international entrepreneurial opportunities can also provide an explanation for how some internationalising firms seem to skip internationalisation stages, even becoming global at inception. Johanson and Vahlne [2, p. 24] had reported that internationalising firms generally begin by 'exporting to a country via an agent, later establish a sales subsidiary, and eventually, in some cases, begin production in the host country'. Bilkey and Tesar [3] introduced a six-stage model that showed how internationalisation began by firms delivering on an unsolicited export order, and then moving on to regular exports to a psychologically close country, and finally to exporting to additional countries that are psychologically further away. But the nature of the entrepreneurial opportunity might actually determine the process of internationalisation. For example, if an international market, it may decide to establish a foreign sales subsidiary at the outset. A manufacturing company may also determine that production in an international market is more attractive because of cost-advantages and availability of specialised resources and internationalise in this manner. Internationalisation is non-deterministic under the OBA.

The opportunity-based approach can also theorise on the speed and entry mode of internationalisation, and likelihood of early internationalisation. A discovered opportunity (quadrant 1) would imply more rapid internationalisation than opportunity creation (quadrant 4). A domestic firm with existing capabilities that responds to an unsolicited export order (quadrant 1) can internationalise much faster than a firm that has to build its capabilities (quadrant 2) or construct a market (quadrant 3), in order to internationalise. A new domestic firm with current capabilities and strategic international partners (quadrant 1) can internationalise earlier than an established firm seeking to pursue international opportunities, i.e. construct a market (quadrant 3), on its own. The latter will have to amass the resources necessary for internationalisation – which takes considerable time – and acquire experiential knowledge before internationalising. Mode of entry will also be determined by the nature of the entrepreneurial opportunity. An export order will trigger exporting as the entry mode while a strategic alliance can lead to licensing/franchising or joint ventures.

# 8. Conclusion

This paper has sought to deepen our understanding of international entrepreneurship by exploring the entrepreneur-firm-opportunity nexus and suggesting an opportunity-based approach to international entrepreneurship. In particular, we explored the role of the entrepreneur in the formation of international opportunities and examined the subjective dimensions of entrepreneurial creativity and prospectivity. We also situated the firm – through its capabilities –

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as the vehicle for internationalisation and opportunity exploitation. The 'opportunity' construct was re-examined and our notion of 'entrepreneurial opportunity' clarified. The paper also showed how the entrepreneur orchestrates the dynamic interplay between firm capabilities and market opportunities to form entrepreneurial opportunities, leading to an examination of the dimensions of opportunity formation and a typology of entrepreneurial opportunity processes. Finally, the paper outlined how conceptualising internationalisation as the formation and exploitation of international entrepreneurial opportunities, and applying the opportunity-based approach to international entrepreneurship, can lead to a better understanding of the phenomenon of firm internationalisation.

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# Industrial Clusters in Slovenia – A Success Story?

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Slovenia has began with its national cluster policy in 2001. Industrial clusters have been a prevalent element of Slovenian competitiveness policy for next four years. More than thirty cluster initiatives were born in Slovenia in that period. The authors of this paper have followed the birth, organisation and performance of industrial clusters in Slovenia for the period of three years. Based on several in-depth case studies in Slovenia and Austria we have built a cluster development and organisation model applicable to smaller (transitional) countries. We have identified factors that have an impact on cluster development and organisation at the level of general business environment. At the same time we have identified a government role in fostering clusters. But external factors are not the only factors influencing clusters. There are also internal factors that are in the hands of the cluster actors. These are factors that directly influence cluster development and organisation process. We have classified them in four areas and they will be also presented in this paper. We have also identified four stages of cluster birth, organisation and growth. The model is highly applicable as it combines research results with best practices based on several case studies.

#### Keywords

cluster development, cluster model, cluster organisation, industrial clusters, Slovenia

#### 1. Introduction – on industrial clusters

Various terms and definitions have been used to describe the phenomenon of agglomerations of interlinked firms. [1] provided a solid definition of the term "clusters" that embraces most important elements:

"Clusters are agglomerations of firms in a particular activity, usually with geographical dimension, with horizontal and (preferably also) vertical intra- and (preferably) inter-sectoral linkages in the context of facilitatory socio-institutional setting, which cooperate and compete in (inter)national markets."

Clusters of high-technology firms have become an important source of economic development across the advanced industrial economies, and a central focus of technology policy. Many research studies have provided descriptions of successful technology clusters and the existence of social networks, labor mobility and knowledge availability have been identified as crucial components that make technology clusters relevant for wider technology policy [2].

Although the cluster concept is quite widely recognised today, it is still just a concept rather than being supported by a well-defined body of knowledge. There is a need for research to put flesh onto the concept and establish operating principles and guidelines. There are many open questions concerning the creation and nature of clusters and concerning the operations management of clusters [3].

Hundreds of cluster initiatives have been launched involving virtually all regions in the world and the number is still growing. However, there is surprisingly little systematic knowledge of these initiatives, their structures and their outcomes. This is a gap in the world literature that should be filled.

This paper presents the cluster policy in Slovenia. The main contribution, however, is a proposed model of cluster development, organisation and growth, especially applicable for smaller, even transition countries.

## 2. Industrial clusters in Slovenia

The Slovenian Ministry of Economics started the clustering concept in 2001, as the ministry recognized both the value of industry clusters and the need for greater innovation and networking among Slovenian manufacturers. Quickly industrial clusters became a part of the Programme of measures for fostering entrepreneurship and competitiveness. In 1999 three pilot projects were launched: Toolmakers Cluster of Slovenia (TCS), Slovenian Automotive Cluster (ACS) and Slovenian Transportation-logistic cluster. Since then the number of clusters has been continuously rising. It reached a number around thirty clusters that were successfully operating in Slovenia in the field of automotive industry, tool making industry, transportation, logistics, air conditioning, building construction, plastics, ecology, textile, wood, tourism, catering, hotels, geodesy etc. In the observed period of research (from 2001-2005) the cluster policy presented a pillar of Slovenian Government's industrial policy.

The Slovenian Ministry of Economics spent almost 9 million Euros for establishing and supporting 29 clusters in Slovenia in the period from 2001 until 2004. Majority of the funds was for cluster organizational issues (establishing legal form, promotional activities, joint infrastructure etc.). The analysis of cluster policy measures from 2001-2004 proved positive effects on local economy. The Slovenian Ministry of Economy developed a systematic framework for developing industry clusters and soon it has been widely recognized that cluster policy in Slovenia was among the best in developing countries. It was constantly used as a case study in different publications and presentations (e. g. [4]). In 2006 TCS was named as one of the most innovative cluster in Europe (by EU IRE – Innovative regions). The manager of ACS was recognised as the best cluster-manager in Europe in 2006 by the Europe INNOVA initiative.

Despite all that, in 2005 a new government stopped direct funding of clusters. That was a huge barrier for younger clusters. Many of these clusters lost their starting enthusiasm and simply disappeared. Older and more established clusters continued to exists, but also faced many unexpected problems. Many joint projects were endangered, especially R&D projects. Clusters had to find additional funding elsewhere. Majority of smaller cluster disappeared. The original clusters, namely TCS and ACS still exist and operate. The government did not support cluster R&D projects in preference to other R&D projects. In the period from 2005 to 2009 cluster policy was not the important part of national policy to foster competitiveness and entrepreneurship of Slovenia. Nevertheless, the importance of clusters in neighboring regions continues to grow.

# 3. Research methodology

The focus of our research was developing a cluster model in smaller transitional countries. The research has adopted a case study methodology [5] with a significant element of action research [6].

A case study research strategy enabled us to focus on understanding the dynamics of the phenomenon observed. The case study methodology is appropriate when the boundaries between phenomenon and context are not clearly evident. The case study's purpose may be strictly to describe a situation but, more often, it is to understand how or why events occur [7]. We attempted to study a particular process of cluster birth, development, organisation and growth and grasp the conditions surrounding the phenomenon to build a plausible explanation or discover a causal relationship that links the antecedents to the result. [48] also argues that case study is an objective, in-depth examination of contemporary phenomenon where the investigator has little control over events. This definition covers several significant points. First, the study typically involves one or more researchers gathering a considerable volume of data from within an organization to develop the clearest possible picture of the phenomenon. The data may come from primary sources (such as direct observation or interviews of people involved). It may examine a single situation or, with multiple-case studies, several related situations. Second, distinct from historical studies, case study research generally focuses on current conditions, using historical data primarily to understand or substantiate the information gathered about the ongoing situation. Third, the researcher usually has little or no capability of manipulating events (in contrast to action research, where the researcher is involved as a participant and director of events in a natural setting).

Let us take a look how all these points where integrated in our research. The data was gathered in real business environment in specific firms and other organizations. Most of the data was qualitative, but in order to interpret the results additional quantitative data was also used. The authors have used primary and secondary data sources. Direct observations of the events were possible because of the active participation in TCS. The first author had a chance to participate in business meetings. He has also been involved in preparing and managing several TCS projects (e. g. building database of existing and future knowledge and technologies, arranging and conducting business meetings with potential business partners). Active participation in TCS has enabled to gather data that otherwise would not be available. This especially refers to data, gathered through informal contacts with top managers in TCS. The next primary source was interviews with top managers of firms and other relevant informants. The interviews normally lasted 2 hours. They were tape recorded and transcribed in the hours immediately following the interviews.

The secondary sources ware documents, sometimes even classified documents (minutes and notes from meetings, business documentation, reports, newsletters, etc). The first author also kept a diary of relevant events that happened in the period of four years. He also made notes, observations, impressions, ideas and analyzed them accordingly. The use of different data sources improves the validity of the proposed models.

Three case studies have been selected (industrial clusters) that served as a way for data gathering. The most important case study is TCS that has been the most detailed case study and at the same time a place to conduct action research. Two other case studies were ACS and Automotive cluster of Austria (AC Styria) to deepen our understanding of researched phenomenon.

Action research element was extremely important to grasp the dynamics of cooperative activities between members of studied cluster. The first author of this paper was heavily involved in activities of TCS. For example he prepared a catalogue of technologies and knowledge within TCS. This catalogue was also a basis for understanding the relationships between firms with respect to technologies and knowledge. It was a starting point to build technology network. This enabled him to be part of initiated actions and also reflecting on consequences by developing knowledge informative to theory building. The research has

focused on current situation in the cluster. Historical events were helping to understand the current situation.

# 3. Cluster development and organisation model

#### 3.1 Cluster model

Based on intense studying of theoretical perspectives, domestic and foreign best practices and especially on the research conducted with the appropriate research methodology (case study and action research) we have prepared a model of cluster development and organisation process. This model also includes practical experiences with TCS, ACS and AC Styria. Building the cluster development and organisation model was the first part; the second part was the identification of factors influencing cluster development and organisation process.

We have classified the cluster development and organisation process into four stages:

- Cluster initiative local economy analysis, governmental approach to cluster;
- Cluster definition the mapping of cluster, cluster definition, setting the leading team, setting a cluster vision, looking for partners, membership analysis, strategic cluster development plan, cluster development structure, cluster project organisation;
- Cluster development short-term plans, building trust and networking, cluster informatisation, education and training, cluster promotion, technological development strategy;
- Cluster growth and technological development internationalisation strategy, cluster restructuring, cluster monitoring.

Cluster initiative stage encompasses the analysis of local and national business environment. Basic characteristics of business environment have to be identified in order to find out the potential for new clusters formation. In this initial phase a governmental role is very important. Government must promote the cluster concept in the region (bottom-up or top-down approach) and help cluster initiatives with advice.

Cluster definition stage comprises several activities, such as cluster mapping, definition of cluster context, setting the leading team, setting the cluster vision, looking for partners, membership analysis, formation of strategic development plan, cluster development structure, cluster project organisation. In this stage is important to define cluster context, its core business and members, vision and top management.

After the definition of a cluster it is important that the cluster starts to develop immediately. The starting enthusiasm of the cluster members and particularly cluster top management must be transformed into action. Cluster development stage comprises several activities that differ from one cluster to another. Some of them should be present in each cluster: formation of short-term plans, building trust and networking, cluster informatisation, education and training, cluster promotion and technological development strategy.

The last stage is cluster growth and technological development. Cluster growth is associated with cluster physical growth and cluster competitiveness growth. Physical growth means acquiring new members, growth of existing members, linkages with other networks and clusters, new suppliers, new buyers etc. Clusters have great impact on productivity, innovation activities and formation of new businesses and all of these factors contribute to competitiveness growth of a cluster. At the same time competitiveness depends on new technologies and knowledge – cluster technological development. In this stage clusters go through internationalisation activities and organisational restructuring. It is also important that all activities are monitored.

The clusters are at least in their core a part of a national environment. This environment in which clusters are born and developed, consists of four levels: general business environment, governmental cluster policy, microeconomic business environment (embedded in Porter's diamond model) and clusters. General business environment of the nation consists further of five pillars: national history and culture, geographical position, legal framework and institutions, macroeconomic environment and infrastructure. We will take a look at each of them more in detail. These characteristics of business environment must be taken into account when we start with cluster initiatives.

The factors that have an impact on cluster development and organisation at the level of general business environment are:

- National history and culture (level of development of market economy, level of experience in competition and cooperation between firms, level of cooperation between industry and R&D institutions, level of firms' acquaintance, level of trust between firms, level of trust in governmental organisations, level of impact of governmental policy in economy, existence of organisations to foster cooperation between private and public sector or to serve as a »glue« in society, social capital in overall society, entrepreneurship climate and culture).
- 2. Geographical position (physical position with infrastructure, natural resources, closeness of countries with developed clusters, geographical closeness of markets and customers).
- 3. The legal framework and institutions (governmental institutions, institutions for cooperation, educational system, intellectual property rights, environmental legal framework, jurisdiction, regional policy).
- 4. Macroeconomics with its goals (a favourable currency exchange, a low inflation rate, a positive balance, appropriate employment rate, a favourable fiscal policy (taxes), monetary policy, a foreign economic policy).
- 5. Infrastructure (local schools, universities, local trading associations, economic development agencies, regional agencies, technology centres, technology parks, business incubators with researchers, roads, railways, ports and airports, garbage disposal, communication linkages).

The second level is governmental cluster policy. The government has the following roles in dealing with industrial clusters:

- initiator (public calls, cluster policy),
- catalyst (new ideas),
- financier (at the beginning of the cluster formation, R&D projects),
- stimulator (of all actors in local economy to upgrade business environment, to set local vision),
- adviser (expert help with cluster development and organisation in initial stage),
- linkage (between private and public sector, governmental institutions firms forums),
- caretaker (of favourable business environment, macroeconomic and political stability),
- doctor (removing gaps and errors in business environment),
- guardian (competitiveness policy, intellectual property rights, legal framework),
- tutor and mentor (training cluster managers),
- promoter (of the cluster concept home and abroad, new investors, new capital),
- agent (for knowledge exchange, R&D),
- buyer,
- informant (foresight studies, trends),
- constructor (infrastructure, physical supporting environment).

The third level is a step from macro level to micro level, described in Porter's diamond model. This model is used to illustrate the quality of regional business environment and regional productivity. Its four determinants (context for firm strategy and rivalry; factor (input) conditions; demand conditions; related and supporting industries) lead to the occurrence of interdependent competitive sectors in economy – industrial clusters. The cluster development and organisation process have already been presented. The micro level ends with a firm, as a central building-block of clusters and national economies.

External factors are coming from cluster business environment and the cluster does not have any impact on them in the beginning. The cluster can influence some of these factors later, when it is formed, developed and a powerful actor in regional and national economy (e.g. lobbying). The clusters can have an impact on legal framework and institutions, infrastructure as well as on future governmental cluster policy. With their business results the clusters can indirectly influence macroeconomics trends (the only condition is a sufficient critical mass of involved actors and many interdependent clusters).

But external factors are not the only factors influencing clusters. There are also internal factors that are in the hands of the cluster actors. These are factors that directly influence the cluster development and organisation process. We have classified them in four areas: cluster size and structure; cluster members' enthusiasm; cluster members' leadership capabilities and organisational approaches. Let us have a closer look at each of these areas.

The cluster size and structure that primarily influences cluster organisation:

- Critical mass the cluster birth is reasonable only if there is enough firms and other organisations;
- The size the higher number of members means more problems with organisational issues and with achieving consensus on what actions to perform. Large clusters are definitely preferable after overcoming these initial organisational problems. This is why it is recommended for a cluster to have just a core of actors at the beginning. This cluster core sets the rules of the game;
- SMEs and large firms ratio there is a place for each and every type and size of firms in a cluster;
- Vertical and horizontal relationships ratio in the cluster each dimension brings different relationships between cluster firms and different means of cooperation and cluster organisation;
- Presence of leading regional and national firms these firms have a direct impact on attracting new members and different cluster organisation (establishment of internal networks and value chains around these firms);
- Geographical diffusion and focus greater geographical proximity means easier organisation;
- Structural gaps identification of gaps in value chains influences the cluster organisation (attracting new missing links, outsourcing specific activities).

Cluster members' enthusiasm primarily influences the:

- Visionaries setting the common cluster vision, foreseeing cluster future, setting cluster core competence;
- Members' consensus defined consensus on what actions to perform, common goals, common strategies, help with individual cluster members' goals, cooperation on common areas of interest;
- Willingness to cooperate and to network the firms must start opening themselves, look for business partners and business opportunities;
- Firms' activity only active and risk taking firms contribute to cluster development;
- Energy and enthusiasm of cluster members a driver for cluster development;

• Understanding the essence of cluster and clustering process – this understanding has a direct impact on long-term cluster development process.

Leadership capabilities:

- Leadership team skills to manage network organisations and all the qualities we have mentioned at cluster members' enthusiasm;
- Cluster manager with all characteristics a good leader must possess;
- Consultancy help if there is not enough knowledge for cluster development and organisation or to ensure neutrality;
- Equality for all cluster members the feeling of inequality never contributes to cluster development.

Organisational approaches in cluster:

- Formal organisation with its linking centre;
- The use of information and communication technology to connect all cluster members;
- Project management cluster project organisation;
- Flexible organisational forms simple organisational adjustments must be possible with cluster growth and new challenges;
- Monitoring periodic cluster performance control (figure 1).



Figure 1 A cluster development and organisation model

# 4. Conclusions

- Recent development of industrial clusters show that it is not enough for clusters to be locally strong. On the contrary, they must tend to be globally strong and dynamic (local dynamism, global attractiveness, global market reach). A strong cluster core with local actors must become a part of international – global business environment and accept foreign influence. With one word, cluster must be open, which means:
- clusters must allow the entrance of new domestic firms and other organisations,
- clusters must welcome also the firms that do not seem to fit in the cluster,
- competition must be welcomed and not persecuted,
- cluster must welcome foreign firms and other organisations,
- cluster must attract foreign direct investments,
- cluster must attract as many as possible different financial resources from public and in particularly private sector,
- no monopoly, cartels and trusts,
- no trading limitations,
- no competitiveness protection by the government,
- cooperation with other domestic clusters,
- cooperation with foreign clusters from the same (similar) or different industries,
- cooperation with foreign multi-national firms and other firms and R&D institutions,
- more communication between firms and between firms and other organisations,
- comparison with other domestic and foreign clusters benchmarking,
- continuous promotion and building of globally recognised cluster trade mark.
- On the final note are clusters a success story in Slovenia? Although they are not as popular as five years ago they were one of the main reasons that Slovenian firms started to cooperate more openly. A good combination of "top-down" and "bottom-up" approach of the clustering policy made this possible. A new network forms have developed since then, such as technological platforms, living labs etc. A recent study (in 2006 and 2009) performed by the first author of this paper among manufacturing firms in Slovenia provided extremely interesting results. In comparison with several European countries Slovenian manufacturing firms were the ones that had the higher percentage of cooperation with other firms and R&D institutions. Surprisingly, or not, a part of this fact can be explained by the clustering policy in the first half of past decade.

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# Towards improved integration of Western Balkan Countries' ICT R&D in EU's Framework Programmes: Challenges and Recommendations

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This paper examines the progress and prospects of six Western Balkan countries (WBC: Albania, Bosnia & Herzegovina, FYR of Macedonia, Kosovo/UNSCR 1244, Montenegro, Serbia) with regard to research and development in the domain of Information & Communications Technologies (ICT). WBC have demonstrated considerable commitment towards convergence with the European Research Area (ERA), which resulted in their recent association with the 7<sup>th</sup> Framework Programme (FP7). However, this seems to be more of a symbolic gesture rather than recognition of readiness for full participation on equal footing. Study of relevant bibliography and a research through ICT-WEB-PROMS, an ongoing EU-funded programme, suggest that ICT research and development in the WBC lags behind in comparison with EU countries due to institutional inefficiencies, political problems, and lack of financial resources. This paper identifies policy recommendations towards integration of the WBC ICT sector in the Framework Programmes (FP) in the context of a "WBC Transregional excellence strategy" that encapsulates concentration of WBC FPrelated competitiveness on one or maximum two ICT research thematic priorities, on the basis of coordinated efforts at transregional level, while the rest of the research topics should be tackled through domestic programmes. At the same time, WBC governments shall pursue aligned implementation of generic "quick fixes" at national level, such as improvement of infrastructure and institutional capacities, brain-gain measures, ICT literacy at all education levels, and increased researchers' mobility.

#### Keywords

European Research Area (ERA), 7<sup>th</sup> Framework Programme (FP7), Information & Communication Technologies (ICT), Policy Recommendations, Western Balkan Countries (WBC)

# 1. Introduction

Conditions for Research, Technological Development and Innovation (RTDI) in the field of Information & Communication Technologies (ICT) vary widely across Europe. Significant differences, primarily between the historic core of the EU-15 and the periphery of the New Members and the Accession Countries, exist not only in the form of the so-called "digital divide", but also as regards countries' institutional capabilities in terms of design, funding and implementation of research and innovation policies. The ICT-WEB-PROMS project is an

example of a support action funded by the EU in the context of FP7, aiming at increasing capacity of stakeholders in the WBC to fully participate in the ERA by creating and supporting strategic partnerships between them and stakeholders in the EU, while providing access to relevant knowledge. The authors of this paper are participating in Work Package 8 of the ICT-WEB-PROMS project, entitled "Policy Dialogue and Impact Assessment".

# 2. The RTDI and ICT state of play in Europe

#### 2.1 RTDI Policy Framework, Governance and Instruments

The European Research Area (ERA) concept, adopted in the 2000 Lisbon Council, is a central pillar of the EU Innovation policy. In 2008 ("Ljubljana Process") the European Commission (EC) agreed on a new "2020 ERA Vision", aiming at the free circulation of researchers, knowledge and technology across the ERA, thus contributing to the sustainable development and competitiveness of Europe.

The major European RTDI funding schemes [1] are the Framework Programmes (FP) and the Competitiveness and Innovation Framework Programme (CIP), while considerable financial support can be allocated through Structural Funds (SF). In addition, ERAWATCH [2] lists seventeen intergovernmental organisations that co-ordinate and fund research on an intra-European and international level, the most generic and important being COST (European Cooperation in Science and Technology) and EUREKA (Europe-wide Network for Market Oriented Industrial R&D and Innovation.

The EC has been supporting integration of neighbouring areas such as the Western Balkan countries (WBC) through initiatives for coordination of national and regional research programmes and policies (e.g. SEE-ERA.NET, WBC-INCO.NET, ERA WESTBALKAN), as well as joint transnational calls of proposals and funding. The "Steering Platform on Research for WBC" is a specialised intergovernmental actor with the objective to support the enhanced integration of the WBC in the ERA.

#### 2.2 ICT Policy Framework, Governance and Instruments

The EU policy framework for the information society and media is called "i2010" [3]. A "High Level Group" (HLG) comprising three subgroups (eInclusion, eHealth, eGovernment) advises the EC on the implementation and development of the "i2010 strategy". As of August 2009, of the six WBC under examination, only the FYR of Macedonia was a HLG member.

One of the main priorities ("pillars") of "i2010" is innovation and investment in ICT research [4], through instruments such as the 7<sup>th</sup> Research Framework Programme (FP7), the European Technology Platforms (ETP), Joint Technology Initiatives (JTI), and the ICT Policy Support Programme [5] under the CIP.

The "National ICT Research Directors Forum" is an informal framework through which national ministries responsible for ICT research policy and funding (typically research and industry ministries) and their EC counterparts meet twice a year to discuss and develop shared visions and strategies for ICT research in Europe. The IST Advisory Group (ISTAG) [6] advises the EC on ICT scientific objectives and technological priorities to be followed in the ICT thematic priority under the FP. None of the WBC countries are currently represented in either of these policy coordination bodies.

#### 2.3 Legal and Financial Regulatory Framework of FP7

The legal basis of FP7 is based on Decision No 1982/2006/EC and Regulation (EC) No 1906/2006, which include general legal principles, such as: minimum conditions for participation, independence of entities, need for a consortium structure, ownership and protection of results, etc. The financial framework of FP7 is based on Regulation (EC) No 1605/2002, which lays out general financial principles, such as: mix of funding sources, type of financial support, accountability requirements, eligibility and types of expenses, and exclusion of profit making or double-financing.

Since 2008, all WBC have been fully associated to FP7, with the exception of Kosovo/UNSCR1244, which participates as an International Cooperation Partner Country. However, harmonisation of their domestic research legislation with the FP7 regulatory framework varies, depending on each country's progress within their Stabilisation and Association Process.

#### 2.4 Implementation Framework of FP7

The EC's rules for proposals submission, and the related evaluation, selection and award procedures in relation to FP7 [7] rest on the principles of Excellence (comprising the criteria of scientific and technological merit; relevance; impact; implementation), Transparency, Fairness and Impartiality, Confidentiality, Efficiency and Speed in Evaluation, Ethical and Security Considerations.

Notwithstanding the good intentions of the procedural framework, stakeholders are concerned that interested parties with no previous FP experience are usually disincentivised by the complexity of project management, and have repeatedly [8], [9] stressed the need for simplification of implementation aspects, such as: inflexible partnership rules, strict financial accountability requirements, excessively detailed proposal structures, and arduous reporting systems.

Another common critique is that FP have become dominated by a few "closed" consortia that achieve high selection rates on account of their "virtuous circle" of ever-increasing participation and experience in FP calls, effectively shutting out the less experienced candidates. The counterarguments are that FP are inherently "elitist" and very selective, as they pursue high levels of scientific excellence; and that European integration of research stakeholders with lesser capacity should be achieved through other funding instruments that are primarily concerned with cohesion, most importantly SF such as the Instrument for Pre-Accession Assistance (IPA) [10].

# 3. The RTDI and ICT State of play in the WBC

On account of their small size, cumbersome political and socio-economic legacy, and minuscule historical levels of RTD investment, the six WBC under examination demonstrate low national ICT RTD competitiveness, and are - to a divergent extent, as illustrated in the following table - in the early stages of their transition from "efficiency-driven" to "innovation-driven" economies [11], [12].

Country	2009-2010 Competitivene	Global ess Index	Global Information Technology Report Networked Readiness Index 2009-2010			
Country	Technological Readiness Rank	Innovation Rank	Environment component	Readiness component	Usage component	
Albania	89 of 133	126 of 133	105 of 133	103 of 133	89 of 133	
Bosnia-Herzegovina	95 of 133	131 of 133	118 of 133	116 of 133	103 of 133	
FYR of Macedonia	52 of 133	92 of 133	77 of 133	75 of 133	65 of 133	
Kosovo/ UNSCR1244	n/a	n/a	n/a	n/a	n/a	
Montenegro	45 of 133	56 of 133	43 of 133	41 of 133	46 of 133	
Serbia	78 of 133	80 of 133	90 of 133	66 of 133	84 of 133	

Table 1 International competitive standing of WBC regarding RTDI and ICT

Nevertheless, WBC have demonstrated considerable commitment towards targets of the Lisbon Strategy, are undergoing continuous reforms to develop modern and innovative science and research systems, and have been reasonably active in the challenging FP field.

Table 2 Number of WBC successful FP applications in the ICT field [13]

Country	FP6 IST (total)	FP7 ICT (up to Call 4)		
Albania	9	2		
Bosnia-Herzegovina	8	2		
FYR of Macedonia	12	3		
Kosovo/ UNSCR1244	0	1		
Montenegro	10	3		
Serbia	- 19	18		

Notwithstanding extended literature reviewing the RTDI and ICT background in the WBC [14], their actual level of research capacity and competence has been highly disputed, prompting the EC (DG Information Society) to undertake a Technological Audit [15], due for completion in the summer of 2010. The following paragraphs summarize the current state of play as regards ICT research in the WBC.

#### 3.1 Albania

Research-driven economic growth has yet to be developed in Albania, as the local government has been focusing on general measures for poverty reduction and economic development, while prioritizing health and education [16]. According to the 2009 EC Progress Report [17], "overall, preparations in the area of education and research are moderately advanced". Nevertheless, ICT indicators have been improving, and two recent strategic documents ("National Strategy of Science, Technology and Innovation, 2009-2015" and "Cross Cutting Strategy on Information Society 2008-2013") are providing a coherent framework for improved RTD. ICT is candidate to be included in the national research priorities, planned to be formally concluded by June 2011. In the meantime, the SCORE project [18] identified the following ICT research concentration areas for Albania: eBusiness, eGovernment, Network Technologies, eLearning, eHealth, and Distributed Systems.

#### 3.2 Bosnia-Herzegovina

According to the 2009 EC Progress Report [19], there is no integrated research policy, as it is still designed and implemented at ethnic entity level with no real coordination, while

relevant budget allocations are very limited. The "2004-2010 Strategy and Action Plan for Information Society Development", although ratified by the Council of Ministers, was never implanted due to lack of capacity and political will. Research activity at higher education institutions is reported to be almost non-existent [20], and research equipment is largely obsolete [21]. Within this meagre context, the SCORE project [18] identified for Bosnia-Herzegovina the following ICT research concentration areas: eBusiness, eGovernment, eLearning, eHealth, and Environment-Energy.

#### 3.3 Former Yugoslav Republic (FYR) of Macedonia

FYR of Macedonia is the only among the six WBC under examination with "EU candidate" status, having achieved good progress in legislative alignment with the EU's legal order. However, the (now outdated) 2005 "National Strategy for Information Society Development" and 2007 "National Strategy for Electronic Communications with IT" contain only limited references to ICT research policy and priorities. The 2009 EC Progress Report [22] testifies little progress towards ERA integration, due to "lack of a national research strategy and weak administrative capacity". According to SCORE project [18], ICT research in the FYR of Macedonia demonstrates capabilities for eBusiness, eGovernment, Network & Mobile Technologies, eLearning, and Software Engineering.

#### 3.4 Kosovo under UNSCR 1244

Echoing this territory's unresolved political situation and poor overall capacities, Dall [16] remains sceptical whether Kosovo is in the position to establish a full-fledged system of research "even in the next ten years". Local government has been rightly focused its interventions on basic structural and administrative issues regarding higher education and ICT usage; nevertheless, it has managed to adopt a "National Strategy for Electronic Governance (2009-2015)" and a "National Research Programme (2010)". The latter treats ICT as a "cross-horizontal" enabler that shall support five other "low-end" research priorities, which are considered critical for the territory's sustainable economic growth and social development.

#### 3.5 Montenegro

Montenegro's progress towards European integration has been notable, considering that it declared its independence only in 2006. Notwithstanding the fact that RTDI capacity is still weak, ICT usage is satisfactory and the 2009 EC Progress Report [23] comments on "good progress on research, particularly on strengthening the institutional framework and on participation in FP7". Adoption of two strategic plans for "Information Society Development (2009-2013)" and "Scientific-Research Activity (2008-2016)" provides a concrete development framework, which needs to be coupled with adequate funding. According to SCORE project [18], ICT research in Montenegro focuses on eBusiness, Network Technologies, eLearning, eHealth, Environment & Energy, and Distributed Systems.

#### 3.6 Serbia

Serbia - owing to its size and legacy - enjoys a leading position among WBC by improving science and research capacities (e.g. technological & science parks, innovation centres, incubators [14]) and is in the process of catching up with certain EU member countries. The ICT research policy framework in Serbia is set by the "Strategy for Development of an Information Society (2006)" and "Scientific and Technological Development Strategy (2009-

2014)", which sets a well articulated implementation plan. According to SCORE project [18], ICT research strengths in Serbia exist in eBusiness, Network Technologies, eGovernment, eHealth, Environment & Energy, Software Engineering and Embedded Systems.

# 4. Barriers and Shortcomings related to ICT RTD in the WBC

#### 4.1 Review of arlier relevant research

Earlier research [24, 25, 26] regarding factors inhibiting the proliferation of ICT RTD in the WBC, identified barriers and shortcomings that can be classified under the following categories:

- Structural Included here are institutional, administrative and political deficiencies, such as: low level of national funds for ICT research; lack of evaluation, policy revision and technology foresight; weak lobbying capacity in the EU. It should be noted that WBC were criticised also for absence of defined government policy for ICT research at a national level. Although this has been to a large extent remedied during the last couple of years through the adoption of relevant legislation and strategic documents, concerns remain regarding the often over-ambitious and unrealistic targets, the low degree of transregional intergovernmental coordination, as well as the large discrepancy between the normative regime and the actual state of affairs in ICT RTD.
- Academic This category comprises issues such as: education system not being in line with needs of ICT industry; weak networks among researchers and R&D organisations within the region and between the region and rest of Europe; poor RTDI-enabling infrastructure (facilities and equipment).
- Business low private sector participation in R&D; insufficient collaboration between the ICT industry and academia; lack of appropriate state initiatives (e.g. tax incentives, technology parks, etc.); inability to attract Foreign Direct Investments (FDI) in ICT RTD.
- "Soft" issues This category summarises various factors of human resources-related, socio-cultural, and practical nature, such as: "brain-drain"; low researchers' mobility and international cooperation; lack of professionals to provide assistance on proposal writing and project management; low international reputation and scientific image of WBC.

#### 4.2 Insights from the ICT-WEB-PROMS project

A survey among ninety-one WBC stakeholders [27] yielded the following findings:

- 68% of the respondents are aware of their country's national strategy on ICT RTD; the majority of which (54%) feel that the national strategy is not being implemented adequately, while another significant faction (21%) feel it is not being implemented at all.
- Only 52% of the respondents are familiar with the existence and operation of the National Contact Point (NCP) system, and just 49% know the NCP's name and contact data.
- Likewise, only 40% of the respondents are familiar with the Ideal-IST portal [28], a wellestablished ICT partner search network, and a mere 15% actually utilised the portal at a past instance.
- Of the 66 respondents (in a total of 91) that rated their overall experience with Framework Programmes, 55% found it "positive", while 36% considered it "neutral"; the rest 9% having a negative opinion.
- Distribution of research project or proposal areas among ICT regional research priorities mirrored to a large extent the results of the SCORE project [18], with eGovernment, Software Engineering, eLearning, and Network Technologies topping the list. However,

representation of thematic areas not prioritized by SCORE was also significant, hinting at the possibility of tension among various research themes in the search for funds.

 Finally, the following table lists the most important obstacles in accessing national and EU research funds in the respective WBC:

Type of Obstacle	Responses for national programmes	Responses for EU programmes	
Lack of national funding / Low EU funding level	61	11	
Lack of information on funding sources	42	29	
Bureaucratic procedures	41	24	
Programmes not matching organization's expertise	31	17	
Lack of transparency in the allocation of funds	23	n/a	
Lack of experts	23	n/a	
Difficulty with networking and identifying partners	21	20	
Lack of knowledge of project management	17	n/a	
Lack of clear guidelines	16	12	
Lack of communication with the NCP for ICT	14	n/a	

Table 3 Common obstacles in accessing research funds in the WBC

In addition, six respondents identified "differences in the procedures between FP7 and national funding" as a factor prohibiting participation in such programmes. Overall, the ICT-WEB-PROMS survey confirmed to a large extent the findings of previous relevant research.

At the ICT-WEB-PROMS "1<sup>st</sup> Vertical Workshop on Training and Networking for WB-EU research cooperation in ICT for e-Learning" that took place in Thessaloniki on September 18<sup>th</sup> 2009, participants agreed that WBC practitioners largely fail to convert scientific ideas into successful FP proposals, as they lack the skills to match them more closely with the objectives of each specific Call.

At the "Expert Forum on Critical Success Factors for Integration of the WBC in the ICT ERA", which took place in Thessaloniki on March 3<sup>rd</sup> 2010, discussion among nineteen experienced stakeholders regarding shortcomings of the ICT research policy in the WBC can be summarized in the following opinion statements: (a) Current level of preparedness, technical expertise for ICT RTD, and competitiveness of research institutions in the WBC is generally low.; (b) Each of the WBC alone is considered probably too small and weak in terms of the "research excellence" required for participating in FPs and for playing an important role in the ERA; (c) Generic "WBC-specific" calls (like in FP6) should be avoided. They create illusionary "peaks" of WBC participation in FP, do not create real incentives for them to pursue "excellence", and lead to complacency.

# 5. Policy Recommendations related to ICT RTD in the WBC

#### 5.1 Outline of earlier relevant research

Several projects and studies [24, 25, 29, 30, 31, 32, 33] have suggested policy frameworks towards reinforcement of the research capacity of WBC and their integration in the ERA, and identified recommendations and that can be classified under three main categories: (a) *Institutional*, which underpin regional cooperation, improved enforcement of ICT RTD legislation, reduced bureaucracy, and transparency in the selection of state-funded ICT RTD; (b) *Implementation*, which emphasize improved ICT RTD infrastructure, and enhanced collaboration between basic and applied research, as well as between academia and business community; and (c) *Human Resources*, which advocate further capacity-building

and training of WBC civil servants and researchers; financial incentives for preparatory actions (e.g. researchers' travel and mobility grants); availability of ICT courses and IT skills at all levels of education; and measures against "brain-drain".

#### 5.2 Insights from the ICT-WEB-PROMS project

At the survey among WBC stakeholders [27], "Cooperation between academia and industry", "Alignment with European strategies", "More open consultations with researchers", and "Cooperation with European experts" topped the list of methodological factors considered important when drafting National ICT Strategies. Interestingly, "Mapping of research strengths" and "Alignment with FP7 ICT objectives" gathered much fewer responses.

"Extrovert" Disposition	"Introvert" Disposition			
(number of responses out of 91 in total)	(number of responses out of 91 in total)			
Financial Incentives for preparation for joining FP7 ICT programmes	42	Financial Incentives for research projects at national level	38	
Developing new ICT research competencies	36	Building support for existing ICT research competencies	39	
International mobility of researchers	33	Mobility of researchers at national level between industry and academia	27	

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Opinions among the 91 respondents regarding important elements of the National ICT Strategies were balanced between a more "extrovert" and a more "introvert" set of responses. This notion is reinforced by the fact that another 27 respondents selected "All the above" elements, hinting at the need for an even-handed policy mix towards mutual convergence of national and EU research programmes in the WBC.

Other recurring suggestions in the survey included: the call for improvement of ICT literacy at all levels of education; the need to continue raising awareness among researchers through coaching and mentoring; and the imperative to apply more transparency in the project selection and evaluation process. In the meantime, mobility barriers have been mitigated by the recent abolition of visa requirement for short-term stays in the Schengen area for citizens of FYR of Macedonia, Serbia, and Montenegro.

The main insights offered by the participants at the Thessaloniki "Experts Forum" [10] are as follows:

- FP7 is based on "excellence" not on "coherence", thus the scope for WBC participation in FP on equal footing is very low. Support for ICT RTD should be explored primarily through supplementary RTDI Policy instruments, such as European Technology Platforms and ERA-NETs, as well as through Cohesion and Regional Policy instruments, such as Territorial Cooperation initiatives (e.g. "SouthEast Europe")
- The WBC should first employ "quick-fixes", i.e. comparatively economical measures with a high potential impact, such as "brain-gain" by the Diaspora (not necessarily repatriation, but rather remote coaching and mentoring); use of instruments such as 'Marie Curie' and EURAXESS; research mobility through simple initiatives at bilateral level or internships.
- ICT RTD national strategies and thematic priorities should be designed on the basis of the actual scientific background and core competencies of each country, taking into consideration the need for *trans-regional coordination* as a key enabler to the creation of critical mass (in terms of resources and expertise) that could provide a foundation for the pursuit of ICT RTD "excellence".
- The EC could apply "restricted calls" on an ad-hoc basis: Through these calls, WBC research institutions can compete for positions of "apprenticeship" in cutting-edge

projects run by ICT RTD leaders. The rationale is that WBC will learn and prove themselves "on-the-job", in order to gradually gain the confidence of the more sophisticated FPs' "players", and gradually earn a permanent position in long-standing, successful consortia.

#### 5.3 A comprehensive approach for WBC integration into the ERA and FP7

Based on the above findings, this paper suggests that WBC require an integrative approach that moves from piecemeal initiatives at domestic level to a *comprehensive strategic plan* that shall be: (a) coordinated at *Transregional level* (i.e. intergovernmental alignment among Albania, Bosnia-Herzegovina, FYR of Macedonia, Kosovo/UNSCR1244, Montenegro, Serbia) under the auspices of the EC; (b) aligned among all key stakeholders (academia, public sector, private sector), who shall commit to specific roles and targets; (c) unambiguous and measurable, i.e. setting specific milestones within a fixed timeframe; (d) iterative, i.e. including monitoring and modification mechanisms.

It is believed that such an approach should adhere to the following guiding principles: (a) ERA integration is multifaceted endeavour, where FP participation should not be regarded a panacea or an end in itself; (b) a single tool or a homogenized approach cannot cover the divergent needs of countries and stakeholders at different levels of ICT RTD development; (c) leading, "hands-on" role of the EC in a top-down implementation of the strategy plan can mitigate a potential lack of consensus among the WBC; (d) further to point (a), the approach should cater not only for the identification of ICT research excellence, but also for the support of thematic areas that may not be competitive at European level, but make economic and / or social sense at the domestic level.

In this context, the main policy recommendations per key stakeholder group can be summarised as follows:

The role of the European Commission's ICT research regulatory framework

- To put pressure on and guide WBC authorities in concentrating on one or maximum two ICT research thematic priorities (based mainly on the DG InfSo Technological Audit findings and a realist mentality), around which they shall coordinate their effort for FP and CIP participation on equal footing. This premise can be dubbed the "WBC Transregional ICT RTD excellence strategy", and shall be the cornerstone of the whole approach.
- To adopt a rational incentive policy towards WBC at FP level that should ease first-time entry at successful consortia (even if only in the form of "apprenticeship"). The one or two thematic areas prioritised for "Transregional excellence" shall either receive extra "bonus points" at the evaluation stage, or can be the subject of focused top-up calls or consortia extensions. Other (non-priority) thematic areas shall, of course, be able to pursue FP funding, but - in the interest of the Transregional focus strategy - only at their own merit.
- To enhance its coordination authority in the region (e.g. through mechanisms such as the "Steering Platform on Research for WBC" or the "National ICT Research Directors Forum"), and safeguard that the rest of available non-domestic funding sources (CIP, SF and even other international donors) are "well-spent", i.e. utilised by the WBC governments at national level in a coordinated manner that furthers the overall strategic plan, primarily by addressing local key shortcomings (e.g. improved ICT infrastructure and curricula, increased researchers mobility, better administrative capacities, enhanced business-academia cooperation).

The role of the WBC national authorities responsible for ICT research policy and funding

• To adjust national ICT and RTD strategies, policy mixes and action plans in alignment with the "Transregional excellence strategy" that will have been introduced by the EC.

- To commit, at high policy (i.e. governmental) level, to sincere cooperation in the context of the strategy's implementation through the creation and co-funding (through national, structural, and donor funds) of a "WBC Transregional ICT RTD excellence platform".
- To provide RTD practitioners with clear guidelines regarding funding opportunities.
- To facilitate, at national level, rigorous differentiation between researchers who demonstrate larger capacity that is competitive in pursuing international excellence; and researchers who have smaller capacity, useful mainly for domestic priorities. The former should be nurtured through the Transregional RTD platform, whereas the latter can receive support and funding primarily through national programmes. Each national RTD system should, in addition, make provisions for (a) permeability between the domestic and Transregional thematic areas and foci; (b) research mobility within the WBC region.

The role of the WBC researchers and development practitioners

- To capitalise all the ERA/FP-related technical assistance they have received and will continue to receive (e.g. by projects such as ICT-WEB-PROMS) in the form of a "permanent soft infrastructure", and to act locally as multipliers (e.g. through seminars, workshops, conferences) for the improvement of the general level of awareness and technical skills.
- To facilitate and actively pursue increased interaction and cooperation between the academic and the business sector.
- To select and plan their RTD activity taking into consideration the strategic priorities, the policy mix and the funding opportunities under the "WBC Transregional ICT RTD excellence platform".
- To have an active role in monitoring, controlling and re-shaping the "WBC Transregional ICT RTD excellence strategy" through relevant collective representation bodies, such as, indicatively, the "South East Europe ICT Private Sector Forum" [34].

# 6. Conclusions

Significant background research and preparatory work in the last five years have improved the prospects for ICT RTD in the WBC, but substantial gaps continue to exist between (a) the national institutional framework (strategy, legislation) and its actual implementation; (b) the selected thematic priorities and their actual capacity for excellence; (c) the isolated domestic initiatives and their Transregional coordination; (d) normative harmonisation with European acquis and effective peer representation / lobbying in European policy-making bodies.

This paper suggests that a fast and efficient integration of the WBC ICT sector in the European RTD paradigm and framework is dependent upon the adoption of a well-defined roadmap that shall cater for the attainment of the following strategic goals, in a manner coordinated among the three key stakeholder groups (the EC, WBC national authorities, and the WBC research community): (a) Achievement of WBC *Transregional* RTD focus on one or maximum two ICT thematic priorities towards "excellence" and integration at FP level; (b) Achievement of WBC *domestic* RTD focus on all other ICT thematic priorities, while maintaining "incubating" capacities for the cultivation and preparation of "excellent" researchers to gradually feed in the Transregional WBC "excellence platform"; (c) Rationalisation and coordination of funding at national, Transregional and EU level, based on the differentiation between "Transregional" and "domestic" ICT RTD foci; and (d) Transregionally aligned implementation of long-due, generic "quick fixes" at national level, such as: increase of RTD funds as percentage of Gross Domestic Product (GDP), improvement of infrastructure and institutional capacities, brain-gain measures, ICT literacy at all education levels, increased researchers mobility.

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# Role of SMEs in the Development of Tourism Industry of the Autonomous Province of Vojvodina

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Tourism is the world's largest international service business. Small and medium-sized enterprises (SMEs) are the main providers of services to tourists everywhere: accommodation, catering, leisure and entertainment activities and transport. The potential for development of tourism in the Autonomous Province of Vojvodina provides scope for the expansion of existing SMEs in the sector and for new entrants. The fact that many SMEs in tourism have managed to sustain a certain level of activities in a very difficult economic environment supports the view that there is scope for growth, particularly if this part of Serbia can develop and implement an integrated tourism policy. SMEs could develop in many activities: transport to local tourist attractions, souvenir shops, crafts and souvenir production, small-scale accommodation, small-scale catering and other activities. The purpose of this study is to help in designing policy issues supporting the tourism SMEs sector and to exploit growth prospects and respond to structural changes in the tourism industry demand in Vojvodina and also in the whole country. There are number of challenges that SMEs will need to overcome in order to participate fully and effectively in an expanded tourism industry.

#### Keywords

SMEs, transition, tourism industry, Vojvodina

## 1. Vojvodina and Its Potentials for Tourism Business Development

The Autonomous Province of Vojvodina represents the North part of the Republic of Serbia. It lays on the Pannonian Plain covering the area of 21.506 km<sup>2</sup> with the population with over two million inhabitants [1]. The capital town is Novi Sad. Vojvodina's great cultural tradition and valuable heritage were enriched by all nations of this region. The migrating population was bringing, creating and reproducing the elements of their own culture, but also accepting the other nations' influences. Fertility of this plain attracted many tribes and nations since the Roman times. Hence, Vojvodina represents a treasury of cultures whose material and spiritual remains lead back to the past more than 50.000 years old. In addition to many archeological localities, *Gomolava* near the village Hrtkovci and *Sirmium* in Sremska Mitrovica being best known, there are numerous well preserved monasteries with rich medieval frescoes and military objects out of which *Petrovaradin Fortress* near Novi Sad is the best preserved [1]. All of these heritages, monuments and tradition are good field to set Vojvodina as region for cultural tours and city break tours. Present settlements were founded in the

period of Illyrians, Kelts and Romans and were at that time exceptionally important military, economic and cultural centre.

Vojvodina has a very long and rich tradition in the fields of literature, theatre, arts and music. Art and music have the longest tradition, from ancient time. The folklore from that time was preserved in various ways up to now. The earliest literacy was in connection with Catholic and Orthodox monasteries. Nations living here were meeting, mixing and influencing each other. Vojvodina by it's geographical position is at the borders of two civilizations, western and oriental, although the major characteristics to the social life was given by the Middle-European culture. Vojvodina is famous with old traditional farm houses, called SALAS, which are the greatest representatives of rural tourist offer [2].

This plain with two mountains only - *Fruška gora* and *Vršacki breg* - is very rich with waters and one of rare European oasis with preserved nature. The largest rivers are the *Danube*, the *Tisa* and the *Sava* and out of dozen best known lakes are *Palić* and *Ludoško* near Subotica, *Rusanda* near Melenci, *Belocrkvanska* and *Borkovačko Lake*. The swamparea of Obedska bara is the largest stop of migratory birds from Europe on their way to the South. Deliblato Sands, often called Small Sahara is the only desert on our continent and arises equal interest. Thermal and mineral springs are found all over Vojvodina. The famous spas are in Kanjiža, Apatin, Melenci, Vrdnik, Novi Sad and radioactive mud in Jermenovci [1].

In Vojvodina there are 64.000 hectare of water suitable for fishing of all kinds of freshwater fish such as carp, sheatfish, sturgeon and perch. The famous fishing areas are on the Danube near Apatin, Bogojevo, Bačka Palanka and Novi Sad and on the Tisa near Titel, Novi Bečej and Senta. In addition to the Yellow River in China the Tisa is the only river that "flourishes". At that time it is covered with millions of butterflies coming out from sandy riverbed as larvae. Getting out from their wrappings they live only one day returning afterwards to the river. Hunters frequent targets are: pheasants, partridges, wild ducks, hares, wild boars and capital specimens of deers from forests along the Danube and the Sava. This abundance with game enabled the formation of numerous hunting grounds, best known being in the vicinity of Bačka Palanka, Bač, Sombor, Subotica, Novi Bečej, Perlez, in forests along the Danube and the Sava, in Fruška gora, on Vršački breg and in Deliblato Sands. Vineyards and orchards are cultivated in Vojvodina more than 2.500 years. Wines from Fruska gora, South Banat and Subotica were well known both in Roman times and the Middle Ages [1].

The shortest roads from Central Europe to the Middle East have always crossed this territory. Therefore, the cooking specialities in Vojvodina are both from Europe and Orient. As it was mentioned before many nations and nationalities live in this territory with their custom and songs. Perhaps a visitor will keep these songs as the most beautiful memory knowing that with them and his pride a villages, one of which was Zidovar in the southeastern Banat. The commerce was developed, and the money that was minted became the measure of value. People traded between very distant areas.

Novi Sad is the second largest city in Serbia with over 300.000 inhabitants [3]. The City of Novi Sad is the city of tourism and perfect City Break destination with rich cultural offer and vivid mixture of different nationalities and cultural background and that reflects the name of the city which could be translated as the new garden. From the City Hall along the downtown promenade and Danube street the pleasant mini tour attracts ever more and more tourists. It is crowned with magnificent Petrovaradin fortress an architectural masterpiece built from 1692 to 1780. At the fortress the past and present meet in the most popular music festival in the SE Europe EXIT Fest held at the beginning of July with 150.000 young visitors (more than 20.000 from UK) [4]. In the vicinity the Fruška gora national park with 17 monasteries, 14 lakes and health paths, wine testing and recreation possibilities provides excellent short nature breaks. Accommodation is possible in 14 hotels with over 2.500 beds and other facilities from Youth Hostels to the five star hotels. The M.I.C.E. offer of the City of Novi Sad includes newly opened Master Centre at the Fair ground as well as the centers incorporated

in hotels. The excellent taste of traditional cuisine and wines could be tried in many restaurants in the city or at the original Salash - farm houses in the vicinity.

# 2. The Role of the SME Sector in Vojvodinian Tourism- Future Prospects

#### 2.1. The Potential for Growth

The potential for development of Vojvodinian tourism provides scope for the expansion of existing SMEs in the sector and for new entrants. The fact that many SMEs in tourism have managed to sustain a certain level of activities in a very difficult economic environment supports the view that there is scope for growth, particularly in Vojvodina can develop and implement an integrated tourism policy. SMEs could develop in many activities: transport to local tourist attractions, retail, souvenir shops, crafts and souvenir production, small-scale accommodation, small-scale catering and other activities. There should be scope for SME specialization in *special interest tourism*. Currently, there are business opportunities worth investigating in activities such as: rural tourism, mountain climbing, horse riding, cycling, walking, eco-tourism, sports fishing, hunting, etc.

#### 2.2. Ideas for Tourism Development

There are ideas for tourism enterprises in Serbia, which could be implemented in the context of a more developed and integrated tourism policy. These are some ideas which could be suggested areas for tourism development:

- Novi Sad city break tours (walking) both organized groups and individual travelers
- Various forms of eco-tourism: Protected zones exploring untouched nature mixing various activities; Bird watching in Vojvodina
- Health: Spas, Health food preparation in nature, Medical herbs gathering school
- Activities: Fruška gora- cycling, sport fishing, hunting
- Local features: rural tourism on farms salash and in villages.

#### 2.3. SME Issues in Tourism Development of Vojvodina

There are a number of challenges that SMEs will need to overcome in order to participate fully and effectively in an expanded tourism industry. These challenges are concerning:

- Creation of a favourable business environment;
- Establishment of modern information systems in tourism;
- Design of the Vojvodinian tourism Internet portal, including a booking engine;
- Support for clusters in tourism industry in Vojvodina;
- Development of quality control systems;
- Training for knowledge and skills in tourism and catering; and
- Development of special interest activities in tourism.

The Government of the Republic of Serbia through its SME Strategy (2003) [5] is committed to the provision of the environment needed for the successful operation of SMEs. In the case of tourism, in addition to purely economic aspects, a wider environment is also important, the elements of which could have a strong impact on the development of tourism. It is particularly important to create an environment of stability in which SMEs can grow and prosper.

Regional and entrepreneurial development policies should be integrated. Finance for individual tourism enterprises needs to be addressed also. Many tourism enterprises are small local services enterprises with relatively low capital requirements. On the other hand, facilities such as hotels and restaurants will require considerable capital investment. One priority should be to develop closer relationships between banks and tourism SMEs.

Establishment of a modern information system is a prerequisite for bringing successful decision-making to tourism development. Accurate information should be the basis for good decisions on tourism development by the state institutions. Such information should be accessible to the private sector as well, so as to provide for adequate decision making at all levels. The accessibility of information in the private sector is of key importance for SMEs in particular. Given the limitations of existing information, the following actions would make a substantial difference to the accuracy and quality of data and information:

- Undertake Incoming Tourist Surveys "Know your customer" [6] is a key requirement for success. Indeed, profiles of tourists need to be drawn from personal interviews at different times of the year and different places. Selected focus groups would also be required to complement interviews. Surveys need to dig deeper than standard socio-economic data by enquiring into motives, concerns and perceptions.
- 2. Buy Market Research in Main Source Markets The first step in such a program would be to develop an in-depth understanding of the main source markets for Vojvodina. To optimize limited resources, Vojvodina should buy existing market research rather than undertaking its own research.
- 3. Undertake Benchmarking Visits to Key Competitors As awareness of competition is a key element in strategy development, The Provincial Secretary for economy and the Tourism Organization of Vojvodina should organize a few, selected benchmarking visits to some of main competitors, like some tourism areas in Hungary, Slovenia, Croatia and Austria. The trips should be well prepared by providing detailed information to the host countries on the visitors, the products of interest, the planned infrastructure and so on, and should include top level contacts with the public sector, e.g. government and tourism institutions, and the private sector, e.g. hotels, inward operators, representatives of foreign tour operators. One of the main outcomes of such visits should be a competitive intelligence framework, which would enable Vojvodina to collect and analyze on a regular basis the activities of the main competitors. This framework should include key information about, tourist profiles, local and foreign tour operators, facilities and infrastructure, promotional and marketing activities, government regulations and subsidies.

It is of critical importance to enhance the e-marketing capabilities of tourism in Vojvodina to ensure that potential international and repeat customers receive high quality information services and can easily be directed to online purchasing services including "packages". accommodation and other facilities. Given the limited resources that domestic enterprises and provincial institutions can allocate for the promotion of tourism and domestic locations, it would be preferable to opt for the type of promotion which covers the widest public and offers maximum return on investment [7]. The key type of promotion would be the design of Internet portal with a booking engine. The Internet tourism strategy for the Autonomous Province of Vojvodina requires three basic components. First, there is e-commerce, directed to the endconsumer in the source markets. This would include detailed content about Vojvodina, while enabling online booking, purchase of products and services, such as domestic flights, hotel accommodation, excursions and the like. The second aspect would be applications for the travel and tourism trade, enabling direct communications between the source market players and the Serbian tourism industry. Apart from product and destination information for the travel trade, the site would be a comprehensive provider of information with last-minute availability and prices. The basic restrictions on small and medium-sized enterprises are

related to their limited resources. The quantity of resources is often below the necessary level for the realization of certain goals. One of the main purposes of assistance to small enterprises would be to remove this limitation, to the extent to which it would realistically possible. The fact is that, in most cases, a small enterprise cannot individually enter the international market, and even its potential for any independent entry beyond a local market is very limited. But, it is also a fact that there are many small and medium-sized enterprises in tourist destinations. Creating a synergy between their resources could assist small and medium-sized enterprises to overcome this handicap [8].

Clusters are defined as "geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions" (1990) [9] and are an appropriate mechanism for bringing small and medium-sized enterprises to larger markets, and from the aspect of tourism they are of special importance. With inter-firm linkages, they are a basis for a strategic approach by SMEs in major target markets. From the marketing aspect, an offer to a tourist is at two levels: destination (primary) and purchase of products of services at the selected destination (secondary). The basic decision for a tourist is the choice of a destination, whereas the decision on expenditure at the location is second. Therefore, enterprises at any given location are not competitors at the primary level, as their joint efforts are needed for the promotion of the location, on the basis of which they realize a joint benefit. Through joint engagement with the support of public institutions, the resources needed for the successful presentation and promotion of the destination could be organized. Support to clusters should at the same time be linked to the creation of brands, which would be recognizable abroad. Thanks to joint action, SMEs could achieve economies of scale and higher fixed investments, which would be necessary for the development of brands. Tourism clusters would help achieve greater utilisation of Vojvodinian historical, cultural and events attractions and facilities [10]. It would be essential to achieve a better presentation and more integrated and cooperative marketing of clusters of products and services that complement each other and broaden the offerings available to visitors. The clusters can be single product (e.g. Orthodox heritage etc.) or multi-product (e.g. activity/health-related, culture/heritage etc.) and could be supported at national or regional levels. Successful clusters would significantly increase the capability of Vojvodinian tourism in attracting foreign visitors, which would result in increased foreign earnings by the sector.

Quality must be a priority in all aspects of tourism in Vojvodina to ensure its competitiveness and growth. At present, there is very little emphasis on quality in Vojvodinian tourism. It is therefore necessary to develop an appropriate quality control system. Given the importance of this issue, as well as the required independence of its participants, it should be developed by international experts who would participate in its implementation as well. Moreover, additional steps should be taken so as to provide the necessary information and knowledge for the improvement of quality in the private sector. In that sense, some of the measures recommended by the EU could be applied directly in Vojvodinian tourism as well:

- benchmarking at the European level
- non-financial support for tourism SMEs implementing quality systems.

Training for the tourism industry in Vojvodina should have two objectives:

- Provide constant upgrading of the quality of service to the customer
- Improve the productivity of and competitiveness of enterprises in the sector.

A first priority should be to develop training programmes for the owners and managers of tourism enterprises, particularly SMEs. The progress of Vojvodina's tourism will depend largely on the success of the enterprises in the sector to provide quality and value of service in a manner that is both efficient and friendly. As quality and friendly service is vitally important to tourist perceptions, considerable emphasis should be placed on training of current and future employees in hotel and catering establishments. There are probably three categories: (1) existing employees in private SMEs (2) employees in establishments yet to be privatized and (3) people interested in hotel and catering careers. As some catering

employees will be made redundant during the process of privatization, they should be a special target group for training, as they already have certain skills. However, their experience with socially owned enterprises would not have equipped them fully for participation in competitive tourist oriented enterprises. Improvement of their skills will be crucial for re-employment, particularly if education is oriented towards those segments of tourism and catering which could expect rapid growth. Learning of foreign languages is also very important and should be applied in all areas where significant contact with tourists is anticipated. English and German are the most useful languages. Training for tourism in Vojvodina should address the following issues [8]:

- Emphasis on the particular importance of communications and inter-personal skills in tourism in recruiting new employees and in training existing employees.
- Ensuring the delivery of training programmes for existing employees at times and places convenient to the needs of enterprises and employees.
- Taking full advantage of the significant potential of distance based e- learning in training and educational programmes.
- Promoting training networks of tourism enterprises in conjunction with tourism industry representative bodies.

The Tourism Organization of Vojvodina, tourism industry representative associations, Local Tourism Organizations, Regional Agencies for SME Development should develop training programs for the sector based on international experience. Databases on training and education for careers in tourism should be established, so that SMEs in Vojvodina may have easy access to information on trends and good practice in human resource development [11] [12].

Special interest activities are areas of tourism, which based on world trends, are forecast to achieve significant growth. The provision of services for special activity holidays depends mainly on small and medium-sized enterprises due to their relatively small-scale and specialized nature. This aspect of tourism is seriously underdeveloped in Vojvodina but offers significant potential for growth, particularly for small and medium-sized enterprises. Special interest activities include several relatively different products, which have some common characteristics. Potential development is probably in activities such as adventure tourism (hiking, water skiing, etc.), cycling, walking, hunting, sports fishing and rural tourism. Notwithstanding the differences in these types of tourism, the similarities may be seen through common channels of distribution, which would facilitate joint marketing and branding. The process of branding special interest product's should be developed in two stages: (1) "build the product" and (2) "promote the product". As already mentioned, it would be futile to promote something of poor quality to consumers.

## 3. Conclusions and Recommendations

Vojvodina, unlike some areas in countries such as France, Spain and Croatia, is not a primary tourism destination. It lacks coastline and many of the other features that have enabled primary destination countries to develop major national tourism industries. However, many secondary destination countries have overcome disadvantages such as the lack of warm summers and have developed successful niches in tourism, for example Ireland and the Scandinavian countries. Vojvodina can also look to other parts of land-locked countries in Central Europe as examples of successful tourism development in destinations as in example some regions of Austria and Hungary. The changing patterns of tourism such as people taking a greater number of shorter breaks represent an opportunity for Vojvodina and Serbia, also, as a secondary destination, to develop its own tourism niches, thus generating tens of thousands of additional new jobs and more foreign exchange earnings.

Across the world, new tourism "products" are being introduced on a continuing basis and the range of destinations is constantly expanding. Successful destinations must offer attractive

"products" linked to attractiveness, interest, value, efficient service, cleanliness and friendliness [7]. Customer expectations of choice, quality and value are very high. If Vojvodina wishes to compete successfully and share in the benefits of tourism, it must make a real commitment to the highest value and standards. Tourism in Vojvodina should be based on a number of niche "products" that respond fully to contemporary trends in tourism:

- Novi Sad as an attractive, lively, historic and friendly Central European city located at the Danube river, catering for a full range of activities for visitors, including city breaks, business travel and conferences, and already famous with festival EXIT.
- Cultural heritage and multi ethnical character of province. Cultural tourism in Vojvodina is underdeveloped and most often it is just an unplanned activity of tourists who arrive at the given destinations for other reasons.
- Special interest, particularly outdoor recreational activities: adventure tourism (hiking, water skiing and other aquatic sports, cycling, walking, hunting and fishing), thus taking greater advantage of opportunities for these activities offered by Fruška gora mountain, countryside and rivers, particularly the Danube.
- Rural, eco and village tourism.
- Health or "wellness" holidays focused on Vojvodina's spas, an opportunity that will require considerable investment to bring these spas up to the very high quality standards expected by today's demanding tourists.

Vojvodina is almost recreating its international tourism business. The growth and development of tourism throughout Vojvodina will be driven by the private sector through enterprise, innovation and investment. The tourism industry everywhere is mainly owner operated and small in scale. Government policies and actions must be supportive but ultimate success will depend on the private sector and that means SMEs. Against a background of more tourism destinations, greater competition and the application of new technologies, Vojvodina's tourism SMEs will need to constantly improve and innovate, with quality experience and value to the customer being the overriding objective. Every foreign tourist who visits Vojvodina will almost certainly have visited other destinations and will consciously or unconsciously make constant comparisons between his or her experience in Vojvodina and those of other places. These comparisons will extend to the first contact with region, travel within the country and perceptions of value, quality, efficiency, friendliness, comfort and service. Many of these comparisons will be based on experience of tourism SMEs in other countries. Three important enablers for increased SME competitiveness tourism are: quality of service, customer knowledge and follow-up of complaints.

Because the tourism market will be more integrated, matching different quality levels will become more important for SMEs in the future. It is likely that additional self-regulation or legislation will be defined in order to guarantee to the consumers adequate safety, health, and environmental and other standards. Quality is a most important enabler for customer satisfaction and therefore should be dealt with as a very serious issue by all tourism based enterprises.

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# An Aspect of Introducing Innovations into Serbian Companies Organizational Culture in the Light of the Schein's theory: Questionnaire and EFA as Tools for Researching Employees' Assumptions Despite of Schein's Opposite Claims

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This paper deals with an aspect of introducing innovations into organizational culture in Serbian companies. An ad hoc questionnairre was designed consisting of twenty one items in order to confirm our claim that questionnaire could be a useful tool for collecting data about employees' assumptions (third cognitive level of organizational culture according to Schein). Answers from 1,206 employees in 75 randomly selected Serbian companies have been gathered. The data was analysed on two levels: descriptive and in-depth by performing exploratory factor analysis. Descriptive level analysis provided data from the second cognitive level (values) according to the Schein's theory.

#### Keywords:

Introducing innovation, Organizational culture, Schein theory, Exploratory factor analysis, Organizational culture levels

## **1** Introduction

The term innovation means a new way of doing something. It may refer to incremental, radical, and revolutionary changes in thinking, products, processes or organizations. A distinction is typically made between invention, an idea made manifest, and innovation, ideas applied successfully. (McKeon 2008) In many fields, something new must be substantially different to be innovative, a significant change, e.g., in the arts, economics, business and government policy. In economics the change must increase value, customer or producer value. The goal of innovation is a positive change, to make someone or something better. Innovation leading to increased productivity is the fundamental source of increasing wealth in an economy. Today, the most difficult managerial task in Serbia is introducing innovation into Serbian companies. Main reasons for that is the transitional natureof Serbian economy, the growing effects of the world economic crisis in Serbia and Serbian employees' fear that introducing innovations will initiate a new order of things in their companies.

#### 2 Innovations

A convenient definition of innovation from an organizational perspective is given by Luecke and Katz (2003), who wrote: "Innovation is generally understood as the successful introduction of a new thing or method. Innovation is the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes or services. Innovation typically involves creativity, but is not identical to it: innovation involves acting on the creative ideas to make some specific and tangible difference in the domain in which the innovation occurs. For example, Amabile et al. (1996) propose: "All innovation begins with creative ideas. We define innovation as successful implementation of creative ideas within an organization. In this view, creativity by individuals and teams is a starting point for innovation; the first is necessary, but not sufficient condition for the second". For innovation to occur, something more than the generation of a creative idea or insight is required: the insight must be put into action to make a genuine difference, resulting for example in new or altered business processes within the organization or changes in the products and services provided. A further characterization of innovation is as an organizational or management process. For example, Davila et al. (2006), write: "Innovation, like many business functions, is a management process that requires specific tools, rules, and discipline." From this point of view the emphasis is moved from the introduction of specific novel and useful ideas to the general organizational processes and procedures for generating, considering, and acting on such insights leading to significant organizational improvements in terms of improved or new business products, services or internal processes. Through these varieties of viewpoints, creativity is typically seen as the basis for innovation, and innovation as the successful implementation of creative ideas within an organization (Amabile et al. 1996). From this point of view, creativity may be displayed by individuals, but innovation occurs in the organizational context only. It should be noted, however, that the term 'innovation' is used by many authors rather interchangeably with the term 'creativity' when discussing individual and organizational creative activity. As Davila et al. (2006) comment, "Often, in common parlance, the words creativity and innovation are used interchangeably. It should be avoided, because while creativity implies coming up with ideas, it is the "bringing ideas to life" . . . that makes innovation the distinct undertaking it is." The distinctions between creativity and innovation discussed above are by no means fixed or universal in the innovation literature. They are however observed by a considerable number of scholars in innovation studies. Effective goal definition requires that organizations state explicitly what their goals are in terms understandable to everyone involved in the innovation process. This often involves stating goals in a number of ways. Effective alignment of actions to goals should link explicit actions such as ideas and projects to specific goals. It also implies effective management of action portfolios. Participation in teams refers to the behaviour of individuals in and of teams, and each individual should have an explicitly allocated responsibility regarding their role in goals and actions and the payment and rewards systems that link them to goal attainment. Finally, effective monitoring of results requires the monitoring of all goals, actions and teams involved in the innovation process. Innovation can fail if seen as an organizational process whose success stems from a mechanistic approach i.e. 'pull lever obtain result'. While 'driving' change has an emphasis on control, enforcement and structures it is only a partial truth in achieving innovation. Organizational gatekeepers frame the organizational environment that "Enables" innovation; however innovation is "Enacted" - recognized, developed, applied and adopted - through individuals. Individuals are the 'atom' of the organization close to the minutiae of daily activities. Within individuals gritty appreciation of the small detail combines with a sense of desired organizational objectives to deliver (and innovate for) a product/service offer. From this perspective innovation succeeds from strategic structures that engage the individual to the organization's benefit. Innovation pivots on intrinsically motivated individuals, within a supportive culture, informed by a broad sense of the future. Innovation, implies change, and can be counter to an organization's orthodoxy. Space for fair hearing of innovative ideas is required to balance the potential autoimmune exclusion that quells an infant innovative culture.

# 3 Organizational culture

Edgar Schein, an MIT Sloan School of Management professor, defines organizational culture as: "A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way you perceive, think, and feel in relation to those problems". According to Schein, culture is the most difficult organizational attribute to change, outlasting organizational products, services, founders and leadership and all other physical attributes of the organization. His organizational model illuminates culture from the standpoint of the observer, described by three cognitive levels of organizational culture. At the first and most cursory level of Schein's model is organizational attributes that can be seen, felt and heard by the uninitiated observer. It includes the facilities, offices, furnishings, visible awards and recognition, the way that its members dress, and how each person visibly interacts with each other and with organizational outsiders. The next level deals with the professed culture of organization's members. At this level, company slogans, mission statements and other operational creeds are often expressed, and local and personal values are widely expressed within the organization. Organizational behaviour at this level can usually be studied by interviewing the organization's membership and using questionnaires to gather attitudes about organizational membership. At the third and deepest level, the organization's tacit assumptions are found. These are the elements of culture that are unseen and not cognitively identified in everyday interactions between organizational members. Additionally, these are the elements of culture which are often taboo to discuss inside the organization. Many of these 'unspoken rules' exist without the conscious knowledge of the membership. Those with sufficient experience to understand this deepest level of organizational culture usually become acclimatized to its attributes over time, thus reinforcing the invisibility of their existence. Surveys and casual interviews with organizational members cannot draw out these attributes rather much more in-depth means is required to first identify then understand organizational culture at this level. Notably, culture at this level is the underlying and driving element often missed by organizational behaviourists. Using Schein's model, understanding paradoxical organizational behaviours becomes more apparent. For instance, an organization can profess highly aesthetic and moral standards at the second level of Schein's model while simultaneously displaying curiously opposing behaviour at the third and deepest level of culture. Superficially, organizational rewards can imply one organizational norm but at the deepest level imply something completely different. This insight offers an understanding of the difficulty that organizational newcomers have in assimilating organizational culture and why it takes time to become acclimatized. It also explains why organizational change agents usually fail to achieve their goals: underlying tacit cultural norms are generally not understood before would-be change agents begin their actions. Merely understanding culture at the deepest level may be insufficient to institute cultural change because the dynamics of interpersonal relationships (often under threatening conditions) are added to the dynamics of organizational culture while attempts are made to institute desired change. Stephen McGuire defined and validated a model of organizational culture that predicts revenue from new sources. Writers from Critical management studies tend to express skepticism about the functionalist and unitaristic views of culture put forward by mainstream management thinkers. Whilst not necessarily denying that organizations are cultural phenomena, they would stress the ways in which cultural assumptions can stifle dissent and reproduce management propaganda and ideology. After all, it would be naive to believe that a single culture exists in all organizations, or that cultural engineering will reflect the interests of all stakeholders within an organization. In any case, Parker has suggested that many of the assumptions of those putting forward theories of organizational culture are not new. They reflect a long-standing tension between cultural and structural (or informal and formal) versions of what organizations are. Further, it is perfectly reasonable to suggest that complex organizations might have many cultures, and that such sub-cultures might overlap and contradict each other. The neat typologies of cultural forms found in textbooks rarely acknowledge such complexities, or the various economic contradictions that exist in capitalist organizations. One of the strongest and widely recognized criticisms of theories that attempt to categorize or 'pigeonhole' organizational culture is that put forward by Linda Smircich. She uses the metaphor of a plant root to represent culture, describing that it drives organizations rather than vice versa. Organizations are the product of organizational culture, we are unaware of how it shapes behaviour and interaction (also recognized through Scheins (2002) underlying assumptions) and so how can we categorize it and define what it is?

# 4 Problem and methodology

According to the previously showed theoretical base (Schein's organizational culture theory), an ad hoc questionnaire was designed. It consists of twenty one Likert items. The main objective was to discover the underlying factors which on the best way describe employees' attitudes towards introducing innovation (as a part of their organizational culture). Exploratory factor analysis was performed on collected data to discover the third, invisible level, the employees' tacit assumptions about introducing innovation.

# 5 Sample

Our sample consists of 1,206 employees from the 75 randomly selected Serbian companies of different sizes and industry branches. In every company, where the research was carried out, a random sample of respondents was taken, and of course, those respondents who were willing to cooperate.

# 6 Assumptions of the research

General assumption of this research is as follows: Using questionnaire could provide data about organizational culture, the third cognitive level despite Schain's opposite claim. *Specific assumption*: The notion of the innovation introduction among the Serbian employees consists of patterns, and they represent the deepest level of this organizational culture aspect (this is the reason why exploratory factor analysis was performed on the data obtained by the questionnaire).

# 7 Results

According to the Schein's theory employees' attitudes strength presented on descriptive level is the second, visible level of that aspect of their organizational culture. Results shows that our respondents' most critical attitude towards the innovations is that their introduction is necessary for companies' development and survival as well as company management has to establish clear rules for their introduction. On the other hand, our respondents' lowest intensity attitudes are that their companies do not need any innovation, because the most important thing is that employees work well and thus, innovation should be introduced quickly and decisively without a lot of thinking about the consequences. So, it can be clearly seen that there is some kind of consensus among all the respondents, that the innovation introduction is necessary and an unavoidable process. Likewise, employees in Serbian companies are feared from uncertainty which is tightly connected with the innovation introduction process. Before performing explorative factor analyse on the data, the properness of using this statistical procedure was checked out. The KMO value which is
higher then 0.500 indicates that factor analysis is useful and meaningful tool for analysing the data. Another indicator of the strength of the relationship among the variables is Bartlett's test of sphericity. The observed significance level is .0000. It is concluded that the strength of the relationship among variables is strong and the decision to precede a factor analysis on the collected data was confirmed. The first of the six extracted patterns after Varimaks rotation participate in the total variance with 16.657% and it consists of five items with factor saturation which range from 0.409 to 0.690. These five items and their factor saturations are:

- 1. The first item: Today, company's survival is impossible without innovations, it's factor saturation is 0.548
- 2. The second item: It is essential that company includes research funds for introducing innovation, it's factor saturation is 0.606
- 3. The third item: My company should have partners which help introducing innovations, it's factor is saturation 0.655
- 4. The fourth item: Only completely original innovations have sense, it's factor saturation is 0.690
- 5. The fifth item: The innovation has to change my company's way of working radically to be considered as successful, it's factor saturation is 0.647

The items which confirm employees' consideration of the innovations introduction process (cognitive aspect) but also the items about conditions which the company has to provide for the successful innovation implementation (also cognitive aspect) gather around this extracted factor. This factor is named THE CONDITIONS FOR THE INNOVATIONS INTRODUCTION. Second extracted factor participates in the total variance of observed phenomenon with 14. 54% and consists of the four items with factor saturation which range from 0.483 to 0.785. These four items and their factor saturation are:

- 1. The first item: Each innovation in my company should be postponed until all the employees are confident that it will bring desirable results, it's factor saturation is 0.530
- 2. The second item: It is better not to introduce any innovation in the company, than to expose it to the risk, it's factor saturation is 0.785
- 3. The third Item: My company do not need any innovations, most important is that people work well, it's factor saturation is 0.732
- 4. The fourth item: I think that it is better that my company takes care about its employees' wages rather than about innovations, it's factor is saturation 0.483

The items which mostly express a negative emotional aspect of the attitudes towards introducing innovation in the company are grouped around this extracted factor. This factor is named REFUSING INNOVATION. If the content of these four items is analyzed it can be seen that all of them express fear. The third extracted factor explains 8.44% of the total variance of the observed phenomenon. It consists of three items with factor saturation which ranges from -0.642 to 0.733. These three items and their factor saturation are:

- 1. The first item: I like others in my company to think about the innovations, it's factor saturation is negative: -0.642
- 2. The second item: I like to review new ideas and new approaches, it's factor saturation is 0.733
- 3. The third item: My company can count on me to support the innovations, it's factor saturation is 0. 655

Three items which describe the respondent's behaviour in the situation of finding innovation, their creative and active approach to innovative process are grouped around this extracted factor. This factor is named THE ACTIVE APPROACH and it describes behavioural aspect of employees' attitudes towards innovations. The fourth extracted factor explains 7.69% of the total variance of the observed phenomenon and consists of three items. These three items and their factor saturation are:

- 1. The first item: It is necessary to think carefully before introducing any innovation in the company, it's factor saturation is 0.750
- 2. The second item: The innovations introduction is necessary for the company survival and development, it's factor saturation is 0.670
- 3. The third item: Introducing innovations in my company is possible but the way of their introduction should be clear to all the employees, it's factor saturation is 0.638

Three items which point to some kind of caution during the process of the innovation introduction are grouped around this extracted factor. The content of this factor is highly emotional and fear lies in its basis, thus, it is called THE CAUTION.

The fifth extracted factor involved in the 6.523% of the total variance of the observed phenomenon and it is composed of four items. These four items saturate the factor from 0.408 to 0.783. The extracted factor included the following items:

- 1. The first item: The innovations are good for my company, regardless of their outcomes, it's factor saturation is 0.783
- 2. The second item: The innovation should be introduced quickly and decisively, without a lot of thinking about the consequences (there is no success without risk), it's factor saturation 0.722
- 3. The third item: People in my company are afraid of innovations, it's factor saturation is 0.424 (negative saturation)
- 4. The fourth item: Innovations, regardless of the investment, bring profit to the company, it's factor saturation is 0.408

Four items which describe the voluntary dimension of the attitudes towards the innovation introduction are projected on this extracted factor, so it is named DETERMINATION FOR THE INNOVATIONS INTRODUCTION. Negative factor saturation of third item shows that the respondents are more determined for the innovations introduction if they are less afraid of them. The sixth extracted factor explains 5.53% of the total variance of the observed phenomenon and it consists of the two items of our questionnaire. These items saturate this factor from 0.709 to 0.750.

- 1. The first item: Recognized experts for creating and introducing innovation are employed in my company, it's factor saturation is 0.750
- 2. The second item: My company management is capable of introducing innovation, it's factor saturation is 0.709

Two items related to the company human resources and their competence for the innovation introduction are grouped around this extracted factor, so this factor is called CONFIDENCE IN COMPANY HUMAN RESOURCES. It also represents emotional dimension of the respondents' attitudes towards the innovations. The results confirmed our specific research assumption that notion of the innovation introduction consists of dimensions. Extracted factors (dimensions) show that emotional dimension predominates among Serbian workers when they consider introducing innovation. Fear is a dominant emotion linked to the innovations introduction. The subjects have the highest factor scores on the dimension DETERMINATION FOR THE INNOVATION INTRODUCTION. This fact indicated that employees in Serbian companies are strong willed for introducing innovation in their organizations. But the situation with factors scores on the other dimensions is not favourable because all of them are lower than their average value. As a conclusion, the research shows indirectly that innovative climate in Serbian organizations is unsatisfactory when considering relative relations between factor scores and respondents recognize their organization resources as the largest obstacle for introducing innovation. The respondents show absence of fear from innovation introduction, they have no confidence in their management, they do not insist on the need for caution, they encourage innovations, they do not ask for special conditions for innovation introduction and they have a passive approach towards it. They only show great determination towards innovation introduction. Indirectly, employees in Serbian companies are aware of hard economic situation (transition and growing effects of economic crisis) according to the dimensions relation but obviously they do not make distinction between terms organizational change and innovation. Economic crisis and transition are coercive persuasion for them: their determination for innovation introduction is some kind of obedience or cooperation. Low factor score on the dimension THE ACTIVE APPROACH and high factor score on the dimension DETERMINATION show some kind of learned helplessnesswhich is a profound consequence of the former socialistic economic system and thus, explains their invisible conflict situation (lack of activity vs. determination, lack of confidence in management vs. determination) in actual economic situation in Serbia.

## 8 Conclusions

These results clearly suggest that the nature of the third, invisible level aspect of organizational culture in Serbian companies is predominantly emotional despite the cognitive nature of the first extracted factor (CONDITIONS FOR INTRODUCING INNOVATION). This analysis shows that our respondents think that innovations are necessary for their companies' survival (values, second cognitive level according to the Schein's theory). Deeper analysis of the results show that the respondents' behaviour in a complex situation of introducing innovations consists of complex interdependence of their emotions, states and wishes (third cognitive level according to the Schein's theory). Their determination for introducing innovations is basically declarative (it does not signify that they will do their best in the real situation of introducing innovation). Serbian transitional economy and growing effects of economic crisis by its coercive nature increases employees' fears.



Figure 1: Third cognitive level of organizational culture in Serbian companies (innovation aspect)

Only in-depth analysis (reaching organizational culture, the third cognitive level, and employees' assumptions) provides the exact data about all invisible employees' assumptions in Serbian organizations. This research shows that it is possible to complete this difficult task using a questionnaire (Schein excludes that possibility). Performed EFA shows that on the third level employees in Serbian companies have serious doubt about the innovation introduction. Low level of confidence in company resources as well as employees' passive approach indicate that introducing innovation will face huge obstacles despite great determination. Thus, it is possible to reach the third, cognitive level of organizational culture (its aspect which deals with innovation process) by using EFA. If data analysis was completed on the descriptive level, a distorted picture about Serbian employees' attitude towards innovations would be provided and made wrong conclusions as follows:

- 1. Employees in Serbia are convinced that introducing innovations is necessary for the development and survival of their companies
- 2. Company's management has to establish clear rules for their introduction.

These results are from the second cognitive level (values) of Schein's theory and lack to provide a real picture about this aspect of organizational culture in Serbian companies. So what should be done? First of all, data from the third cognitive level (employee's assumptions) should be followed.

- 1. Changes in Serbian companies have to be managed in accordance with the well established procedures (fulfilling employees' assumptions about conditions),
- 2. With well examined and checked approaches (improving employees' confidence in company resources)
- 3. Process of introducing innovations has to carry the least risk (satisfying employees' assumptions about caution).
- 4. Companies should provide coordinated strategy with their organizational structure (improving employees' active approach in the process of introducing innovations).

The key managerial question is which Serbian companies organization components should be changed to strengthen their ability for making changes of innovative character. According to the data obtained from the third cognitive level these are our answers:

- 1. Future innovative Serbian company's structure should be flat, without hierarchical control (to stimulate employees' active approach).
- 2. Companies should create special teams for specific tasks (stimulate employees' active approach).
- 3. Strategic planning should be flexible, financial and operational controls should serve to the strategy (reinforce their determination for introducing innovation).

Finally, companies create climate for the innovation acceptance and implementation (rebuilding mutual confidence and decreasing the level of employees' refusing innovation introduction). So which story is true? If the data of the descriptive level analysis is accepted as the only possible solution, the only conclusion is that introducing innovations in Serbian companies is a relatively simple task. Thus, clear rules for their introduction should be established. EFA (in depth analysis) is the other possible solution; it provides the data for the third, cognitive level of organizational culture so the conclusions are different. Introducing innovations in Serbian companies fails to be a simple managerial task. Acceptable solution should be found to satisfy all gathered data of the third cognitive level in order to establish a successful innovation process. Carefully constructed questionnaire and proper EFA using will make half of the business done.

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## **Controlling – as a Choice for Recent SME's**

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Controlling knowledge is in a great demand in this crisis time. More and more people are willing to learn about controlling as well. It can be sad that is a connection between the global financial crisis and the growing demands on the controller's services in a global market. The controller's duty is to serve the management as an economic navigator and to ensure that the company's ship reach its profit targets. To reach the mentioned duty the controller has to be sure that he or she has an organizational support from the top management. Controlling outlines business policy of an enterprise, the term derives from an English word «to control» - control, managing, setting rules and directing. It includes the tasks of management planning and business processes supervision. Controlling as a term dates from the Middle Age, but not until 18th century in the USA, when a clerk who was responsible for keeping the balance of government budget appears and was called the comptroller. In Europe, controlling became a more serious topic of conversation in the 1870s mostly in German speaking countries. Controlling can be described as a navigation process towards set goals of an enterprise or as an economic consciousness of an enterprise. We define it as a subsystem of managing, which coordinates planning and control and provides information, creates and links the system oriented towards a result.

Based on the organizational investigation, primarily the finance departments in our enterprises, it comes to the conclusion that the current situation in most enterprises is that there are sectors or plan and analysis departments, which deal with analyzing the things that happened and cannot be influenced on. It was suggested to establish the controlling department which can be applied to our systems of economy and, which would be directed to recognize and forecasting the future.

Nowadays, a modern enterprise can successfully fight with the competition only if it puts efficient controlling into practice. The goal of controlling is to recognize and solve problems or suggest measures for solving them and all that in order to avoid such problems in the future. Constant application of operational and strategic controlling instruments will assure the improvement of the situation on the market, as well as the realization of set goals and will ease the process of making decisions. If we apply the methods of controlling, our work can always be correct and successful, because the data obtained that way, are always used for predicting and fast reacting to the noticed proble.

#### Keywords:

Controlling, operational, strategic controlling, Balanced Scorecard

## 1. Introduction

The controller's duty is to serve the management as an economic navigator and to ensure that the company's ship reach its profit targets [1, p. 31]. To reach the mentioned duty the controller has to be sure that he or she has an organizational support from the top management. Having knowledge about a company ensures that we can compare with perception of something that takes place in the brain. It's a result of thinking. However, it needs knowledge about the range of management performance structures. Even so, that's not enough. We need communication. It's the controller who needs to provide managers with service that enables them to understand what lies behind the presented figures. Implementing the controlling philosophy in an enterprise ensures that plans are being implemented properly. In the functions of the management circle - planning, organizing, directing, and controlling - planning moves forward into all the other functions, and controlling reaches back. Controlling is the final link in the functional chain of a management's activities and brings the functions of a management cycle's full circle. For all the reasons mentioned above, managers have the task to create an environment in which employees could achieve the enterprise's goals and own personal goals, too. The purpose is to achieve as much as possible with available resources. For that purpose, we need rules of conduct and the game rules for the moderation process by which win-win solutions can be found by implementing a controlling philosophy. The basic task of controlling is «to make the enterprise more profitable» and is also the orientation towards the future which means constant learning and improvement. Before we move on to a review of a possible modern organization of an enterprise which has controlling, it is necessary to say something about the concept of controlling itself, which is very difficult to be defined. In our opinion, the most acceptable definition is the following: "Controlling is the navigation process towards economic goals, where managing, definition of position is performed according to the established order and plans monitoring" [13]. The definition can be described as: "The role of a controller can be compared with the one of a navigator on the ship. He helps the captain to reach the goal by overcoming all the obstacles and giving the instructions which way to take to reach the goal." [14] When one systematizes the attempts of defining controlling, then there is a distinction between the definitions which see the controlling as an INSTITUTION and those seeing it as a FUNCTION.

The controlling as an institution mostly includes a controller in an organization, his education, competence and duties. Controlling as a function must be differentiated from the term controlling with the one in control, because control represents only one aspect of the controlling function.

When we use the English term "to control" to explain the controlling, then by that we mean managing, behaving or regulating an action which can be achieved by a systematic connection of planning, understanding of a current situation and control. Lately, in our professional terminology, talking about control started to appear, which can be described as follows: the main goal of a controller function consists of the evaluation of all business activities of an enterprise, from the financial point of view. The assumption for this task is the adequate planning and the information system. That's why these two functions are closely connected with the control function and represent its integral part, but, here is something that originally cannot be united in one department, and we think that a part which deals with planning should be part of a financial department's function, and the part dealing with control should be independent of the financial department and directly responsible to the management of an enterprise. The positive thing is that the theoretical explanations more and more include the information about control in finance and that the organizational schemes, which consisted of a plan and analysis department as a part of a financial department, have been overcome. Some authors predict the control to be in the finance department for middle and large enterprises. In this organizational scheme, in the finance department there would be an analysis part, which would deal with the analyses of a balance

sheet, statement of income and other internal and external financial analyses. The unit so called "*Systems*" includes the work of planning and developing the strategy, flow of an information, data bank, and the choice of computer equipment and system application.

The unit so called "*Control*" would include the following activities: the control of conducting the business policy and the program, making instruction books for new control activities and reporting on the legacy of business operations. It should be said that the analysis's tasks are directed to the achieved things and the organization of modern controlling would be directed to present and future, so a modern financial manager and other managers in an enterprise can bear in mind the goals of profit realization, financial security and rational enterprise liquidity.

Today's accounting reports, done two months after the end of a business year, cannot assure an action towards the realization of an effect for the past period. Controlling, as a rule, doesn't have time limits, but it is done constantly in keeping with the real needs and the system of internal control of an enterprise. The information obtained this way provides action in actual time both in the realization of increased effects and elimination or decrease of negative appearance influence on business operations. Larger number of institutes and authors in European countries and America deal with the organization and controlling application. In addition, we will give a brief review of certain attitudes about the place and the role of controlling in an enterprise. Controlling can be considered as an internal management which a general manager and other managers use in making decisions, and it gives answers to the following questions: [1, p. 18]

a) Where is the enterprise now, is our position good or bad (forecast)

b) What are the problems, we need to focus our attention on,

c) The way and suggestions for solving the noticed problems.

Then, the same author emphasizes that managers often think unreasonably and ignorant associates surround them. Wishing to avoid making the wrong decisions, they are forced to introduce the perfect controls. However, the desirable success often misses. If we ask the question why, the answer could be that this is because the associates avoid making decisions themselves in order not to offend their superior or to make sure they didn't make any mistakes, so they return unsolved questions to their superiors.

According to time, we divide controlling into operational, which deals with the future up to a year. That means it operationally monitors the process together with the short term forecast of the occurrences in business. [12, p. 374] Then strategic controlling, which deals with the future up to five-year times, which means that, based on the data of operational controlling and other analyses, prepares a long term forecast of the enterprise's business operations. According to this thinking, we can emphasize that the controlling function represents the management's need and a task and makes a difference between a manager and a controller. A manager chooses a goal and a controller gives advice on how it can be achieved [1, p. 215]. A manager is responsible for making decisions and their accuracy. A controller informs a manager how that decision will affect the profit realization, the financial security and the liquidity of an enterprise [3, p. 288]. We have to bear in mind the fact that a controller has the business operations' indicators in front of himself, because he has to consider a wider environment. That's why it is very important that both a manager and a controller cooperate and work together.

A good controller has to be able to recognize such problems, especially when his conclusions are based on firm facts, which he obtained by reconsidering the parameters of an enterprise's business operations. In these conditions, the associates have to be able to reconsider their behavior and to bear in mind the fact that the enterprise doesn't pay their salaries for the time spent, but based on the effects and their work. The effects of business operations can be increased in a short period of time by the implementation of controlling instruments. In order to reach this stage, it is necessary to establish the controlling system

and the competent executives as well as to organizationally locate controlling, so it can successfully accomplish its tasks.

## 2. Building up a controlling system

As we mentioned before, we can say that a management is a process in which a manager has to do besides his or her daily work. Management job must be completely separated from the profession someone originally learnt during the applied studies or during the technical training. Being a manager is not confined to any particular level or rank in the company's hierarchy. Beyond that, organization of a controlling in an organization must be concentrating on the concrete job description the person has to fulfill in other departments: sales, production, development, purchasing or in administration. This is also applied to the controller's job. The definition of objectives and agreeing upon these objectives is part of the controlling process. Controlling system is simply not feasible without objectives. Planning strategies, measures and budgets are part of executive planning. In that meaning, we can say that our plan determinates the way we have to take to achieve the agreed objectives. Controlling means: Being on the way to our objective. In order to achieve the agreed objectives, interim targets are needed to steer toward an objective. Variances are the signal for correction. Variances are the goodies in controller's work and not proof to guilt! Controlling follows the medical principle of anamnesis, diagnosis and therapy:

Anamnesis: Where does it hurt? This includes an analysis of whether the signals (figures) are right? Diagnosis: Why does it hurt? Here we need analyses and research. Controllers as interpreters together with the managers have to find the reasons to learn what to do. Therapy: take a 3 a day. The therapy is action paper, the list of measures to take along with responsibilities and deadlines that should essentially come from the manager; the controller provides support by taking minutes and translating measures into figures. For building a successful Controlling system we can use more operational and strategic Controlling instruments. One of the most useful strategic Controlling instrument can be implementation of Balanced Scorecard. Balanced Scorecard (BSC) [14] represents a method which professors Kaplan and Norton. The first findings were published in "Harvard Business *Review*". The task to work on a development of new methods and ways of measuring the performance (performance-measurement). That was the basic starting point during the conceptualization of BSC idea. As an accessory tool, "the strategic matrix" was taken into consideration, because it helps realizing the perspectives of an enterprise and choosing the most important ones among lots of possibilities. The purpose of enterprise existence has to give us the answers to the questions of what picture of us should our customers (users of our services) have to have. The question of associate's quality that has to meet the demands of the users is of the highest importance. The goals are practically achieved by the employees. In that sense, all available staff potentials have to be engaged in order to put BSC in practice, because the associates are more important than the data. If we don't want the associates to be in a situation which would look like a chaos, we need measurable goals, so they can work efficiently and in that sense the numeric indicators can be useful. Intellectual capital is the most valuable in a modern enterprise. It can be said that the financial capital is not the only so called "development drive" but the knowledge and associates skills have to be valued in a proper way. Because of that, associates individual goals are built. In accordance with individual power of each employee, his ability to identify himself with the enterprise goals and in position and influence on strategic goals. Where are we at the moment and where would we like to be? Decrease the paper work and simplify the communication. Make a clear communication between the basic values. The basic value is a stable element "anchor" which gives us answers to questions: Why is an enterprise positioned on a market? Why do we exist as an enterprise? It is necessary to create an

integration of all employees in an enterprise, separate goals and that way they will be more easily achieved in the future. We suggest more detailed observation of the following elements: Define the strategic horizon. Which production cycles can be expected in our profession? What is that we offer to a customer (why would he tie his future to us?) Through future existence vision, the attention should be paid to the questions: What will our enterprise achieve in "x" years' time? What is the most necessary for surviving on a market (minimum)? Which standards do we aspire to? What are our possibilities (maximum)? Which decisions do we have to make today, and, which can we leave for tomorrow? What are the decisions we have to prepare for? What do we have to prepare for? Define clear indicators for monitoring vision realization. Observe the strategic coordinating system in more details. It is necessary to direct strategic issues in order to achieve goals set: If it is possible. Choose four topics and focus on strategic actions towards them. What are the critical points in making decisions? What are the most important levers? Choose one indicator per each strategic issue. Present strategic issues (divide them) in table form. Present developing fields in the matrix which have to be filled with the ideas how the actions will be conducted. Collect structural ideas because of directing to: goal - action - indicator. It can be said that Balanced Scorecard is one very powerful strategic controlling instrument, which can serve the management to monitor the flow of total business operations and rely on it. But, before the implementation of Balanced Scorecard, as a Strategic Controlling instrument, we have to build up a Controlling department.

## 3. Developtment controlling as an academic discipline

Parallely to its development in practice (mostly in German speking countries), controlling has become a recognized discipline in academia as well - in spite of some reservations. According to study by Prof. Elmar Mayer [2, p. 103], there are more than 72 chairs explicitly carryng label controlling at the 130 business administration faculties of the German language universities and business schools in 2005. y. Furthermore, some aspects of controlling as a subject are often covered by other chairs that do not explicitly use the expression controlling as apart of their name, Prof. Weber [13, p. 20]. According to Prof. Weber's analysis of chairs labels shows that only 15% of 72 chairs are pure controlling chairs. The remaining 85% of chairs are linked to ather subjects. The diversity of mombinations clearly shows that controlling can be linked to very different aspects, and therby represents a classical cross/sectional function. Combinations with accounting (36%), and auditing (13%) head the list. The institutional development of German-language controlling at universities and business schools began in 1973. y., when Prof. Horwâth was offered the newly created chair of controlling at the Darmstadth technical university. After that, progress was slow until end of 1980's. In 1989, just 17 of todays 72 controlling chairs existed. Then things started speeding. In just a few years, 14 controlling chairs were established in former East Germany, while number grew by 41 in the former West German Bundesländer.

This rapid institutionalization of controlling chairs can be traced back mainly to changes in business practice. The expansion of university in the field of controlling also led to a clear increase in publications relevant to controlling in the academic journals of the German-speaking regions.

## 4. How to organize controlling in SME's

The first dilemma of organizing the controlling in an enterprise, is a decision where can be its place is in an organization. That mostly depends on the way internal division of work is done in an enterprise (departmental division of work) [8, p. 118], on the size of an enterprise and

its business structure, as well as on the location of work processes realization – one or more locations, in connected or indented process.

If the managing of an enterprise is decentralized, one can head for the decentralization of controlling and vice versa, if the managing is centralized, one will head for centralization. The level of controlling independence depends on its location in an organization of an enterprise as well as on its subordination to the sector it belongs. In our practice, the way of internal control is differently established. Where it is organized, it is most often a part of a financial department, which means that a control is based on the financial data and evidences. Prof. Rankovic thinks that in smaller and middle size enterprises, all financial businesses and controls are focused on the functions of a financial manager, who is on the top of a pyramid, as the main superior and main responsible for managing the finance of an enterprise. Some reasons for locating of controlling and its status in a system of an enterprise are emphasized, and they are as follows: [2, p. 123]

a) For a centralized controlling - if it is a small enterprise, the control uniqueness

b) For a decentralized controlling: the problems can be analyzed more easily and eventually solved on the spot, low level of bureaucracy in regard to centralized controlling, unloading of central functions and the work oriented towards immediate receiver of the information and the control suggestion.

According to som practical experiences, migration from centralized to decentralized controlling is made among to problems with centralized controlling which was too dominant and causes variety of problems of acceptance among managers: On the one hand, it may duplicate work when working on checking and interpreting information from group's subsidiary companies. Local controller would be tempted, for instance, to include buffers in there, for example, proposed operational budgets. On the other hand, there might also be re-delegation of local decision making rights if, as a result of informational dominance, only central controlling reports on business developments in the group companies while those actually responsible are not heard. The answer of mentioned dilemma may be the intention that the centralization of controllers tasks should be minimized and activities close to the business (for example; such as operational planning discussions), should be delegated to local controllers

As a result, ability for solving the noticed problems has to come from it, and that can be achieved through:

a) Preparation of decisions (which is achieved by using the economic analysis data) and

b) The responsibility for the accuracy of suggested measures (in order to achieve the results, it is necessary the qualified people to conduct them)

Regarding to internal structure of controllers units, two questions receive the greatest among of attention in the practice of controlling:

- Which is the dominant structural aspect on the subdivisions of controllers units: functional, divisional, or the combination?
- Are the tasks of cost controlling, financial accounting and strategic planning integrated into the controller unit organized in separate units? Which special functions do controllers perform?

It is necessary to bear in mind the fact that a controller cannot be responsible for the realization of the suggested measures that is primarily the task of the enterprise's management [1, p. 28]. Planning is conducted in separate departments, a controller is there to help, in other words, he is there to suggest the management the measures that have to be taken in future and which are based on the analysis of the results from the past. It can be said that controlling and bookkeeping are two different functions, because the practice showed that a good bookkeeper is a bad controller, because he is too precise and therefore, he is overloaded by details, while a controller cannot deal with small details, but has to be an expert who knows an enterprise, accounting as well as a market [12, p. 156]. Furthermore, it is very important that the top management confirms its goals taken from the suggestions that

controlling gives. The controlling departments are usually placed in the head office (there is a head office or a team on a management's side) as a controlling department. Using the controlling, the management of an enterprise can effectively fulfill its role, which can be observed through several most important directives such as managing through defining the clear goals – from the top to the bottom and vice versa.

## 5. Summary

Controlling knowledge is in a great demand in this crisis time. More and more people are willing to learn about controlling as well. It can be sad that is a connection between the global financial crisis and the growing demands on the controller's services in a global market. Managing of an enterprise is happening in a completely new ambient which requires the use of modern business operation instruments. Adequate and relevant decision making insists on understandable, reliable and comparable information. Therefore, an operative and strategic controlling instrument's must be designed properly to be effective. Implementation of controlling philosophy must be designed to prevent future problems of an enterprise. Controlling almost doesn't exist, neither theoretically nor practically organizationally, is known to managerial structures in our country. Thereby, by this paper we suggest the order of controlling philosophy. Verification of suggested controlling methodology by its putting into practice will mean its constant self corrections towards higher added value of an enterprise. Organization of a good controlling department in SME's is orienting forwards: *let's shape the future*. [1, p. 218].

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## Comparing Bootstrapping High-Tech Start-Up Companies in the West and in a Transition Country

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This is a study of the process of the development of high-tech start-up companies through the mechanisms of bootstrapping in two extremely different environments: the one of highly industrialized countries, such as USA and Switzerland; the other of Serbia, which is a post-communist transition country with particular difficulties. The research method is the analysis of case studies. One case study of US and two of Swiss start-ups build the base for the analysis. All three cases show common patterns: from the very beginning, these companies sell R&D services in their fields of expertise; and using the cash from these early sales, and the information feedback from cooperation with the early customers, they develop their resources and, eventually, also their own high-tech products. The essential feature of this process is the selling of R&D services and the first products in the neighborhoods. Then also two cases of high-tech start-ups from Serbia are analyzed. Both Serbian start-ups are founded in partnership with small high-tech companies from highly industrialized countries (Switzerland and Germany). The Western partners use their reputations and contacts to enable the early sales of the Serbian start-ups in the industrialized countries. This is crucial for the Serbian start-ups, because they have no domestic market for R&D services. Apart of this element, all other essential patterns of the Serbian cases are very similar to those of the Western cases.

#### Keywords:

bootstrapping, high-tech start-up, Serbia, Switzerland, transition country

#### **1. INTRODUCTION**

A great majority of high-tech start-up companies have been founded in highly industrialized countries [1]. However, the phenomenon of high-tech start-ups does exist also in less developed countries, particularly in post-communist transition countries [2], [3]. Serbia is an extreme case of post-communist transition countries. It was among the last to start the process of transition from the so-called socialist economy toward free market (capitalistic) economy. Nevertheless, the phenomenon of high-tech start-ups now does exist also in Serbia. This is a consequence of the good system of higher education, which existed before (high-tech companies are usually linked to universities) and the emerging new market system allowing individual initiative. In this paper we shall analyze this phenomenon by comparing the start-ups in Serbia with the similar cases in highly industrialized countries like USA and Switzerland. Thereby we apply the case study method [4], [5]. In this paper we concentrate on the analysis of the relevant case studies. These case studies are published elsewhere [6] - [15].

The reason for choosing a case of USA is the well-known fact that in this country the entrepreneurship mechanisms function extremely well and have the highest impact on the

economy [16]. So this US case may be used as an important reference for other cases. The reason for choosing also the cases from Switzerland are the following: comparable sizes (area, population) of Switzerland and Serbia, but also an extreme difference in history and economical development of the two countries. Both USA and Switzerland have high business expenditure rates on R&D per capita [17]. Switzerland allocates about 0.8% of GDP to basic research, which is the double of the corresponding percentages in USA and Japan [18].

The analyzed high-tech start-up companies from Serbia develop themselves through the mechanism of bootstrapping, i.e. without venture capital. For this reason, also the reference cases from the West are bootstrapping high-tech companies. Bootstrapping means "to pull oneself up; to succeed on one's own" [19]. The process of bootstrapping of start-ups may have at least the following two forms: 1) "highly creative ways of acquiring and the use of resources without borrowing money or raising equity financing from traditional sources" [20] and 2) "minimizing or eliminating the need for finance by securing resources at little or no cost" [21].

While analyzing the cases, we shall particularly look into the ways of how these companies develop and/or mobilize their resources [22]. The resources can be classified into six types: financial (funding), physical (equipment, geographic location), human (individual skills, knowledge), technological (intellectual property, technological know-how), organizational (internal structures, processes, relationships), and social (reputation, external relationships, networks) [23], [24]. The best known way of developing resources of a start-up company is through venture capital funding [25]. However, in reality venture capital funding is found less often than bootstrapping [26]. In spite of its significance [27] the process of development and mobilization of resources of high-tech start-ups through bootstrapping is a scarcely treated subject in literature [28]. This paper gives evidence of a very efficient form of bootstrapping, which is the use of information feedback from early customers. This mechanism of bootstrapping has not been described before. We have found that the regional, cultural, institutional and economical environment of a start-up has a profound influence on its relationships with early customers, and so also on the information feedback bootstrapping mechanism.

#### 2. WESTERN CASES

The following three case studies of Western bootstrapping high-tech start-ups give the base for analysis in this section: Enox Technologies, USA, [6], JDC Electronic SA, Switzerland, [7], Sentron AG, Switzerland, [8] - [14]. By examining the Western bootstrapping high-tech start-up companies, we found a striking similarity in their development.

#### 2.1 THE BOOTSTRAPPING PROCESS

The essential feature in the analyzed cases is that these companies start very early in their lifecycles with sales and various cooperations. Below are described the sales and cooperation activities typically used for the development of the resources of a bootstrapping high-tech start-up company [7], [8].

1. Offering engineering services while developing the own product (early stage):

By the very nature of start-up companies, virtually any start-up is created around a "big idea". This big idea differentiates the company from its competitors and positions the start-up's specific know-how. While a newly founded company starts developing its product, it may also offer engineering services in the domain of its expertise: consulting, realization of parts of a prototype for the customer and other similar activities.

#### 2. R&D order (early stage):

The company may sooner or later find a solid customer (= lead customer) who asks for the development of something that is technologically close to the start-up's own planned product. The optimal objective of a start-up in such a cooperation is acquiring resources, including cash, training of collaborators, and technology. The results of the development belong to the customer but the

information feedback (e.g. market information, new skills, know-how, technology) remains within the start-up. While working for the customer, the young company may develop a technology and production facility that it can also use for the production of its own products.

3. Selling a license (early stage): If a start-up company is not able to develop enough its resources for production and sales of its own product, it may decide to sell a license for its technology to a partner or even to a competitor. This injects money into the young company but also limits its future opportunities.

4. Joint development (early stage): When the company reaches the stage in which it is able to demonstrate a prototype of a marketable product, it becomes much more interesting for joint developments with cooperation partners. The partners provide very valuable information feedback, typically in the form of market intelligence, which helps the start-up define its own product.

5. Production cooperation (early stage-expansion stage): When a start-up company is trying to commercialize a new high-tech tangible product, organizing production might be the most difficult task. High technology generally requires high front-end investments. Also whereas high-tech equipment has great capacity, a start-up generally starts with a small quantity production. One way to circumvent the problem of high front-end investment is to organize the production through outsourcing.

6. Cooperation with distributors and representatives (early stage-expansion stage): Marketing and sales of high-tech products generally is a difficult task [29]. It causes a bottleneck particularly in the development of a start-up because 1) the start-up has no reputation and 2) the product is developed around a new "big idea" and often requires a paradigm shift in thinking. Therefore, the activity of marketing and sales requires qualified persons, funding and time. A way to mobilize these resources is to enter in cooperation with specialized marketing and sales companies, called Distributors or Representatives.

7. Strategic alliances (established): Once the start-up company reaches the stage of an established business, it may enter into a strategic alliance [30].



Figure 1 Qualitative model of the development of resources: relationships with customers

From the analyzed case studies one can also derive the model shown in Figure 1. The essential feature of this model is the return (i.e. feedback) from the customer to the company. Whereas the return in the form of money goes without saying, the importance of feedback in the form of information is generally overlooked. However, our analysis reveals a crucial role of customer feedback for the development of a start-up company. Briefly, customer information, and stimulates training of employees. So the information feedback positively influences human, social, and technological resources of the company. In particular, while working on a customer's R&D project, the start-up and trigger creativity of the employees. Due to the type of activity of high-tech start-up companies, this is an absolutely crucial effect, which may boost their overall development.

The model in Figure 1 is derived from the case studies of high-tech start-up companies in which the initial and the additional conventional funding (share capital, loans) are much smaller than the achieved annual sales. In particular, there was no venture capital funding. The final outcome of a well-managed process of the development of the resources of such a high-tech start-up may be an exponential growth of its sales [8].

#### 2.2 EARLY SALES

Each of the cooperation activities described above includes corresponding marketing and sales activities. Obviously, marketing and sales are very important in the process of bootstrapping. Selling a start-up's product relies on the rules of marketing. One of the central concepts in marketing is the marketing mix of the 4Ps (product, price, promotion, placing) [31].

In [11], [12] a novel concept of modelling the marketing process of high-tech start-up companies is presented. The model directly relies on a conceptual, graphical and mathematical formalism, which is well established in various engineering fields, such as reliability engineering [32]. The main aim is to model the process of attracting the interest of potential customers and leading them toward a first purchasing decision.

#### 2.3 INFLUENCE OF THE ENVIRONMENT

The environment of a start-up company that influences its creation and development includes the following aspects: economic factors (GDP, economic growth), physical factors (geographical location), trade factors (import/export), competitive advantage (education, cost of labour, political stability, size of domestic market), cultural factors (attitude to works, personal contact and trust), structural issues (where to manufacture) [16].

The analyzed Western start-up companies have different geographical locations (USA and Switzerland) and are located in the countries of very different sizes (population: USA about 300 million, Switzerland about 7.5 million). In spite of these facts, the relevant cultural, institutional, and economic factors in the two countries are similar. Notably, in both countries exists a tradition in high-tech entrepreneurship; The governments of both countries support high-tech start-up companies through various programs, such as Small Business Initiative in USA and CTI (Commission for Technology and Innovation) in Switzerland; And the economic-systems and parameters are comparable [16]. The very different sizes of the respective domestic markets is not an important factor, because Switzerland is well integrated with the market of European Union, which is of a similar size as the US domestic market. So there is no wonder that in USA and Switzerland we find high-tech start-up companies with many similar patterns in their development: the companies are created by individuals (with big ideas) but with little capital. These companies develop themselves through bootstrapping in similar manner: very early in their lifecycle, they find in their neighbourhood established companies, which are ready to buy their engineering services; moreover, in USA, Enox Technologies receives research money from US Department of Energy, and in Switzerland, Sentron AG uses a CTI research grant from Swiss

government; and all studied companies find the lead customer for their respective products 'close home': the natural gas industry (Enox), Swiss watch industry (JDC and Sentron).

#### 3. SERBIAN CASES

The following two case studies of high-tech start-ups recently founded in Serbia give the base for analysis in this section: Sentronis a.d. and Zesium Mobile d.o.o., Serbia. [15]

#### 3.1 ANALYSIS OF THE SERBIAN CASES

Both cases of Serbian companies are high-tech start-up companies: they are in early life-cycle phase, and have high dynamics and future orientation; and they are engaged in the design, development, and introduction of new products through the systematic generation and application of scientific and technical knowledge (notably, they publish their R&D results at scientific conferences and in journals) [33] - [35].

In the two Serbian case studies we find almost identical patterns and models as those found in the bootstrapping high-tech start-ups from highly industrialized Western countries, as summarized in Section 2. Notably, the Serbian start-up companies also relay on the bootstrapping for their development: they find highly creative ways of acquiring resources without financing from traditional sources; and they minimize or eliminate the need for finance by securing resources at little or no cost. However, the Serbian cases in addition show a few important particularities, which are due to the corresponding environment.

#### 3.2 CULTURAL, INSTITUTIONAL AND ECONOMICAL ENVIRONMENT IN SERBIA

Until 1991, Serbia was one of the six federal states (republics) of former Yugoslavia. Yugoslavia was one of the most prospectus communist countries. The disintegration of the country and the civil wars have blocked the operation of most of its industries. In addition, Serbia was isolated from the world economy for several years due to the sanctions of the United Nations; and in 1999, Serbia had the conflict in Kosovo and NATO bombardment. As a result, when in 2000 Serbia started the transition toward free market economy, the country was in a very bad shape: it had poor industrial infrastructure, no high-tech industry, very high unemployment rate, political instability, legal insecurity, and very negative reputation abroad. Although since 2004 the Serbian economy grows for about six percent per year, Serbia still has among the lowest gross domestic product per capita in Europe, \$10'400 in 2009 [36].

In spite of the long communist period (1945 – 2000), the entrepreneurial phenomena quickly reappeared in Serbia. For example, for the first ten months of 2006, about 8000 new companies were registered in Serbia [37]. But among them very few are high-tech companies. The probable reason for this is the non-high-tech-start-up-friendly environment in Serbia: no potential customers for engineering services (established industrial companies), no tradition of buying knowledge on the domestic market, and no organized institutional support for high-tech start-up companies. So the (still) rare high-tech start-up companies had to develop a particular strategy to overcome the difficulties imposed by the non-friendly environment.

#### 3.3 PARTICULARITIES OF THE SERBIAN HIGH-TECH START-UP COMPANIES

Compared to the analyzed Western cases, the most important difference found in the Serbian cases is the following fact: the two Serbian start-ups started their existence with strategic alliances. Zesium, Serbia was 'born' linked with Zesium, Germany; and Sentronis, Serbia is linked with Senis, Switzerland; and then, the two Serbian start-ups went more or less backwards in the process described in Section 2.1 (see 7,6,..). This is in contrary to the cases of the start-ups from Switzerland and USA, which developed themselves by offering first engineering services, then

R&D services and so on; and only with the accumulated reputation, they became interesting as partners for strategic alliances (Section 2.1: 1,2,..).

The basic reason for this specific strategy of the Serbian high-tech start-ups is the fact that they have no potential customers on the domestic market (no established high-tech companies that would buy the R&D services and initial products of the start-ups). Therefore, from the very beginning, they have to look for customers in highly industrialized countries. But, without alliance with Western partners, Serbian start-ups would have no chance on the international market. Why this is so could be best understood by analyzing the probability of the direct early sales of Serbian high-tech start-ups (see Section 2.2).

*Promotion.* An essential attribute of any sales offer is the associated image. The image of Serbia was very bad, and this bad image transfers to anything related to Serbia, including their products and companies. Therefore, the probability of influencing a customer to consider the other 3Ps is close to zero.

*Product.* The development of a novel product requires interactions with the first customers, that are crucial for the evolution of the "big idea" and related technology, and the refinement of the product. Such-interactions are much more difficult for Serbian start-ups than those in the West, because in Serbia there are no customers "close home" (see *Place*). Moreover, for the same reason, a Serbian start-up is not likely to develop well the outer shells according to the Levitt's whole product model [38]. Therefore, the probability that the customer likes a product of a Serbian high-tech start-up is low.

*Price.* Engineering costs are by far lower in Serbia than in the industrialized countries. Therefore, the probability that the customer accepts the price is high.

*Place.* Recall that here Place means convenience for interactions vendor – customer. The probability that a potential customer from an industrialized country considers Serbia as a convenient place for looking for a solution of his high-tech problems is very low.

Therefore, the total probability of direct early sales by a Serbian high-tech start-up is close to zero. On the other hand, the start-ups in Switzerland and USA could sell R&D services "next door" and enjoyed the high reputations of their respective countries in the eyes of international customers. Therefore, the condition *sine qua non* for the Serbian start-ups was the alliance with the partners from highly developed countries. Only thanks to the reputation and relations of the foreign partners, the Serbian start-ups could perform early sales and so go through the other stages of the usual development of bootstrapping high-tech start-up companies.

The motivation of the foreign partners to start working with Serbian start-ups is based on their expectation to obtain engineering and other work at good performance - price ratio. The Serbian high-tech start-ups can attract the best available educated and talented local people. To this end, it is important to place high-tech start-ups in Science Parks [39] at Serbian Universities. Moreover, foreign partners also hope that the industrial culture, developed until 1990 still exists in the local population. However, sometimes they encounter a number of obstacles, including incomplete training and non-adequate work habits of the employees, and poor general and industrial infrastructure. Therefore, start-up companies (and Universities [40]) in Serbia have to work on the development of their human resources more than those in the industrialized countries.

#### 4. CONCLUSIONS

As any other start-up, each of the analyzed high-tech start-up companies was founded with a "big idea" in the minds of its founders; but they started with little capital. From the very beginning, these start-ups sell R&D services in their fields of expertise and so deepen their knowledge in the field. Using the cash from the early sales, and the information feedback (know-how and market information) accumulated through cooperation with early customers, they develop their resources. They may mobilize further resources through outsourcing and cooperation with production and sales partners. They also use the feed-back from the early customers to refine, modify, and further develop their original "big idea", or to create a better one. So, while working for early customers, such start-up companies eventually manage to develop and commercialize their own high-tech products.

This model was found in all analyzed cases of high-tech start-up companies, irrespective whether a case comes from USA, Switzerland, or Serbia. However, the home country of a high-tech startup does have a decisive influence on the process of early sales of a start-up, and so also on the very nature of a start-up. The reason is the following. The typical early customers of a high-tech start-up company are well established companies. In order to improve the productivity of their own R&D, such companies may buy engineering services from a start-up, or outsource a whole R&D project to a start-up; or they may seek to improve their products or operations by applying innovative technologies or products of a start-up. The high-tech start-up companies situated in highly-industrialized countries, such as USA and Switzerland, have an economical environment populated by such potential customers. So they even do not have to bother about formal promotion of their technologies. On the other hand, the high-tech start-up companies situated in a transition country, such as Serbia, have a domestic environment practically with no industry interested in their services. So they have to go to the international market from the very beginning of their existence. But the probability that a company from an industrialized country decides to buy R&D services from a Serbian start-up is very low. The reasons are the negative image of Serbia, inconvenience in communication and working with a Serbian company, and low probability of matching of customer needs with the Serbian offer. Therefore, from their very creation on, Serbian high-tech start-up companies work in close cooperation with partners from industrialized (Western) countries.

The interaction of the bootstrapping Western and Serbian high-tech start-up companies with their environments is illustrated in Figure 2. Western high-tech start-ups sell at the beginning their services and first products on the local (domestic) market. On the other hand, the early sales of Serbian high-tech start-ups and the related information feedback go via their Western partners. A symbiotic consortium of Western/Serbian high-tech start-up companies combines its resources in order to optimize both its current market offer and the development for the future. Notably, the Western partner contributes its social resources (reputation, contacts with potential customers), and the Serbian partner contributes its human and, later, also technological resources. Together, they can optimize the marketing mix of 4 Ps for their services and products: the Western partner assures good Promotion and Place, and the Serbian partner assures good Product and Price.



**Figure 2** Interaction of the bootstrapping Western and Serbian high-tech start-ups with their respective environments: a) Western high-tech start-ups interact with their domestic environment. b) Serbian high-tech start-ups perform early sales and obtain the market feedback via their Western partners.

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## Does Human Resources Management Vased on Creativity Enhance the Innovation Capability? An Exploratory Study of French Firms

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Nowadays, the competitive advantage of firms is mainly based on innovation. Rough competition and market globalization stimulate firms to conceive and offer a high added value in products and services. Performance of organizations depends more and more on their capability of innovation. The capability of innovation can be defined as the ability of the firm to combine knowledge and management practices in a dynamic way in order to create new products, services, and processes and to respond to the changing environments.

Amongst all the resources of the firms, only human resources can innovate. Some specific characteristics of formal and informal structure, communication, culture, management and human resources management practices are able to create an environment that facilitate new ideas' generation and innovation from all employees. Our paper aims to investigate the relationship between human resources management practices and innovation performance.

We realized an exploratory study with 37 French companies based on the innovation capability model of M. Terziovski. Using non-metric tests we were able to suggest some promising links between human resources management based on creativity and innovation performance measured by criteria such as: new products' turnover, number of innovations, and time of innovation adoption.

#### Keywords:

Innovation, Human Resources Management, creativity

The rising competition, globalization, technological change and frequent crisis incite firm to innovate. Innovations allow companies to benefit of pioneer advantage and to develop core competences in order to cope with change and uncertainty. Even imitation and low cost strategies need innovation and absorption capacity. How to enhance company's innovation performance is a major concern for many professional and scholars.

The Booz Allen Hamilton consulting group defines innovation as "the ability to define and create new products and services and quickly bring them to market" (<u>www.boozallen.com</u>). Amongst all firm's resources only human resources can innovate. Thus, the Human Resources Management (HRM) is likely to be a critical function for increasing the firm innovation performance. It embraces measures (strategies, politics, procedures, etc) and activities which concern human resources and aim the efficiency and the optimal performance of employees and organizations (Sekiou and al., 2001). Our research tries to identify some of these Human Resources activities and strategies that enhance employees' creativity and in turn innovation performance.

In this paper we briefly summarize some recent works that show the importance of Human Resources Management for innovation performance. Afterwards we will describe our research instrument and the mobilized statistical methods. Later we expose and discuss our findings. Finally we conclude on the future research agenda suggested by this study.

## I. Theory and Methodology

# 1. Relationship between Human Resources Practices Based on Creativity and Innovation Performance

Verona (1999) adopts the resource based view and suggests that in order to develop new products, firms must dispose with internal and external integrative capabilities, technological and marketing ones. Espousing the same theoretical stand, Lawson and Samson (2001) develop the concept of innovation capability that represents the firm capacity to integrate multiple competencies in a dynamic way. Innovation capability is defined as *"the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders"* (Lawson and Samson, 2001). The innovation capability integrates the following strategic capabilities: Leadership, vision and strategy; Human capital management; Creativity management; Culture; Organizational intelligence, Structure and systems; Marketing; and Management of technology (Metz et al. 2005).

In this work we focus primary on innovation capabilities that are related to Human Resources Management. Verona (1999) argues the firm's internal integrative capabilities include managerial process (internal communication, political and financial support, subtle control, and integrative strategies), managerial systems (job training, collective brainstorming, and incentives), integrative structure (process integration and organizational reengineering,) and culture and values for internal integration. In the same vein, Vision and strategy, Human capital management, Creativity management, Culture, Structure and systems are likely to represent the major internal integrative capabilities identified by Lawson and Samson (2001).

Reviewing some of the existing literature on the impact of HRM on innovation perforce, we distinguish two major topics of research: the first one focuses on the relationship between HRM and firms' innovativeness and the second one is primarily concerned by the management of creative employees.

Leede and Looise (2005) suggest eight HRM components that are able to influence innovation: organizational structure, staffing, HR development and carriers, performance and reward, communication and participation, team working and leadership, key roles of individuals and creative culture. Shipton and al. (2006) identify six HRM practices that develop knowledge and skills: exploratory learning, socialization, appraisal, training, contingent reward and team working. Induction aims to help new employee to "fit" with organizational goals and values. Appraisal guides workforce to better understand organizational purposes and keep them motivated. Exploratory learning and extensive training intend to raise the existing organizational and individual knowledge. Contingent rewards are able to foster extrinsic motivation. Moreover they can be perceived by employees as recognition of their effort and competencies. Finally, team working allows recruits to share tacit knowledge and represents a support for individuals.

Shipton and al. (2006) show that HRM is an important predictor of innovation. Their empirical study of UK companies shows that all HRM practices (exploratory learning, socialization, appraisal, training, and team working) have a significant positive effect on product and process innovation except contingent pay. Chen and Huang (2009) study of Taiwanese firms demonstrates that staffing and participation have positive and significant impact on technical and

administrative innovation. Performance appraisal has a significant positive effect on administrative innovation, while compensation has strong positive impact on technical innovation. Camelo-Ordaz and al. (2008) observe that both the top management vision and compensations practices based on performance influence the firm's innovation performance. Chen and Huang (2009) also record that recruitment policies and participation in decision making have a significant positive effect on knowledge acquisition, sharing and application. Training favors knowledge acquisition and application. Compensation practices are able to stimulate knowledge sharing and application. The authors also observe that knowledge management capacity plays a moderating role on the relationship between HRM practices and innovation performance.

Chanal et al. (2005) focus on innovative people management and identify four organizational mechanisms that can be used for this purpose: Leadership; Organizational structure; Culture; and Diversity management. The authors argue that more participative and supportive leadership within an 'organic' organizational structure are necessary for management of creative employees. Culture and diversity management by encouraging risk taking and multiplying points of view facilitate the implication of innovative employees. McMeekin and Coombs (1999) show the importance of organizational structure and result-driven culture, teams, product champions, appraisal system, carrier management, and communication for innovation. They also point out that technical professionals are motivated mainly by interesting work. Chang and Chiang (2008) observe that knowledge sharing, international view, team work, exhibitions visits, and diversified work experiences are the best practices for enhancing creativity in Taiwanese design organizations.

With this study we explore the impact of the internal integrative capabilities related to HRM on innovation performance within French firms.

#### 2. Research Methodology

Our study is based on the questionnaire developed by M. Terziovski that aims to measure innovation capabilities (see Metz and al, 2005; Terziovski and Samson, 2006). From this questionnaire, we selected three organizational capabilities that are related to HRM practices based on creativity: Leadership and strategy; Human resource and creativity management; and Organizational culture (see appendix). They represent our independent variables. Leadership and strategy scale integrates items such as: top management implication and vision, strategic coherence, clear strategic objectives, top management encouraging, change, innovation and entrepreneurship, decision making process and trans-functional teams. Human resources and creativity management scales include items that measure: recruitment, training and development, compensation and communication process, creativity stimulation by knowledge sharing and management, suggestion schemes, interesting work, job rotation, and individual benefits from intellectual property. Finally, culture scale integrates items that evaluate the 'fit' between individual and organizational values, the importance of learning organization and total quality management, the decision making' habits and performance oriented culture. All independent variables are 5 point Lickert scales.

Our dependant variable is innovation performance. This concept is represented in the Terziovski innovation capability' questionnaire by five innovation' success closely related measures (see appendix): revenue from new product development (in %), number of innovations, time of innovation adoption (in years), time to market (in years), and research and development as percentage of total sales (in %). Innovation performance is completed by three more broadly related measures: customers' and employees' satisfactions and ecological efficiency. The last three measurements are also 5 point Lickert scales.

At this stage of our study we contacted 120 French companies that have relationship with the University of Versailles. 37 firms responded to our mailed questionnaire. Using descriptive statistics we analyze our data in order to observe its distribution. The responses of the majority of our scales were distributed quasi normally. In this case we can use metric statistical methods for analyzing them (see Howell, 1998). Although, we preferred non metric methods because, for small samples they are more powerful than metrics ones. The non metric statistical tests use

median parameter and not the average (Siegel, 1956). For the purposes of this work we mobilized two statistical methods: correlation and one way ANOVA.

Our data is ordinal and thus we can look for correlations and not only for associations between variables. We can use mainly two non metric tests for the study of the non metric correlation:  $\rho$  of Spearman and  $\tau$  of Kendal (Malhotra, 2004). Howell (1998) suggests that in general, the test  $\tau$  of Kendal is more useful than the  $\rho$  of Spearman. Malhotra (2004) points out that the  $\tau$  of Kendal is to be preferred to the  $\rho$  of Spearman when the responses categories are limited (5 in our case). Moreover, the two tests are equally powerful (Siegel, 1956). For all these raisons we use the  $\tau$  of Kendal for the study of the correlations between our different variables. This test transforms the data of each analyzed pair of variables in ranked one. After that it measures the correlation based on the number of inverse ranks of the two variables. When this number is low, the correlation is high.

Non-metric methods allow us to study the influence of one independent variable to one dependent one. The more popular test is Kruskal-Wallis (KW) test for k independent groups that is the non metric counterpart of one way ANOVA. The null hypotheses of the KW test supposes that the medians of the dependant variable' distributions for each degree (category) of the independent variable are equal. Despite the fact that median test is more useful when the dependant variable' categories are not numerous (5 in our case) than the KW test (Siegel, 1956), we mobilize the last one because for small samples the first one is not applicable.

## II. Findings and Discussion

In this section we present our analysis of innovation' performance variables, and the influence of Leadership and strategy, Human resources management based on creativity and Culture variables on firms Innovation performance.

#### 1. Innovation performance

First we looked for the correlations between innovation' performance variables. We observed that the revenue from new product development, the number of innovations and the research and development as percentage of total sales are all correlated (respectively, correlation 0,587, signif. 0,000; correlation 0,454, signif. 0,004; and correlation 0,411, signif. 0,006). These results suppose that the high revenue from new product development is mainly based on the high number of innovations. So multiplying innovations are expected to enhance firm performance. Research and development as percentage of total sales is probably more innovation's input than innovation's output. In this case, the correlation between means (research and development resources) and outcome (revenue from new product and number of innovations) is quite natural. But the inverse relationship is also possible: the more the firm is innovative the more it invests in research and development.

The time of innovation adoption and the time to market are also positively associated (correlation 0,459, signif. 0,003). It seems that when innovations are quickly adopted their time to market is also limited.

Our data shows that customer' satisfaction is positively correlated with the number of innovations and the employees' moral (respectively, correlation 0,377, signif. 0,008 and correlation 0,451, signif. 0,003). Customer satisfaction increasing with the number of innovation is an expected finding. When innovation is market driven and responds to the client needs it will be welcomed. The more surprising result is this of the correlation between customer and employees satisfactions. This effect is more relevant for services' sector. Nowadays when, firms sell not just a product but a 'global offer' (product, guaranties, services...), the correlation between client and employees' satisfaction seems to concern the industrial sector also. We can conclude that employees' moral is an important factor for firm performance.

Employees' satisfaction is also positively associated with firm's ecological efficiency (correlation

0,458, 0,007). Still, it is difficult to say if employees' moral is an input or an output for ecological efficiency. It is likely that the work force is more motivated and identifies itself easily to the firms that are socially responsible. Although, it is possible that employees' satisfaction and implication enhance firm's ecological performance.

# 2. The influence of Leadership and strategy characteristics on innovation performance

A mission statement that includes the word 'innovation' is positively correlated with the revenue from new product developed and with the number of innovations (respectively, correlation 0,356, signif. 0,021; correlation 0,340, signif. 0,018). Our findings show that the innovation must be a part of the strategic vision of the top managers. Thus, clear communication about the importance of the innovation and high top management implication are able to raise the innovation performance.

An operations' strategy aligned with the strategy of innovation is positively associated with the percentage of turnover from new product developed, with the number of innovations and with the research and development as a proportion of total sales (respectively, correlation 0,372, signif. 0,014; correlation 0,395, signif. 0,006; correlation 449, signif. 0,004). Moreover the impact of strategic consistency on number of innovations and research and development as fraction of total turnover is confirmed by the KW test (respectively 10,250, signif. 0,010 and 10,383, signif. 0,016). We observe that strategic and operational coherences are important factors for innovation performance. They indicate clearly to employees what the company's expectations are and how to perform them. Our results show also that when innovation is a strategic and operational priority, it is likely that the firm invest more in research and development. There is coherence between strategic objectives and inputs.

The 'top down' strategy is negatively correlated with the employees' moral (correlation -0,422, signif. 0,006). This result is not surprising. More directive management that does not take into account employees suggestions and demands may be able to deteriorate the workforce' satisfaction.

The KW test reveals that there is an inverse U relationship between the emergent 'bottom up' strategy and customer satisfaction (7,861, signif. 0,049). It is likely that the emergent strategy improve the quality of the client' relationship but when there is not top management strategic vision, this approach might deteriorate the client satisfaction.

# 3. The influence of Human resources management practices on innovation performance

A recruitment strategy that focuses on attraction of creative people is positively correlated with the research and development as a percentage of total sales (correlation 0,534, signif. 0,001). This influence is confirmed by the KW test (10,308, signif. 0,016). Our data analysis points out that high financial means dedicated to innovation are coherent with Human resources strategy that aims to enhance employees' creativity. Moreover, it is likely that when firms recruit and dispose with many creative people they try to provide them sufficient funds for innovation.

Freely shared knowledge is positively correlated with the employees' satisfaction (correlation 0,534, signif. 0,037). Indeed shared knowledge is based on better communication between employees and is able to continuously improve the workforce competencies. In turn this can be a reason for high employees' moral.

Employees' satisfaction measured regularly is positively correlated with research and development as percentage of total sales. This result is also established by the KW test (10,356, signif. 0,016) and is difficult to explain. It is possible that the top management of firms that invest hardly in research and development believes that innovation has always human origin and that the human resources are a critical factor for increasing innovation' performance. Thus, paying close attention to employees moral is an important practice willing to assure employees implication

and consequently more suggestions leading to innovations.

The use of change 'champions' is positively correlated with customer and employees' satisfaction (respectively correlation 0,307, signif. 0,045; correlation 0,328, signif. 0,035). The change 'champions' are likely to facilitate new management practices, change and innovation adoption. This may result in better product and services for customers and also in more support for employees.

The case of employees rewarded for the adoption of the continuous improvement philosophy is positively correlated with the number of innovations (correlation 0,302, signif. 0,040). This compensation strategy clearly indicates to the workforce what are the company objectives and tray to align organizational and individual goals. Our results confirm that the effective adoption of continuous improvement philosophy is likely to increase the number of innovations. KW test shows that rewards that take into account the continuous improvement philosophy may be able to raise the employees' moral (9,782, signif. 0,021). Indeed these compensation practices can also be seen as organizational recognition of the workforce effort to continuously improve firm's performance.

The company suggestions schemes are positively correlated with the number of innovations (correlation 0,293, signif. 0,044) but negatively associated with time to market (correlation -0,344, signif. 0,031). The first finding is easy to explain. The suggestions schemes are likely to incite and stimulate the creativity of the whole staff based on its recognition and implication. Thus suggestions schemes might enhance the number of proposed and adopted innovations. Though, it is difficult to explain the second negative correlation. It is possible that the high number of suggestions and the high formalism of the selection process delays the time to market.

Interesting work is positively correlated with employees' satisfaction and research and development as percentage of total sales (respectively correlation 0,408, signif. 0,007; correlation 0,364, signif. 0,021). Interesting work is able to increase the internal employees' motivation and their moral. This result is quite natural. The second correlation is more surprising. It is likely that interesting work is perceived as having a link with innovation and funds that employees dispose. It is possible that the more innovation resources, the more work is supposed to be interesting and vice-versa.

Encourage the job rotation is positively correlated with the percentage of turnover from new product developed, with the number of innovations, and the research and development as percentage of total sales (respectively, correlation 0,406, signif. 0,012; correlation 0,411, signif. 0,005; correlation 0,437, signif. 0,008). Indeed, post rotation is likely to stimulate employees creativity, individual and organizational learning and to improve communication process. So, it is comprehensible that job rotation is correlated to all three innovation performance measures. Although, the KW test suggests that the relationship between post rotation and the three innovation performance variables is likely to be inverse U curve (respectively 12,881 signif. 0,012; 13,960, signif. 0,007; and 10,998, signif. 0,027). There is strong positive relationship between job rotation and these three variables for the first four degree of the scale, but it is possible that very extensive post rotation impedes employees to capitalize their new knowledge and reduce the firm innovation performance.

Sending employees to conferences is positively correlated with employees' satisfaction and research and development as part of total sales (respectively correlation 0,326, signif. 0,032; correlation 0,351, signif. 0,026). In general, innovations are based on accumulated knowledge. Indeed, the conference participation permits to employees to update their knowledge and competences and become more innovative and employable. So, it is likely that conference assistance is linked to employees' moral. Still, to be active in scientific network, highly specialized workers need some financial resources. That why, it is possible that strategic priority focusing on innovation (as research and development as percentage of total sales) is linked to conference participation and vice-versa. According to the results of KW test, the impact of sending employees to conferences on research and development as percentage of total sales has also inverse U shape (9,574, signif. 0,048). There is strong positive relationship between these two variables for the first four degree of the scale, but the very extensive conference's use is not necessary associated with high percentage of total sales dedicated to research and development. This result is unexpected. Sector, size or culture variables are likely to play a moderating effect Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 on the relationship between conference participation and research and development inputs. Finally, the case of employees that benefit of intellectual property right is negatively correlated with time to market (correlation -381, signif. 0,018). At this stage of our study, we are not able to explain this effect. Larger sample will allow as to better understand this relationship.

#### 4. The influence of Organizational culture on innovation performance

Strategic decisions based on quantitative data and on intuition from experience are negatively correlated with employee' moral (respectively correlation -0,338, signif. 0,028; correlation -0,382, signif. 0,014). The last relationship is also confirmed by the KW test (8,541, 0,036). Employee' moral is also negatively impacted by the strategic decisions based on industry experience (KW 8,030, signif. 0,045). It is possible that the quantitative data does not always integrate all aspects of work and employees may feel lack of recognition. It is difficult to explain why intuition form experience is likely to reduce employees' satisfaction. One justification can be found in the fact that experience-based intuition can favor senior employees. Younger and less experienced personnel may be less involved in decision making and thus less satisfied with their work. This relationship must be better explored when our sample becomes larger. It is also difficult to justify the negative link between decisions based on industry experience and workforce moral. Nowadays, some companies imitate the best industry practices and their most performing competitor without always taking into account the company's own core competencies. Although, employees moral and work identification need clear and unique strategic vision that differentiate the firm from its homologues.

Promoting employees in accordance with their merits influences employees' satisfaction in U shape (KW 9,390, signfi. 0,025). This result is difficult to explain and may be specific to the industry and culture.

Organizational culture encouraging risk taking and employees rewards based on individual performance are positively correlated with research and development as percentage of total sales (respectively correlation 0,443, signif. 0,004; correlation 0, 439, signif. 0,007). These two impacts are also validated by the KW test (respectively 10,527, signif. 0,015; 9,421, signif. 0,024). Indeed innovation oriented organizational culture and reward system that align firm innovation objectives and individual ones are likely to be established in companies that have an effective innovation strategy and that provide the necessary resources.

Finally, Total quality management (TQM) embedded in organizational culture is positively correlated with ecological efficiency (correlation 0,338, signif. 0,041). It is possible that the TQM which advocates zero default, continuously reducing energy and other resources' consumption, and focused on the whole value chain may be an approach that favors ecological efficiency. However the 'learning organization' exerts a U shape impact on ecological efficiency (KW 7,880, signif. 0,049). It is probable that industry or other variables play a moderating effect between learning organization and ecological performance.

## **III Conclusion**

Our study confirms the importance of clearly communicated mission and strategy that focus on innovation. We also observe that a directive style of management is likely to deteriorate the employees' satisfaction. However, our data does not validate the importance of multi-functional teams, of internal entrepreneurship, and of top management encouraging change for innovation performance.

Our research shows that many HRM practices based on creativity are able to affect positively some aspects of innovation performance: recruitment policy, shared knowledge, employees' satisfaction measurement, use of change 'champions', employees rewarded for the adoption of the philosophy of continuous improvement, suggestions schemes, interesting work, job rotation, and conferences' participation. We do not find support for the influence of some other HRM practices such as: training and personnel development, multi-skilling, communication processes,

assigning responsibility for knowledge management. Moreover, we observe that offering workers the benefit from intellectual property they create is likely to postpone the time to market.

Innovation and performance oriented organizational culture is able to increase innovation performance. Total quality management embedded in the company's culture may have a positive impact on ecological efficiency. However, some of our results are difficult to explain such as: strategic decision making, 'learning organization', and individual performance rewarding that have an unexpected impact on employees' moral and ecological efficiency. It is surprising that the items related to cultural 'fit', carrier management, appraisal and team rewarding and decision's formalism do not affect significantly innovation performance.

Our results must be used with many precautions. Indeed, we are still at explorative stage of our research. The limited sample does not allow us to generalize our findings and to assert their soundness. Yet, we are not able to take into account some control variables (firm size, industry, and respondent's functional and hierarchical position ...). We mobilize non metric statistic tests that do not use the whole data like metric ones. Unfortunately for the time being, we are not able to complete our quantitative data with more qualitative one.

Actually we continue our study and when the sample is sufficient we will be able to confirm some of our results and explore all unexpected relationships between Human resources management practices based on creativity and innovation performance. We would like to analyze the effect of some control variables (industry, size, strategy, and respondent functional and hierarchical position...). We hope that our findings will promote some new promising research topics.

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## **Appendix**

#### LEADERSHIP AND STRATEGY

<ol> <li>Pleas</li> </ol>	e circle the number which accurately reflects your orgar	nisation's P	RESENT	position, w	/here:1 =	Strongly Dis	agree;
Disagree	e; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strong	ly Agree					•
a)	The word 'innovation' appears in our mission statement	1	2	3	4	5	
b)	Our operations strategy is aligned with our innovation strategy	1	2	3	4	5	
c)	Senior Managers actively encourage change	1	2	3	4	5	
d)	Senior Managers implement a culture of innovation	1	2	3	4	5	
e)	There is a high degree of unity of purpose throughout our organisation	1	2	3	4	5	
f)	We have eliminated barriers between departments	1	2	3	4	5	
g)	Senior Managers show a sense of urgency relating to opportunities for innovation	1	2	3	4	5	
h)	We adopt a deliberate (top down) strategy	1	2	3	4	5	
i)	We adopt an emergent (bottom-up) strategy	1	2	3	4	5	
j)	Entrepreneurship is widely supported at middle management level	1	2	3	4	5	

#### HUMAN RESOURCES MANAGEMENT

2. The following statements are designed to find out the extent to which various human resource management practices and policies apply throughout your organisation. Please circle the number which accurately reflects your site's PRESENT position, where: 1 = Strongly Disagree: 2 = Disagree: 3 = Neither Agree nor Disagree: 4 = Agree: 5 = Strongly Agree

		2.00.9.00	, . <i>.</i>			•	
a)	Our human resource plan is clearly	1	2	3	4	5	
	focused on the recruitment of creative people.						
b)	Knowledge is freely shared in our organisation	1	2	3	4	5	
c)	We have an organisation-wide people	1	2	3	4	5	
,	development process						
d)	We have effective "top-down" & "bottom up"	1	2	3	4	5	
,	communication processes.						
e)	Employee satisfaction is measured regularly	1	2	3	4	5	
f)	Multi-skilling is actively used to build	1	2	3	4	5	
,	innovation capability.						
g)	Respect is a critical organisational value	1	2	3	4	5	
3 Place	e circle one number against the following statements usin	a the fol	lowing sca	olo: 1 - St	ronaly Dis	aree: 2 - D	lisaaraa: 3
- Noithor	- Circle one namber against the following statements usin : Agree por Disagree: A = Agree5 = Strongly Agree	y ine ion	owing see	<i>ale.</i> 1 – 30	Uligiy Dis	agree, 2 - D	isagree, s
- Neilliei a)	"Champion(s) of chapter" are effectively used	1	2	з	Λ	5	
a)	at this site		2	5	4	5	
b)	We reward our employees to adopt a	1	2	2	Λ	Б	
<b>D</b> )	antinuous improvement philosophy	I	2	5	4	5	
2)	Within our organization, individuals and work tooms	1	2	2	٨	F	
C)	within our organisation, individuals and work teams	I	2	3	4	5	
-1)	are assigned responsibility for knowledge management	4	0	2	4	-	
a)	All employees are involved in learning programs		2	3	4	5	
e)	We have a suggestion/idea scheme in place	1	2	3	4	5	

4. What measures do you take to explicitly manage and improve the contribution to innovation capability of knowledge workers? Do you...

	1	None at	All		Ext	ensive
a)	Ensure that they have interesting work	1	2	3	4	5
b)	Ensure they develop their skills	1	2	3	4	5
c)	Provide secondments for professional development	1	2	3	4	5
d)	Send them to conferences	1	2	3	4	5
e)	Offer workers legal rights in IP they create	1	2	3	4	5

CULTURE AND CLIMATE

5. Each statement below can be considered an innovation capability. Some capabilities may be more important for some organisations than others. Please circle ONE number against the following statements using the scale below:

		Not at All			Extens	ively
a)	Our organisation has aligned employee behaviours with stated organisational values.	1	2	3	4	5
b)	Our strategic decisions are based on quantitative analysis of data.	1	2	3	4	5
c)	Our major operating decisions are detailed in formal written reports.	1	2	3	4	5
d)	We rely principally on experienced-based intuition when making major operating and strategic decisions.	1	2	3	4	5
e)	Our major operating and strategic decisions are	1	2	3	4	5
	dingo of					

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2 =

f)	much more affected by industry experience Our culture sees 'failure' as an opportunity to learn	1	2	3	4	5
g)	TQM is embedded in our culture	1	2	3	4	5
ĥ)	The 'learning organisation' concept is practised					
	in our organisation.	1	2	3	4	5
Our	organisation:					
a)	uses hiring procedures that focus on who will	1	2	3	4	5
	best 'fit in' with the organisation's culture					
b)	promotes employees based on merit	1	2	3	4	5
c)	regularly conducts formal performance appraisal	1	2	3	4	5
	of employees					
d)	rewards employees based on how well they perform	1	2	3	4	5
	their job					
e)	rewards employees based on how well their work	1	2	3	4	5
	group or team performs					

#### INNOVATION PERFORMANCE

Revenue from new products	1.0%-4.9%	5.0%-9.9%	10.0% - 14.9%	15.0 – 30 %	More than 30%
developed in the Last three 1-3					
years					
Innovativeness					
Number of innovation	Very Low	Low	Satisfactory	High	Very High
adoptions					
The time of innovation	< 1year	1 year	2 years	3 years	> 3 years
adoption					
Time to market (TTM)	1 year	2 years	3 years	4 years	5 years
Customer	Sometimes	Generally meet	Consistently	Always meet	Expectations
Satisfaction	meets	expectations	meet	expectations	exceeded
	expectations		expectations		delighted
					customers
Employee Morale	Very Low	Low	Satisfactory	High	Very High
Research & Development as a	Less than 0.5%	0.5% - 0.99%	1.0% - 1.99%	2.0% - 5.0%	More than 5.0%
percentage of Total Sales					
Ecological efficiency	Very Low	Low	Satisfactory	High	Very High
degree of recycling					

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6.

# Business Start-up Facilitation Through Patterns

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Currently, new research and practical experiments in the area of models, methods, tools and platforms for business, innovation and entrepreneurship becomes an increasing challenge thanks to the synergy with traditional business planning. With steadily evolving business innovation practice, solutions based on the regularization of business processes and the declarative description of process structure, appear to be more and more promising. The present paper aims to describe the key elements and the stages of development of a pattern-based facilitation model of the business planning process. It is based on a web portal including practical experiments under conditions that are closer to reality. The user, represented by a student, entrepreneur, company stakeholder, venture capitalist, etc., while creating his/her business plan, will be able to find appropriate business pattern or patterns, to visualize them, and to apply them in an adaptable mode in order to customize the patterns regarding his/her concrete business needs. Therefore, such a pattern-based portal will facilitate the new entrepreneurs and will be of great importance for people doing new business plans as it will support them to play by making strategic decisions within the scope of real life strategic business planning.

#### Keywords

Business start-up, business plan, patterns modelling and implementation

### 1. Introduction

Developing an effective business plan with all the related documents requires more than view over the current year and environment. In order to stay competitive, best-practice companies use a cutting-edge and flexible approach to planning, budgeting and forecasting the business and the business ecosystem.

The business plan is a paper presenting key functional areas of a new or an existing business, counting all important issues – mission statement, strategy, operations, management, finance, marketing, etc. [34]. It is a roadmap for a business. The usual business plan is a paper document. The content and deepness of a business plan element differ depending on the purpose for which the plan is being prepared and the scope of the specific business [1, 13, 28, 31, 32].

There are many different reasons for preparing a written business plan including student education, new business start-ups, adapting to major changes in existing business, keeping

the strategic direction of an ongoing business etc (Figure 1). Business plans can be used internally for successful company management, or externally to attract or communicate with stakeholders. It provides an entrepreneur with the means of evaluating the feasibility of a proposed venture by focusing the attention on reality and uncovering until that time unconsidered opportunities or limitations. Every business plan is continuously customized depending on the target audience.



Figure 1. Reasons to prepare a business plan

The paper focuses on the description of:

- designing an efficient business planning process that balances competing influences
- using the pattern paradigm for business plan knowledge transfer
- using technology to support effective business planning

The goal of the paper is to describe the elements and stages of development of a patternbased facilitation for a web portal-based business planning. The portal will assist entrepreneurs in their practice as well as in organized experiments within conditions that are close to reality.

### 1.1 Business Start-up Patterns Portal

Nowadays much attention has been given to the idea of "open" and "disruptive" innovations," which refer to the use of external parties to help solving business issues and to the improve a product or service in ways that the market does not expect, typically by being lower priced or designed for a different set of consumers [5,13]. In the age of greater than before mobility and connectivity and distributed knowledge, entrepreneurs and companies may select to acquire or license processes or innovation from other organization.

Many of the business plan elements can be created using office software tools, but with given charting limitations. There are special computer-based software tools that facilitate the task of analysis, create and write of a business plan [9, 12]. Building blocks are what engineers bring into play: patterns can tell entrepreneurs how to use them, when, why, and what trade-offs to have to make in doing so [3, 5].

The mission of construction and deployment of a software tool facilitating business start-up by usage of patterns could be represented by four principal challenges, as follows:

1. Research of conceptual models of business plan patterns and their declarative documenting and graphical presentation;

2. Analysis and creation of extendible business pattern catalogue indexed by patterns' keywords;

3. Design and construction of a business pattern based repository for business start-up plans and strategic business planning;

4. Practical experiments with business plan constructions closer to reality, by applying various business patterns in single and composition mode, and evaluation of them in Internet.

With a Patterns Based Portal for Business Start-up, the entrepreneur will go with a ready-tomodify business plan patterns (there's no structure that fits all projects) and facilitation – [16, 18, 20]. The first and very important task is to examine best practices in designing and architecture business portal to start the business. The figure presents the main user roles, applications and servers, where you will install scenarios.

### 1.2 Methodology

The authors exercise the project approach about construction of a pattern base portal. Information sources' analyses include best practices, written material, provided by web and the students, teachers' observations, and group discussions during planning of the program. All stages of the research process can be summarized by the following working phases:

- Identification of research problems in the actual practice of modern business planning and software engineering. Due to the accelerative exchange of information between different subject areas, and increasingly complex technology solutions for interoperability and semantic interoperability between different organizations and software systems, problems are difficult to identify.
- Transition from a description of the research problem to research formulation and accurately determination by the latest research issues. Research formulations them self are determined by the context of the problem and define the tasks of research.
- Answer of research questions this tertiary stage of the methodology includes theoretical and practical work on the defined problem. Of crucial importance here is to define the current state of studies in the subject area (software models, methods and architectures) and resources (in this case – technology platforms, standards, best practices and solutions) for the performance of the above tasks. In the proposed project will be used methods of comparative analysis of business architectural models and design of software architectures, on the basis of which will be developed and integrated software platforms and systems in selected process of development.
- Demonstration and analysis of research results through testing of prototype software platforms in real circumstances and using appropriate selection of methods for verification, validation and analysis of survey results should be given a clear answer to the research questions.

# **2.** Importance and state of the scientific research in the respective research fields

The Entrepreneurship and Innovation process is a management process, not an individual characteristic [12, 23]. The core elements of the entrepreneurship process are the evolution and identification of a business opportunity and the recruiting and aggregation of the necessary resources (technology rights, people, and money) to pursue the opportunity [4, 33]. Writing a business plan directly helps of the entrepreneurs and reflects on their business cases [11, 25].

#### 2.1 Importance of the research topic in Bulgaria

Providing citizens and employees with a new set of competences turned out to be in the middle of all changes in economy and public life. Entrepreneurship and innovation subjects as a main EU competence need to be introduced in school curricula. A lot of initiatives have to be implemented for educating trainers, establishing incubators in schools and connecting

them to the global networks sites. The general conclusion coming out of these is that present employees need more than just technical skills and knowledge. The need to equip employees with interdisciplinary skills, combining e-skills with entrepreneurial competences, innovativeness and creative thinking, turned out to be among the highest challenges for businesses, educational institutions and policy makers nowadays. The business plan portal project aims to investigate the best practice in Bulgaria and Balkan region, to reengineer and to develop patterns for services to help small companies to start, grow and succeed. It will facilitate entrepreneurs how to write winning business plans their selves. Planning is critical stage to successfully starting, building, and running a business.

In Bulgaria, development of a business plan is teaching at the economic and business schools and universities [23]. There are also non-profit organizations that train young people in this area, as business firms, which spread knowledge and skills in entrepreneurship and innovation (http://www.jabulgaria.org/index.php?option=com\_frontpage&Itemid = 1 & lang = en, http://ec.europa.eu/enterprise/yourworldyourbusiness/index\_en.htm) [12, .29,30]. Traditionally, there is conducted Day of the entrepreneur started in 2003 (http://www-it.fmi.uni-sofia.bg/ede/home.html). For several years in technical and scientific specialties introduced programs building of competence in the field of technological entrepreneurship and innovations (http://dse.fmi.uni-sofia.bg/msc2.html).

#### 2.2 Importance of the research topic in Europe

The pattern portal is based on academic and research literature, business plan writing templates and our own experience in business plan writing and teaching. It is intended to serve as a roadmap for starting a business. The portal aims to guide new and innovative entrepreneurs with patterns how to assess a Small Business Readiness, how to write a winning business plan and how to stay competitive in the dynamic environment. From sample patterns about plans component to a business plan primers, the portal will get entrepreneurs started on this very important activity. Once the business is up and running, successful entrepreneur will need to regularly review and update the plan to manage growth and compatibility of the company.

Globally, the development of entrepreneurial skills is priority for a number of years [5, 8]. World's leading universities and companies organize several events and conferences, plan business competitions (http://ree.stanford.edu/, http://ree.stanford.edu/europe 2009/index.html, http://www.entrepreneurshipchallenge.org /, http://www.hitbarcelona.com/). The authors of the paper are actively involved into some of the events. The European Commission has declared 2009 to be a year of the enterprise (http://dse.fmi.uni-sofia.bg/msc2.html). Paradigm for the use of scenarios is also gaining adherents. There are many conferences [29, 30], many of them Europeans (http://hillside.net/europlop/), recognizing role of this the research topic (http://hillside.net/europlop/submission/schedule. cgi). On the other hand, there are held several contests and competitions to write and to protect business plans (http://www.hitbarcelona.com/en/entrepreneurship competition), where Bulgarian companies have been nominated students and participated actively. The Balkans have recognised also entrepreneurship as a modern subject - in last two years, a Balkan Conference reflecting research in this area was held (http://www.seerc.org/iceird2009/) [34, 35].

## **3 Business Planning**

Business planning is often conducted when:

- Starting a new venture (company, product or service)
- Expanding a current company, product or service

Buying a current organization, product or service

• Working to improve the management of a current organization, product or service Key business plan users are shown on figure 2.





## 3.1 Business plan process

Business planning process goes behind next steps:

- 1. Need plan?
- 2. Develop strategic module
  - a. Stakeholder analysis
  - b. Vision, mission and objectives
  - c. Environment analysis
  - d. Analysis of the company
  - e. Industry and competitor analysis

f. Product and portfolio analysis

- g. SWOT analysis
- h. Generation of strategic options

3. Develop core plan processes, activities and documents

a. Product and service

- b. Market and sell
- c. Deliver
- d. Customers manage

4. Develop support processes, activities and documents

- a. Human Capital
- b. ICT
- c. Financial resources
- d. Environment and health/safety
- e. External relationships
- f. Knowledge management
- 5. Model and develop preliminary plan and budget

6. Finalize plan and budget, present and approve

7. Implement the business plan

### 3.2 Business plan outline

Figure 3 provides a suggested outline of the representative business plan. The finishing plan may vary according to user specific needs or individual requirements.





Figure 3 Outline of the business plan
# **4 Business Patterns**

### 4.1 Pattern paradigm

Pattern paradigms are usually recognized to have been established as a valuable architectural design technique by Christopher Alexander, who described this approach in his book "The Timeless Way of Building" [2]. Patterns propose the promise of helping the entrepreneur to identify combinations of elements of business plan that have been proven to deliver effective solutions in the past, and may provide the basis for effective solutions in the future [7, 24]. A "pattern" has been defined as: "an idea that has been useful in one practical context and will probably be useful in others". Patterns are considered to be an approach of putting building blocks into context; for example, to illustrate a re-usable solution to a problem.

In principle, a pattern describes a particular problem and its solution context [6, 7, 35]. Patterns are to be trusted because each one has been used several times with real development teams and projects — they are not one-off solutions or 'good ideas' that might or might not work. Patterns are "discovered" and not "created."

### 4.2 Business pattern platforms

The pattern format in the project will go after the format used in by Elssamadisy [7]:

Name:		
Description: a brief overview of the practice or cluster.		
{Dependency Diagram:} A diagram showing inter-practice		
dependencies (for practices) and grouping (for clusters).		
Business value: A sorted description of the business values this		
practice or cluster improves.		
Sketch: A fictional story that describes this pattern being used on a		
software development project in a given context.		
Context: The preconditions and environment where this pattern is		
useful. The context is a collection of invariants: issues that do not		
change by applying the pattern.		
Forces: Used to elaborate context and give specific issues that are		
problems (partially) resolved by this pattern. In fact, correct application		
of the pattern should remove many of the forces.		
Therefore: The pattern description.		
Adoption: Steps, ordering, guides to adopting this pattern.		
But: Negative consequences that can occur from applying this pattern.		
{Variations:} Different ways this pattern has been implemented		
successfully other than that described in the Therefore section.		
{References:} Where one can read more.		

# 5. Conclusions

Authors experience and studies show that Best-practice Company as a rule applies knowledge management to become more efficient and effective innovators. While knowledge sharing may not automatically drive a lot of breakthrough ideas, strong knowledge processes make the socialization of new ideas more efficient. Specifically, pattern paradigm leads to more efficient innovation concerning business planning by:

• limiting the time spent on redundancy and relearning of business planning process;

- improving capabilities for reusing knowledge, information, and lessons learned;
- improve the quality of planning process;
- reducing managerial risks, since someone has often done something similar in the past;
- encourage the pattern thinking culture.

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# SMEs Competitiveness and Environmental Influences

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In the related literature, there are many ways in which company competitiveness can be defined and understood. The purpose of this research is a better understanding of the SMEs competitiveness from the Romanian West region. This study presents preliminary results of a research focussed on SMEs competitiveness. There are some positive and negative local and national factors which are influencing firms' competitiveness. This study confirms us our presumptions. The internal and external environment's influences on SMEs are very strong. Managerial competence and good managerial practices are very important factors in the durable success of SMEs.

### Keywords

SMEs competitiveness, entrepreneurs, environmental influencies

### 1. Introduction

SMEs plays an important role in our local economy. This role will increase in the future. It is very hard to determine the influencies on SMEs competitiveness. We are sure that both factors, internal and external, are important for SMEs competitiveness. We do not propose here a methodology to found which factors are very important in SMEs competitiveness. It is difficult, because the importance of factors is changing now from one period to another. But we can say that, in the actual turbulent environment, these factors are constantly important for SMEs competitiveness: managers and their managerial ability.

### 2. Literature Review

In the related literature, there are many ways in which company competitiveness can be defined and understood. There is not a universally accepted definition of company competitiveness and there is a lack of precise definition of this concept.

At a country level, competitiveness is determined by productivity, depends on firms strategies, is, partially, the results of relationship between companies and local business environment, depends on social and economic objectives synergy and is influenced by factors from external environment (M. Porter). According to Porter, there are some internal and external factors that create a context in which firms compete and determine the ability of a firm to maintain its market share, to compete successfully.

During the time, many researchers focused on company international competitiveness, with examples from multinational companies. A neglected subject was the SMEs competitiveness, especially those companies, start-up firms, from Central and Eastern Europe, which are operating only in a local and/or regional market.

Many researchers are considering that competitiveness is synonymous with success and that means achievement of firm's objectives.

### 3. Research Methods

Our research is going on from the following *assumption:* the SMEs competitiveness in the Timis county is influenced by external and internal environment including entrepreneur's profile and competency.

We have used a questionnaire with 23 pages, 6 sections (with subsections) and 111 questions. The first section contains information about founder, company, field, employers, turnover in the last 5 years. (basic information). The 2nd section (the entrepreneur) contains information about the entrepreneur: education, training, experience, motivations to start a business, succes factors. The 3rd section (companies profile) contains information about human, physical, financial resources, companies performance. The 4th section contains information about business environment. The last section contains information about entrepreneurship and ethics. This questionnaire was used in a previous research of a finished grant about SMEs competitiveness, directed an managed by Professor Nicolae Bibu, PhD. We also ask a question concerning actual crisis. We want to knpw if their firms were prepared for economic crisis.

The sample included only companies with income statement and balance sheet from an official database. We received and processed questionnaires with valid responses. The companies questioned were from *different fields*: production (70%), trade (20%), others (10%). The majority of questioned enterprises are in the top of *first 50% of competitors*. We focussed our attention on some SMEs county.

## 4. Results

In Romania, in 2007, the number of active SMEs was about 487,628. In 2009, the estimated number of SMEs was 600,000. Most of the SMEs were microenterprises, (88%), while 10% were small enterprises and 2% were medium-sized enterprises.

Sample structure by field of activity in 2007 shows us that there are many SMEs in the services sector, (75.5% including trade, different services, and tourism). In the industry and energy field were 12.41%, in construction 9.41% and in agriculture and forestry were 2.88%. In our country the number of SMEs was growing continuously since 2002. There was a favourable macro-economic context which influenced many people to start a small company.

In Romania, in 2009, the number of SMEs per 1000 habitants was about 26, very far from the EU average, 50.

In the Timis County, in 2007 there were 22,394 SMEs. Most of them were microenterprises (88.7%), while 8.9% were small companies and 2.4% were medium-sized company. Since 2002, when the number of SMEs was 12318, the number of SMEs was increasing continuously. Year by year, we can talk about a slowly growth. Most of SMEs were in services (79%). In the industry and energy field there were 11%, in constructions were 10% and in agriculture & forestry. The number of SMEs per 1000 habitants was about 32.5 in 2007.

We found that our companies have only internal competitiveness. This concept means that a SME is competing with other companies only in the local/regional/national market, in our case Timis / the West Region or Romania. We think that most of studied SMEs were defensive, very preoccupied to maintain their market share and gain an acceptable profit.

In our studied companies, the turnover was growing slowly in the last 5 years. The profitability rate was 15% (per all). In production SMEs the average of profitability was 10%. In services field, the profitability rate was 30%. It is important that we can discuss about the growth process. The net profit has increased continously, but the growth was very slow. The main factors for this continuous increase were: improvement managerial skills; new distribution channels; Proceedings of

modernization in technology, growth in production capacity; improvement in people motivation. The products are sold in the domestic market.

We found that *entrepreneurs* are important in the firm's growth process. They are the key in the entrepreneurial process. The owners have learned to become good managers for their business. Most of them have higher education (70%). They have technical education (80%) and economic education (30%). 40% from all entrepreneurs have followed managerial training programmes. The average age for entrepreneur is 45 year. About the entrepreneur position in company, 80% are also managers, in most than 50% cases they are top managers.

The *external environment* influence on SMEs perceived by owners/managers is very strong. The actual environment is more uncertain, very difficult to understand.

The external environment, is influencing the small and medium sized competitivitiess, and of course, management decisions. Through our questionaires, entreprepneurs-managers have identified some external factors with positive influences on their productive business, in the 2005-2009 (during the first 3 months) period: the increase in the demand for their products in local markets; infrastructure modernization; opportunity for investments financing (EU money, structural programme) simplified acces to loans; best quality of raw materials; production methods and modern technologies; growth in population buying power; positive modification in rules, governmental policies.

90% from questioned companies recognized that growth demand for their products in local markets is a very strong positive factors for their business, especially for companies with low performance. 60% from SMEs said that simplified acces to loans is not so important for profit growth average rate. Infrastructure modernization is a very important factor for 50% questioned SMEs, per all. 84% of SMEs evaluate as being important the influence of investment financing opportunities on profit and of course on development process. Financing is also very important for business development and for profit growth average rate. Financing opportunity is also important for turnover average growth rate, for 80% of SMEs.

In the same time, we have identified factors which may have a negative impact on business development. Raising prices on raw materials and utilities have a strong influence on SMEs profits. The growth of competition is a very important factor, with a strong influences on turnover and profit rate. Entrepreneurs are espected that competition for resources and clients will be very strong. Legal and political factors are also influencing managerial decisions in company. To many taxes creates problems for small firms.

Entrepreneurs were asked about their strenghts against competitors, which helps them to obtain good results: excellent organization; planning competence; good relationship with workers; marketing abilities; technical competence. Good workers, modern technologies, a good quality of the product/services, a good relationship with actual clients, inovation, enough financial resouces, good strategies are also important for company competitiveness.

New EU regulations, including environmental protection, is a important factors with strong influences on companies profit (48.1%).

The main obstacles for business were: the payment for delivering products; the low level of qualified workers and the weakness financial power. (difficulties in obtaining financial resources).

Most of firms have appreciated that integration in EU is a positive factor for their business because of oportunities (new markets, free circulation of goods, a better access to raw materials). The influency of this factor on profit rate evolution is not so strong. All of entrepreneurs believe that increasing loyal competition is good, fforced them to be more attentive to thir products and clients.

Our questioned companies have the ability to provide products/services to consumers in an efficient and effectiveness manners. They have a competitive advantage among competitors and are able to generate profit (even the profit rate is low it is important that is profit).

Entrepreneurs consider that achieving success requires rapid, efficient and effective actions. Companies must be proactive, must be able to forecast the actions of external environment, anticipates changes and to prepare the answers. In our study, micro enterprises and small firms are active-reactive firms. They know that they must react in a short time, since the opportunity/threats have identified.

We can say that in most of the cases we found that there is a strategic approach, thinking, but few companies are really having a strategic plan.

There are many factors, from inside and outside the company, which can create a favourable conjuncture and the company achieve a temporary competitive advantage. The success consolidation depends on entrepreneurs, on their managerial ability to adapt environmental changes. Small firms are not so oriented to innovation (product, process, method).

In the future, the entrepreneur-manager must talk about sustainable success in both markets. That is why it is not enough for companies to compete only on the internal market.

Most of entrepreneurs said that they were not prepared for the crises. They were not enough interested in growing economic efficiency in their companies, especially reducing costs.

### 5. Conclusions

After this research, we are able to formulate *some conclusions concerning the SMEs growth and competitiveness*, from our questioned companies:

1) For small business entrepreneurs, forecasting time horizon is limited under two years; in most of cases, entrepreneurs are managers and they are very implied in day to day activities. They do not have enough time to prepare long time plans.

2) They have personal objectives which are related with companies. We found especially short time objectives.

3) They do not use planning modern instruments (for studying external environment).

- 4) They do not use contingency plans.
- 5) Most of entrepreneurs have a flexibility in behaviour.
- 6) Small businesses are very strong market oriented.

7) Some external factors (economic factors) have a strong influence on internal competitiveness in the Timis County.

8) A very important problem is the quality of qualified workers. We know that people, workers and managers make the difference between companies.

9) Personal implication of entrepreneurs in problem solving helps many small companies to obtain favourable economic results. But is not a good practice for long time. As companies grow, managers must learn to delegate authority.

10) Management style is influenced by entrepreneur's personality, his knowledge about management styles;

11) Many companies, especially small companies have lack of formal information system; they are not able to process efficiently external information. In forecasting, entrepreneurs need many and different information

12) In decisional process, managers are based more on creativity and their experience.

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# Technological and Business Forecasting in Small and Medium Enterprises

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Today, in dynamic business conditions, managers must not only quickly adapt to changes, they must also anticipate the future events in the environment and within the company, too. Through scientific research of the future, the company will be able to get to know its inner strengths and weaknesses, to perceive future events, movement of the various factors and trends, to recognize the dangers in the environment in time and to exploit future possibility. Research shows that in our region small and medium firms do not attach greater importance of predictions. They do not know when, where and what to predict, as well as how to apply existing methods and techniques of scientific forecasting in practice. Forecasting on the scientific basis enables the company not only to adapt to future changes, but also initiating various changes in its environment. By taking various actions in the present, a company can change its future, adapting to its needs, all with the aim to reach a desired future. Managers in small and medium firms should understand that the research of the future is not only in the domain of large systems. They can also be active creators of their future, and researching of the future and predicting future events should be accepted as a new idea in business decisions.

### **Keywords**

technological forecasting, business forecasting, trends

### 1. Introduction

Today's enterprises operate in dynamic conditions and meet with a number of changes. Managers are becoming aware that the traditional way of managing which is based on intuition, as well as planning and decision making which is based on past experience is no longer applicable in practice. It is necessary to introduce innovations to maintain existence and provide a continuity in the growth and development. There is a need for *scientific forecasting* of changes, not only in business environments but also within the company.

Thinking about the future and making decisions for the future is part of a man. *Forecasting* is a research activity that seeks to measure the uncertainty of future events. *Scientific knowledge* is a prerequisite for scientific prediction. In return, scientific prediction plays an important role in the acquisition, checking and development of scientific knowledge. *Scientific forecasting* anticipate the future course of events that results in a *planned elements*. In everyday life, we often use the word prognosis instead of predictions. *The prognosis* is still free, non-binding estimates of the future course of events, while the prediction is accepted position of future events. We starts from prediction when we define planning decisions [1]. Future research is the only way to predict future events, factors and their effects, and tendencies of development of certain phenomena.

We start from the assumption that our industrial systems are not used or used scientific predictions insufficiently as the basis for strategic planning and decision. The research we want to find out about the situation of small and medium-sized companies in our business environment, i.e. do they use scientific predictions?

First of all we want to get answers to the following questions:

- Does in our domestic professional literature devoted enough attention to scientific prediction?
- Do small and medium enterprises make predictions and in which extent?

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- Do they know methods and techniques of scientific prediction?

- Do they have adequate data, software and trained personnel?

- What are the reasons why they do not or insufficiently apply the scientific prediction?

- How can we approach scientific predictions to the management of small and medium-sized companies?

The aim is to point to:

(1) the importance and role of scientific prediction in planning and business decision-making

(2) to provide the basic methods of prediction

(3) to analyze the application of scientific methods and techniques of forecasting for small and medium-sized enterprises.

In the world, more importance is given to scientific prediction. There are numerous *scientific publications* and various researches are made in this field. Some universities are involved in scientific prediction in their program and some have even opened a department for future research. Cooperation between businesses and institutes is a regular practice.

In our country the situation is a lot different. The national professional literature says little about the scientific predictions. If this topic is touched, it is mentioned in the chapters makeing detailed analysis of planning. Recent publications aimed at managers usually defined predictions, only indicate forecasts horizons, the relationship between forecasting and planning and possibly list some of the well-known methods. It still can not point to the importance of forecasts in making managerial decisions. It is said little about the elements and possible errors in predictions. Similarly, capabilities and limitations of predictions methods and techniques have not been properly dealt with.

Through the prediction based on science, the company can recognize its internal capabilities and possibly occurring in the future. It can recognize the location of its resources, such as: technical and technological equipment, information systems, personnel resources, marketing capability and competency in the market. By prediction performings, the company meets market factors, which operate in different sectors and industries, its position and the power competitors. It can see its close and distant environment including ventures referring to future. Only through pernament predictions it can make itself ready for the uncertainty of the future, to consider all the difficulties relating to business, to avoid the verse and discontinuance, to recognize and prevent undesirable phenomen, to prevent them, or if it is not possible to be adaptable to them in the most acceptable way. By prediction performing we will not only search the ventures, but also the opportunities which will appear in business, which will be possibly used to gain the competitive advantage and long-term growth and development, which is the main objective of every company.

By default the prediction is the activity, which currently occurring does not achive any material outcomes. The result of prediction is information of the facts reffering for the future likely to be certainly valorised in a further period of time.

Although there are significant differences, in daily practice are still being identified as the same processes. While the planning is process of making decisions, whereas the prediction is anticipation of the future course of events. It is process of an imaginative presentation a possible outcome the future events.

Planning means taking particulare actions, which determine the companies acting and lead them to particular objective goal. Prediction is **research**, which results in a wider range of options, i.e. **different forts of future**. Prediction refers to **what the future will look like**, whereas planning refers to **what the future should look like?** Forecasting and planning are inseparable. The result of prediction is the planning elemens and the result of planning is decision. [2]

Forecasting is the first step in planning and decision making. It provides so **vista for planners**, and by the process of predicting we create the **economic horizon** of the company in the future. The economic horizon means the spacial width and length of time, considering all the factors that will affect business in the future. With in the economic horizon, we can distinguish spacial and temporal perception of the future event.[1]

Management operate with width of space and length of time. It develops the company, makes strategy and takes actions to the future.

Future research must be based on scientific and professional knowledge and application of recognized methods and techniques of forecasting. *The method* involves the way we fallow and the one we apply in the prediction. It should be scientific, which means it must be objective, logical, verifying and consists of a system of rules. Each method of predicting will change as the time. By development of scientific knowledge we come to development and improvement of methods of scientific prediction.

There are a lot of methods that can be grouped as follows:

**1.** *Qualitative methods* that are based on intuition and judging (jury of executive opinion, sales force, composite methods, Breinstorming,...etc.)

2. Quantitative methods based on mathematical rules (statistical metodhs, causal model,...etc.)

**3. Research methods** are judged alternative methods (Delphi method, scenario method, casestudy method,...etc.)

**4.** Normative methods for the description of desired future (relevance trees, system dynamics, Pattern model, ...etc.)

**5.** *Methods of* predicting where we have *feedback* of informations in which prediction goes in both directions, i.e. from the goals to potential resources and from the available resources to the desired goals [3] (for example: Games theory).

When will one of the many method be used for forecasting depends on to what predicted, from the ideas and knowledge one who deals with predicting the company and the available information. The best way is to always use several methods simultaneously, keeping constantly in mind the emergence of new and modern methods and techniques.

Thanks to the discovery of new, modern and practical methods of forecasting, development of computer technology and new software solutions that significantly accelerate and facilitate this work, forecasting can be applied to all levels. Worldly the predictions are not performed only at the macro level, but also at the level of economic enterprise.

In this area little attention is paid to future research. The society and most organizational systems are traditionally more oriented to the past instead of looking into the future. It is still difficult to accept **changes** in the environment and even more difficult to change typical views and values. The word **«change»** in this region still means dealing with uncertainty, a new adaptation to unfamiliar circumstances, change and jeopardising previous positions, habits and interests.

In our companies management is mainly occupied with the present and resolving the urgent problems. Many managers who make management decisions, still do not distinguish forecasting and planning, according to research future waste of time, denying the importance of scientific predictions. In such business environment where all forces are directed to *«extinguishing fires»,* the important problems for future development are generally put on the side. If we do not know the future development of environment, industry, technical and technological progress and futures position the company in the future business environment then causes *a fear of the future.* 

Preliminary research shows us that our major systems apply sporadically some of the methods of prediction. But medium and small companies do not make the scientific research of the future.

The passive attitude of the majority of business entities in relation to scientific predictions in decision-making in everyday business activities, ignorance of methods and techniques scientific predictions, resulting in the need for the elaboration of this problem.

The question is why not use the prediction and why not apply the appropriate methods? Is this cause: the lack of adequate literature, lack of information, data, appropriate software? Perhaps lack of education of managers and teams in the company, who do not know how to make scientific predictions? Or is it ignorance, lack of information or opinion that *what does not exist* can not be explore?

In some small and medium-sized enterprises management feels that they need scientific prediction, as the first step in planning and business decisions. This need is most often seen as a reaction to bad financial results and a sense that something has to be changed in the decision making process. In such situations, managers ask themselves the whole range of issues, such as.:

- When, where and what to predict?

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- How to get the necessary information?
- How to adapt existing theoretical methods of practice and the situation?
- How to check the reliability of existing methods and techniques of scientific prediction?
- What should be considered on the occasion of makeing predictions?
- What period of time to explore?
- How far to go to space in prediction?
- What are the elements that should include prediction that it would be scientifically?
- What mistakes should be avoided, so that the prediction will not faile at the very beginning?
- Who is competent to make predictions?
- What costs are acceptable for business forecasting?
- How often do you make predictions?

There are more questions, like:

- What methods of prediction should be used in conditions of extremely rapid changes?
- Is it possible to make a good prediction in terms of increased instability and chaos?
- How to recognize imbalance and economic factors of the chaotic behavior of the company?

-How study the instability, as well as what to do when discontinuity occurs and consequeatly crisis? We live in a changing and dynamic world. Changes in the business environment are extremely large and for the unprepared the consequences can be fatal. The experience of successful companies

has shown that it is necessary to predict the future. If the company is not prepared for the future, if it still be living in the past, it just **becomes a part of the past**.

In order to avoid the fear of the future, all internal factors in the company must be anticipated as well as scientific factors that act in the environment. By predicting we can eliminate the fear of the unknown and management will be able to make appropriate management decisions. In fact, today it is seeking new culture of leadership, new ways of management of the economic systems. It is no longer enough to be just **good enough** to survive in complex and dynamic times, but the company must be among **the best**, if it wants to ensure its continual existence. It is no longer enough to adapt to changes in the environment, i.e. just be flexible, but imposes the need for forecasting the future, as a compulsory condition of survival, because the company must be willing and able to overcome the obstacles that come in the future. Certain future-forecasted future is a condition so it to be controlled by which discontinuities and development crisis are avoided and a planned development is realised.

Searching for and selecting goals is a permanent process of industrial systems [3]. Companies always have to operate with several scenarios of possible activities and have a whole repertoire of business moves. It does not means necessarily, that the future version which is the most beautiful is also the best for a company.

Forecasting on the scientific basis enables the company not only to adapt to future changes, but also *initiating* various changes in its environment. The consciousness of people about predict future, can produce the specified behavior. It can reduces or increases the change that what is prediced can be realize into practice [4]. "Tu try to make the future is highly risky. It is less risky how ever than not to try to make it." [5.p.93]. By taking various actions in the present, a company can change its future, adapting to its needs, all with the aim to reach a *desired future*.

The future is uncertain and carries discontinuity but only in the extent, which the man as decisionmakers be allowed. Great changes are easy to identify and locate for any company, regardless of size. Big problems will require the automatic reaction of the company. The problem may represent changes that are small and lightweight, which can be remain unnoticed for a long time. Small, minor changes and causes, in a short period of time will not cause significant changes in the global level, but that small, insignificant changes in long period of time can cause drastic changes by the hard consequences [6].

The first research shows that in our region small and medium enterprises do not attach greater importance of predictions. They do not know: when, where and what to predict, as well as how to apply existing methods and techniques of scientific forecasting in practice? This is reason, while this issue requires more research and analysis. As a result we can give the recommendation of prediction methods for small and medium enterprises.

The prediction based of science is the only way to recognize various changes in the future, the danger and possible discontinuities. By forecasting small and medium-sized companies can own strategic management put on high level, to reduce uncertainty in business, to adapt to new situations and to avoid discontinuities in the future. A lot of existing methods and tehniques can be used in small and medium enterprises. The ability to recognize problems and opportunities in the future gives priority to the company.

The prediction has large impact on managerial decisions. Good or bad decision has the greatest responsibility for the existence, performance or collapse of the company.

Prediction is the first step in decision-making and it should be an integral part of every business decision. If managers make future researches, then they can easier choose between *alternative possibilities*. The aim is to develop a consciousness oriented to the future. The decision-maker should be responsibile for the future and future events. Managers in small and medium-sized enterprises should understand that research of the future is not only in the domain of large industrial systems. They can also use various methods and techniques, be active creators of their future, and researching of the future and predicting future events should be accepted as a *new idea* in business decisions.

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# Diversification as a Way to Search New Styles of Management Through Corelation Between the Differences of Values in Achieved Results in Agriculture

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Organizational structure in agricultural business consist individual and organizational goals and needs, which not always are the same so they cause conflict situations. Especially nowadays when the battle for higher personal and group power is much more visible, and their most important goal is to increase the power and their personal interests to achieve higher position of power even if that's harming the organization. This organizational activity nowadays is camouflaged.

A new way out from the normal basic activities is formed, and entering in new ways through internal development and external expansion, which bring differentia, and are searching for ways to avoid the parade demonstration of power and personal interests, which are dictated by the situation and nowadays conditions. So the reality is we need new more effective methods of government, and they are synthesized through already used strategies for conflict management, which are reflected on practicaly power through loyalty mutual understanding, acceptance and " forced " agreement. This way we use new modified styles of management which are customized from the changes in the organization, and which are not managing the profit itself but they govern -administer for profit.

### Keywords:

diversification, organizational conflicts, styles of management, value criteria

### 1. Introduction

Transformational process in the agronomy presents great challenge in the organization, which is the effectiveness or more precisely, successful adaptation with the differences in the organizational behaviour in which organizational conflicts are incorporated. In the maintenance of keeping the organization and increasing its efficiency it is necessary to participate, to implement, to initiate new schedule of the functions, concentrating on the development of new valuable system which is based on partnership in the practical reality.

According to this, an analysis of sociological and managerial differences is needed from which organizational conflicts are raised, or more specifically the conditions under which they rise and develop in order to create common model of organizational existence and generating the social, organizational behaviour.

Management or business governance is dynamic process of tasks' accomplishing in the organization with help by the other employees who are lead by the manager. (Hellrigel, Slocum, 1998).

That is a process through which the organizational goals are achieved. Organizational conflicts exist in that process continually called forth of permanent changes, deals, and impulse adjustment from the external and internal surrounding in which the organization is situated.

Dynamic and the access to the organizational conflicts depend most often of the relationship between managers and employees. Managers through their style of managing externalize their assumptions, accesses and opinions and build gradually organizational philosophy, mission and politics in order to be accepted by the employees as correct behaviour which is result of their identification with the organization and its clearly set goals.

# 2. Material and methods of work

Last researches about this problem for collecting and analyzing data used these methods:

- Method of comparative analysis,
- Method of evaluation and judging,
- Method of continuing following.

Research analysis which was used in this research represents total of the components which characterize the subject of researching, and it is consisted of questionarries, measure instruments, techniques and time frame of the research.

The following research methods or technique for data collecting are used:

- An interview with the general, top managers
- Scale of attitudes for the other managers, from other hierarchical level in the organization.

The model or instrument of Hambleton, Blanchard and Hepce, 1978:158 for diagnosing and evaluating workable and psychological maturity of managers in the organization was used in accordance with the needs of this research.

Organizations with low, medial and high organizational maturity were researched in order to gain further comparative and qualitative analysis of the given data by using situational access.

Classification is made by previously set criteria which referred to measure of the indicators of:

- Motive for work
- Belief in the management
- The economic power of the organization and
- Managing with the organizational conflicts

First relation is shown in the following way :



## 3. Results and discussion

Research in the agronomy and agriculture includes 39 managers from 4 organizations from Veles, Skopje, Prilep, Tetovo and Stip. From them 61.5% were men and 38.46% were women, with higher education were 53.8% and those working 30 years and more were 56.4%.

Work, according to them is not fascinating, does not satisfy their needs (64.1%), and they do it routinely. They feel great, import individual creativity (100%). That is because the fact of not feeling the work being appreciated by the external surrounding (51.2%). They feel comfortable inside (87.1%) working and accomplishing the tasks, which sometimes can be tiring (64.1%). However, all questioned managers think that there are challenges in work which make them to last and to feel fulfilled.



Figure 2 Data of characteristics for the work in the Agricultural business

Private means that these managers receive is enough to satisfy their basic live needs (100%) and is regular. There is some complaint because 51.2% of the questionaries think that they receive less than they should, and 51.2% think that they are not paid enough. This speaks about unsatisfactory, little financial power of the agronomical organizations.

Still, there are little possibilities for progress (38.4%) which are based on the individual abilities and perfectly done tasks (61.5%). Part of the questionarries (30.7%) thinks that there is an unfair progress because of the absence of clear criteria for it. These managers are felt needed because the employees ask them for advice (74.3%), and the job that is realized well is awarded. They say for themselves that they are tactical managers (51.2%), influential and informed about everyday events. From them 61.5% announced that they guide their employees in their activities, control their work and direct their effectiveness and efficiency.



#### Figure 3 Data for management in Agricultural business

Managers are connected to their organization 100%, they help it to become more successful, they are proud of the results (87.1%) and that is why they are loyal. That is also because the organization values and personal values are very similar, almost identical. Managers in the agronomy love their work and they are dedicated to it, but they would not mind to go in other agronomical organizations if the work is the same (61.5%). At this moment, in today's organizations with all misunderstandings with the organization policy and changes of the employees, managers more often think of job changing. Managers do not agree with the organizational policy which they must realize even though it is contrary of their opinions (15.3% of them totally agree with this attitude, and 35.8% just agree with it). That is why this situation causes indifference in managing, differences are being tolerated, organizational conflicts are solving by using hierarchical position and power, and their presence is very often. Although it is a team work, it is necessary to give up from the individual, for the good of the common one.

This is the style of compromise by which the managers in agronomy work. Nevertheless, what is the organizational behavior of the employees and do they contribute to these situations and conditions?

According to them, the employees cooperate between themselves, helping each other when someone is absent from work (61.5%), they are punctual when come to work (76.9%), they willingly take tasks that are not theirs. New employees try to improve themselves in the new job, although that is part of the managers' work. The assessment of the managers in this part

of work says that the employees are not absent from work unless is necessary, they have working habits, because of the character the agronomy and agriculture have. They are present on meetings on which may not be (51.2%) and give innovative suggestions in improving the organizational units where they come from. From here is the notice that those who are inferior do not lose their time for empty words (64.1%), they feel responsible for work and the managers are satisfied with them.

# Conclusion

Managing creates *loyalty* and *connection* of all employees to the organization. Managers in the agronomy are fully connected with the organization and they are loyal to it. That is because there is correspondence of the individual and organizational values. However, the connection is refers to the tasks connected to the agronomy, and not with the actual organization they work for (61.5%) because they will work in other organizations if the concept of work is identical. Reason for this is the misunderstanding with the foreign politics which do not permit individual thinking, decision making, and managing. And that do not provide creation of conflict partnership, effective atmosphere, there is no explanation of the differences in perceptions and final solution will be changing of the working organization. Focus is put on the process and *practical activities* of the managers, their *influential skills and abilities*.

Main components that function in opposing situations are connected to the diversity which assumes situational, modified attitude integrated in the organization. Adaptation and integration are two essential activities in creating working atmosphere which means good knowing of the colleagues, good knowledge of the surrounding and the situation in which they can be found, flexible relation and care for all the employees. That is so called *'homeostatic'*, access applied by the managers, whose tendency in the conflict situation is always to set a balance when the existing situation is impaired and influenced by the organizational conflict.

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# Changes in R&D Organizational Strategies Facing the Nano-Bio-Info Convergent Technologies Challenge

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Historically, the convergence of distinct science and branches of electronics is not an automatic process but now, the technological convergence required is of greatest amplitude. The same problem had occurred when the semiconductor planar R&D activities start to develop- the physicians, chemicals and electronics researchers had to work together.

At the same time, convergence of technical discipline at nano scale will be essential for society, for example, by providing the knowledge and the tools for environmental protection

Nanotechnology will have much of this effect on human in partnership with other technologies, notably biotechnology, information technology and new technologies based on cognitive science. That means nano-bio-info convergent technologies.

This convergence it may be difficult to achieve because the communities involved are culturally heterogeneous and may unnecessarily defend their professional autonomy.

That are the problem we intent to analyses: it is obviously that the strategies of R&D companies involved in convergent technologies have to change- but how deep and in what ways?

We do not want to give solutions but we want to present our points of view regarding:

- The necessity of changing the R&D teams
- The necessity of changing the organizational culture of the R&D entities
- The development of a convergent scientific culture and new common languages and ethic rules by developing networks, clusters and virtual laboratories
- To exercise the exchanges of research idea and results from the networks to the SMEs or NTBFs clusters.

Finally we present as a case study the evolution of our Scientific and Technologic Park for Micro and Nanotechnology-MINATECH.RO

We consider that the problems listed above- that can be described as nontechnological and non-economical items- could determine a delay or even a failure in developing research in nano-bio-info convergent technologies with a major effect on world economic development on medium and long term.

### Keywords:

NTBF cluster, Nano-Bio-Info convergence technologies, R&D companies, Scientific and Technologic Park for Micro and Nanotechnology, technological convergence

### <sup>682</sup> 1. Introduction

Nano-Bio-Info/Cognotech – new technology based on cognitive science – holds much promise to enhance human performance in the future. Already we see new concepts, such as smart mobs, unusual groups of individuals who get together in person, via cell phones, or via e-mail and form groups to accomplish specific objectives, with profound swarm intelligence. Cognotech will help us unleash the power of play. For example, Howard Gardner's (1993)"Multiple Intelligences" theory suggests that there is not just one kind of intelligence, but as many as seven, and people may be intelligent in many different ways. The "Motivated Skills" approach of Bernard Haldane (1996) helps people identify what they do well and enjoy doing.

Larry Bock, founder of Nanosys and 12 other companies says, "I feel my way through technology" and Alvin Toffler has said that "We are entering an era where we are a molecular civilization." Those who are feeling their way through the dawn of molecular science today are finding themselves in very unusual circumstances. The laws of quantum physics often apply at the nano level, and classical Newtonian laws of physics do not hold. We are no longer objects, human bodies, living in a world full of valuable objects. We are flows of energy, vectors, interacting in a world in which successful chemistries make things happen – either very quickly or very ineffectively. Its either 2 + 2 = 8 or 2 + 2 = 1. Just look at the loss of market capitalization of major corporate mergers.

In this time, after the Internet and the telecom bubbles have burst, it is easy to be cynical and assume that change is over-hyped. This is precisely the time to throw out, on a monthly basis, your preconceived notions and see what emerging things are growing exponentially around you. Everyone knows the sleeping giant of China is waking up and will dramatically shape the global economy. Developing countries, such as Vietnam, India, and Israel, are also waking up to a global race, where the power of entirely new chemistries – entirely new economic ecosystems – will determine the *winner*.

Cognitive Technologies will enhance human memory, decision-making, creativity, and emotional response. They will be achieved by convergence of nanotechnology, biotechnology, and information technology with cognitivescience. There is also the potential for convergence with the social sciences and the humanities, if the competition with religion does not become so strenuous as to fracture the culture in half – one side oriented toward science and the other toward superstition. The fact that a science of human emotion is beginning to emerge in conjunction with cognitive science suggests that a fully convergent science could compete effectively with religion and could unite with the arts.

The convergent creation of cognitive technologies will be achieved both by gradual development of hundreds of modest applications and by occasional unexpected breakthroughs. It will transform our conception of ourselves, thus debunking old illusions while enabling new dreams. It will call into question traditional norms of privacy, individuality, and group identity. It will be personal in a sense that other technologies have never been, because we will perform research on ourselves in order to augment or even transform ourselves.

As we look 5 to 10 years into the future, nano-bio-info-cogno technologies will enable dramatic changes to improve the lives of people in developing countries. Priorities for improvement will center around the key areas of concern to people in those countries – food, shelter, energy, and access to accurate information. Increased life expectancy should come as a result of increased access to water, food, and medicines. There are three key factors in building the infrastructure to support progress:

- Higher levels of education
- Lower birth rates
- Higher percentages of employed women.

We are already experiencing the dramatic changes brought on by computers, <sup>683</sup> communications, and the Internet. The combination of science and technology with entrepreneurs and venture capitalists has created a momentum of change which is extraordinary. Yet these changes will be overshadowed in the next 20 years by the emergence of an even bigger set of changes based on a combination of biology, information, and nanoscience (the science of objects at a billionth of a meter, from one to four hundred atoms in size). This new and as yet unappreciated wave of change will combine with the already remarkable pattern of change brought on by computers, communication, and the Internet to create a continuing series of new breakthroughs, resulting in new goods and services. We will be constantly in transition as each new idea is succeeded by an even better one.

This paper is an exploration of new opportunities and challenges for improving human performance from the perspective of rapid technological change and convergence. In the past two million years, human performance has primarily been improved in two ways: evolution (physical-cognitive-social changes to people) and technology (human-made artifacts and other changes to the environment). For example, approximately one hundred thousand generations ago, physical-cognitivesocial evolution resulted in widespread spoken language communication among our ancestors. About 500 generations ago, early evidence of written language existed.

Then the pace of technological progress picked up: 400 generations ago, libraries existed; 40 generations ago, universities appeared; and 24 generations ago, printing of language began to spread. Again, the pace of technological advancements picked up: 16 generations ago, accurate clocks appeared that were suitable for accurate global navigation; five generations ago, telephones were in use; four, radios; three, television; two, computers; and one generation ago, the Internet.

In the next century (or in about five more generations), breakthroughs in nanotechnology (blurring the boundaries between natural and human-made molecular systems), information sciences (leading to more autonomous, intelligent machines), biosciences or life sciences (extending human life with genomics and proteomics), cognitive and neural sciences (creating artificial neural nets and decoding the human cognome), and social sciences (understanding "memes" and harnessing collective IQ) are poised to further pick up the pace of technological progress and perhaps change our species again in as profound a way as the first spoken language learning did some one hundred thousand generations ago. NBICS (nano-bio-info-cogno-socio) technology convergence has the potential to be the driver of great change for humankind. Whether or not this is in fact desirable, reasoned speculation as to how this may come to pass and the threats posed by allowing it to come to pass are increasingly available from futurists. Currently, this technology road of human performance augmentations is at the stage of macroscopic external human-computer interfaces tied into large social networking systems that exist today. Recently, there are the tantalizing first experiments of microscopic internal interfaces to assist the elderly or others with special needs; and then there is the further speculative road, with potentially insurmountable obstacles by today's standards, that leads to the interfaces of the future.

After setting the stage with longer term visions and imaginings, this paper will focus on the nearer term opportunities and challenges afforded by NBICS research and development (R&D) over the next half a generation or so. In conclusion, while futurists may be overestimating the desirability and feasibility of achieving many of their visions, we are probably collectively underestimating the impact of many of the smaller technological steps along the way.

Nano-bio-info-cogno-socio convergence assumes tremendous advances in each of the component science and technology areas:

1. Nanoscience advances in the coming decade will likely set the stage for a new generation of material science, biochemistry, and molecular electronics, as well as of new tools for measuring and manipulating the world at the level of individual atoms and molecules. Nanotechnology advances are poised to give humans the capabilities that bacteria have had Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development

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<sup>684</sup> for billions of years, the ability to create molecular machines that solve a wide range of problems on a global scale. Ultimately, these advancements will blur the distinction between

natural and human-made objects.

2. Bioscience or life sciences will expand the mapping of the human genome to the human proteome, leveraging both to create new drugs and therapies to address a host of maladies of the past and new threats on the horizon.

3. Information science advances will find many applications in the ongoing ebusiness transformation already underway, as well as pervasive communication and knowledge management tools to empower individuals. More importantly, information science will provide both the interlingua to knit the other technologies together and the raw computational power needed to store and manipulate mountains of new knowledge.

4. Cognitive science and neuroscience will continue to advance our understanding of the human information processing system and the way our brains work.

5. Social science advances (obtained from studies of real systems as well as simulations of complex adaptive systems composed of many interacting individuals) insights into the collective IQ of humans, as well as interspecies collective IQ and the spread of memes.

6. The question is "how might the convergence of nano-bio-info-cogno-socio technologies be accomplished and used to improve human performance" ?

7. To gain some traction on this question, a framework, here termed simply the Outside-Inside Framework, is proposed. This framework makes explicit four of the key ways that new technologies might be used to augment human performance: (a) outside the body (environmental); (b)outside the body (personal); (c) inside the body (temporary); (d) inside the body (permanent). This framework will be shown to be largely about how and where information is encoded and exchanged: (i) info: bits and the digital environment, (ii) cogno-socio: brains and memes and the social environments, (iii) nano-bio: bacteria and genes and the bioenvironment, (iv) nano-cogno: bulk atoms, designed artifacts, and the physical

environments. In conclusion, near-term implications of NBICS technology convergence will be discussed.

The Outside-Inside framework consists of four categories of human performance enhancing technologies:

- Outside the body and environmental
- Outside the body and personal
- Inside the body and temporary
- Inside the body and permanent

In sum, the Outside-Inside Framework includes four main categories and a few subcategories for the ways that technology might be used to enhance human performance:

• Outside the body and environmental

-new materials

- -new agents
- -new places

-new mediators (tools and artifacts)

• Outside the body, personal

-new mediators (tools and artifacts)

• Inside the body, temporary

-new ingestibles

- Inside the body, permanent
- -new organs (new sensors and effectors)
- -new skills (new uses of old sensors and effectors)
- -new genes

The four categories progress from external to internal changes, and span a range of acceptable versus questionable changes. In the next section, we'll consider these categories from the perspective of information encoding and exchange processes in complex dynamic systems.

This convergence it may be difficult to achieve because the communities involved are culturally heterogeneous and may unnecessarily defend their professional autonomy.

That are the problem we intent to analyses: it is obviously that the strategies of R&D companies involved in convergent technologies have to change- but how deep and in what ways?

We do not want to give solutions but we want to present our points of view regarding:

- The necessity of changing the R&D teams by extending the multidisciplinary breaking down the "ivory town" of the individual researcher and develop a new common language in team
- The necessity of changing the organizational culture of the R&D entities
- The development of a convergent scientific culture and new common languages and ethic rules by developing networks and virtual laboratories
- The improving of the associational culture- this point we consider to be crucial in all this effort
- To exercise the exchanges of research idea and results from the networks to the SMEs or NTBFs clusters.

# 2. The necessity of changing the R&D teams – by extending the multidisciplinary

The convergence of NBIC(Nano-Bio-Info-Cogno progresses, it will be imperative that the technology be focused on ways to help enhance human health and overall physical performance, be disseminated to a broad spectrum of the population, and be developed by a diverse group of scientists and engineers. One potential platform that will enable this would be a "bio-nano processor" for programming complex biological pathways on a chip that mimics responses of the human body and aids the development of corresponding treatments. An example would be the precise "decoration" of nanoparticles with a tailored dosage of biomolecules for the production of nanomedicines that target specific early biomarkers indicative of disease. The nanomedicine may be produced on one type of nanobio processor and then tested on another that carries the relevant cellular mechanisms and resulting biomarker pathways. The nano-bio processor would parallel the microprocessor for electronics, such that the development of new processes, materials, and devices will not be limited to a handful of "nano specialists." With the advent of the nano-bio processor, knowledge from all fields (biology, chemistry, physics, engineering, mathematics) could be leveraged to enable advancements in a wide variety of applications that improve human health and enhance human capabilities.

# 3. The necessity of changing the organizational culture of the R&D entities

From a business perspective, a number of existing technology trends generally align with and are supportive of NBIC directions. One of the major forces driving the economy these days is the transformation of businesses into e-businesses. The ebusiness evolution (new agent) is really about leveraging technology to enhance all of the connections that make

<sup>686</sup> businesses run: connections to customers, connections to suppliers, connections between employees and the different organizations inside a business, and connections to government agencies, for example. Some aspects of the NBIC convergence can not only make people healthier, wealthier, and wiser, but can make e-businesses healthier, wealthier, and wiser as well. I suspect that while many futurists are describing the big impact of NBIC convergence on augmenting human performance, they are overlooking the potentially larger and nearer term impacts of NBIC convergence on transforming businesses into more complete ebusinesses.

# 4. The development of a convergent scientific culture and new common languages and ethic rules by developing networks and virtual laboratories

The area of overlap between what is good for business and what is good for people is in my mind one of the first big, near term areas of opportunity for NBIC convergence. Improving human performance, like improving business performance will increasingly involve new interfaces to new infrastructures.

a) Communication infrastructure: The shift from circuits to packets and electronics to photonics and the roll out of broadband and wireless will benefit both businesses and individuals.

b) *Knowledge infrastructure*: Knowledge management, semantic search, and natural language tools will make businesses and people act smarter.

c) *Sensor infrastructure*: Realtime access to vital information about the health of a person or business will be provided.

d) *Simulation infrastructure*: There will be a shift from *in vitro* to *in silico* biology for the design and screening of new drugs for people and new products for businesses.

e) *Intellectual property, valuations and pricing, human capital infrastructure*: Inefficiencies in these areas are a major drag on the economy overall.

f) *Miniaturization, micromanipulation, microsensing infrastructure*: Shrinking scales drive chip businesses and open new medical applications.

g) *Computing infrastructure (grid - social)*: This is still emerging, but ultimately, computer utility grids will be an enormous source of computing power for NBIC efforts.

h) *Computing infrastructure (autonomic - biological)*: The cost of managing complex technology is high; the autonomic borrows ideas from biological systems.

### 5. The improving of the associational culture

The enormous increases in computing power, the miniaturization of electronic device (nanotechnology),the improvement of techniques for interfacing electronic device with biological tissue, and increased understanding of the sensory pathways, the prospects are great for significant advantages in sensory replacement in the coming years. Similarly, there is reason for great optimism in the area of sensory substitution. As we come to understand the higher level functioning of the brain through cognitive science and neuroscience research we will know better how to map source information into the remaining intact senses. Perhaps even more important will be breakthroughs in technology and artificial intelligence. For example, the emergence of new sensing technologies, as yet unknown, just as the Global Positioning System was unknown several decades ago, will undoubtedly provide blind and deaf people with access to new types of information about the world around them. Also the increasing power of computers and increasing sophistication of artificial intelligence software will mean that computers will be increasingly able to use this sensed information to build representation of the environment, witch in turn can be used to inform and guide visually impaired people using synthesized speech and spatial displays. Similarly, improved speech

Recognition and speech understanding will eventually provide deaf people better communication with <sup>687</sup> others who speak the same or even different languages. Ultimately, sensory replacement and sensory substitution may permit people with sensory impairments to perform many activities that are unimaginable today and to enjoy a wide range of experiences that they are currently denied.

# 6. To exercise the exchanges of research idea and results from the networks to the SMEs or NTBFs clusters.

In 90 percent of cases, the idea exchange between members of an innovative network company (NTBFs) is the key to success in creating new products. Take for example The Scientific and Technological Park (STP) MINATECH.RO, where we can find both nano innovative companies, with an electronic, biochemical and IT profile. The park has enabled dialogue between those companies which led to accomplishing new technologies and products in NIBC.

Here are a few relevant examples of good collaboration: a sensor which detects Tuberculosis, a sensor which identifies the AND sequence, a sensor for pesticides etc.

Through this dialogue, nano technology companies, such as SITEX 45, ROMQUARTZ, next to nano biochemical companies, such as TELEMEDICA, DIAGNOSYS, in collaboration with professors, PHD students and researchers from University POLITEHNICA Bucuresti (UPB) and The National Institute of Micro technology (IMT) have designed and accomplished the above-mentioned products and technologies.

The permanent information exchange between the research entities and SMEs, the market trend and the product request, all represent the basis of dialogue and collaboration between the park residents and the members who manage the park.

Research infrastructure of IMT and IPB, the production infrastructure of SMEs, the specialists complementary to the above-mentioned fields, electronics engineers, chemists, physicians, biologists, doctors, software specialists etc. Have made possible all stated achievements, using the same research and production infrastructure, at optimal costs for creating those products.

### 7. Conclusions

NBIC is the future domain of technology development and the answer to all questions regarding the knowledge and the future of technology.

Collaboration in cluster-structured institutes, STP networks and business incubators, allows the establishment of a permanent dialogue between specialists from different domains of activity, such as: biochemistry, physics, electronics, medicine etc, as well as the common usage of research and production infrastructure, which, if operated with minimal costs, pay off the efforts invested in creating new products and technologies.

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# The Industrial Park Project – From Idea to Implementation

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This professional work will show the facts about the evaluation and activities that were necessary to lead the Project of the Industrial Park from the idea to the stage of implementation.

Through the analysis of the Industrial Park Project in Subotica, the case that will be presented, demonstrates the case of local government, which in the initial period hadn't secured building land in its possession.

The form of solving this problem will be presented by a contract with the Ministry of Defense, on the basis of which the city of Subotica came into possession of an attractive site of the former military barracks and training grounds, where the Project will be implemented. The topic that will be the subject of study in this professional work, as well as the conclusions to which it occurs, will contribute to better perception, understanding and familiarization with the necessary steps in the implementation process of Industrial Parks projects.

### Keywords:

Industrial Park, Military property, National strategy, Unemployment

### 1. Introduction

Disorder in global financial markets and the adverse effects of financial crisis have the significant influence on the economy of Serbia. After a long time of economic growth and keeping inflation at the level of reason, the negative effects of financial crisis began to be noticeable.

The costs of foreign investment have been increased, there was a slower inflow of foreign direct investments, the reduction of the industrial production resulted the unfavorable effects at the stock market....

As a possible way to attract direct forein investments, serbian goverment planned to offer for rent the existing industrial facilities as place to organise industrial production.

Experts are skeptical in renting the existing facilities, because most of industrial halls cannot respond to the demands of modern technological processes. On the other hand, large companies are not willing to compromise in the organization of production, or want to invest large resources in the construction of buildings, where their money is more necessary for the organization of the production process and distribution of goods. As one of the logical solution, imposes the idea of organization the industrial parks with great role to play by local governments, as well as special companies dealing with sales and rents of industrial properties.

Nowdays, from the aspect of Industrial park development, Serbia is in the position in which Hungary was ten years ago. Since the mid nineties, only around Budapest, for a decade, our neighbors have established more than 50 industrial parks. In a radius of 30 kilometers, there

are 2 or 3 of the park. The products of companies that operate within those Industrial parks can be found throughout all of Europe.[1]

According to facts presented by Mr. Szekely Peter, the president of Hungarian Association of IT and Idustrial Parks, 208 Industrial parks were established in the period from 1997 to 2008 in Hungary.

The following numbers illustrates the results that have been achieved, through the decade of Industrial parks implementation in Hungary:

- Total area: 13,879ha
- Utilization: 50.4%
- Number of entrepreneur: 3,855
- Number of employees: 210,543
- Entrepreneur's investment: HUF 2,704 billion
- Income: HUF 7,085 billion
- Export: HUF 5,624 billion[2]

According to these facts, Serbian government should apply positive experiences from Hungary, Czech Republic (160,000 new job openings in period 1996-2007) and other EU countries. One of the most efficient methods is to assign municipalities grant funds to equip the selected locations of future Industrial parks with all necessarily infrastructure.

### 2. National Strategy for Development of Industrial Parks in Serbia

According to basic principles in the National strategy for development of industrial parks, the land for Industrial park is defined as a land equipped with infrastructure, with or without built facilities. That plots are offered to entrepreneurs for industrial production. As such, the Industrial park is different from the Industrial zone, because it is operated by a separate legal entity, which can be private, public (formed by local government) or combined, as the result of cooperation between private and public sector.

National strategy for development of industrial parks is the result of a one-year participation in the project, funded by the European Union, which was implemented by Advisory service for investment from the World Bank Group (FIAS).

The ownership of the building plots and its acquisition makes the greatest obstacle to the realization of these investments. Those facts are recognized by local governments and investors as well. The removal of these barriers is expected to be done through the adoption of systemic laws (Law on public property, Low on privatisation of construction land, Law on industrial parks).

Local goverments have a common stand that the existing capacity of military assets and abandoned industrial complex (the so-called Brownfield sites) may be used for the construction of industrial zones and parks.

After a preparation period, in June 2008, Serbian government established the Plan For The Acceleration Of The Procedure And Efficient Disposal Of Military Sale Of Real Estate.

The precize procedures were identified, with wery short-time termes for egxecution of the tasks. The following subjects were identified for the implementation of the Plan:

- Directorate for Property
- Treasury
- Ministry of Defense-Department of Infrastructure
- Ministry of Infrastructure-Institute for Geodesy
- Local Governments[3]

# 3. Subotica – The Case Study

### 3.1. Basic Facts

The municipality of Subotica is composed of the city and 18 suburban settlements. It covers 1,008 km2. Due to its geographical position and its hard-working inhabitants, Subotica is an administrative, industrial, trade, traffic, tourist and cultural centre of the Northern Backa region. Subotica is located at one of main traffic intersections of Europe:

- Pan European Corridor X
- Motorway E-75: Budapest-Subotica-Belgrade-Nis-Skoplje-Athens
- Railway E-85: Budapest-Subotica- Belgrade-Nis-Skoplje-Athens
- Subotica-Szeged Railway
- Subotica-Sombor-Vinkovci Railway
- Subotica-Kikinda-Timisoara Motorway M-24
- Subotica-Sombor-Osjek. Motorway M-17.1

Subotica is located 100km to the north from Novi Sad, about 190km to the north-west from Belgrade and about 190km to the south from Budapest. Besides its favorable geographic location, the region of Subotica posseses a number of logistic advantages such as:

- Two international border crossings Kelebija at 10km and Horgos at 30km from Subotica
- One international border crossing Bajmok located at 35km from Subotica
- Logistic centre that is about 40ha large
- Railway station for freight trains
- Main Internet node and developed telecommunication infrastructure
- Public and customs warehouses
- Well-developed network of local roads connected to the main and international motorways

• Good connections with three large international airports: Belgrade 165km, Budapest 190km, Osijek 120km

The following tables describes the basic numerical data on population, employment in different industrial areas and the level of unemployment.[4]

Subotica
123,688
126,559
136,782
146,77
154,611
150,534
148,401

Table 1 Number of inhabitants, period 1948-2002[4]

Description	Total number of individuals
Employed in companies, institutions and	35,880
organizations	
Commercial activity	27,062
Non-commercial activity	8.818
Agriculture	1,518
Processing industry	12,026
Power supply, gas, water	685
Construction	2.821
Trade And services for motor vehicles	5,710
Hotels and restaurants	402
Transport, warehousing and connections	2,914
Finance	7,397
Real estates and renting	1,908
Public administrations and social insurance	1,170
Education	2,600
Health and social welfare sector	3,799
Other utility services and service sector	1,139
Entrepreneurs and self-employed	10,610

#### **Table 2** Annual average of employment in Subotica in 2005[4]

Table 3 Number of the unemployed and the unemployment rate, period 1992-2005[4]

Year	Number of the unemployed	Unemployment rate in%
1992	13,104	19.65
1993	13,771	20.65
1994	10,53	15.79
1995	14,137	21.20
1996	19,416	29.12
1997	12,198	18.29
1998	15,218	22.82
1999	16,213	24.31
2000	15,759	23.63
2001	16,04	24.05
2002	18,198	26.72
2003	20,717	30.42
2004	21,45	31.50
2005	18,951	27.83

The importance of realization of the Industrial park project in Subotica, can be clearly concluded, represents the high priority in terms of reducing the unemployed rate. The professional structure of skilled work force makes the most significant advantage of Subotica for the future investors.

### 3.2. Military Property in Subotica

Based on the analysis, there is a list of military assets that can be the subject of Commercialization contract between Ministry of Defense and Local Government:

- Aleksandrovo 1,5 ha 681 m<sup>2</sup>
- Karadjordje Road 1.9 ha
- Petar Drapsin 21 ha 8,871 m<sup>2</sup>
- Army club 0,0843 ha 5,098 m<sup>2</sup>
- Radanovac 123 ha 3,941 m<sup>2</sup>
- Kosta Nadj 9 ha 17,058 m<sup>2</sup>

Of the mentioned sites, Petar Drapsin barrack was selected as the best to start the process of commercialization of military assets.



Figure 1 Location of Petar Drapsin barrack

### 3.3. The Feasibility Study

The Subotica Industrial Park Feasibility Study has been developed as a result of a one-year project (2008) under the title "Feasibility study and supporting technical documentation elaboration for the Subotica Industrial Park" financed by the European Union through the Cross-Border Cooperation Programme Hungary-Serbia.

The Project has been implemented by the local government of the City of Subotica and its project partners Szeged Polus, Subituca Municipality City Planning Institute, Subotica Municipality Development Directorate, the Open University and the Regional Centre for SME Development from Subotica.

The aim of the Project is to promote the environemnt of the city of Subotica for investments by developing the business infrastructure and crossborder economic cooperation.[4]

### 3.3.1. The Basic Steps Related to Elaboration of The Feasibility Study

- Collection of preliminary data
- Situational analysis
- Analysis of location
- Market analysis
- Analysis of possibilities for attracting financial resources
- Analysis of the necessary framework for Industrial Park management
- Financial framework analysis
- Environmental impact analysis
- Marketing plan design
- Elaboration of the business plan
- Interviews with stakeholders.[4]

The basic hypothesis set in the Feasibility study was: *Location of the Petar Drapsin barracks complex is adequate and suitable for establishment and construction of an industrial park.* [4] The most important methodological steps that were undertaken for the purposes of proving the initial hypothesis are as follows:

- 1. Preparatory activities, including selection of team members and division of concrete tasks in accordance with individual competences, references and preferences of each team member;
- 2. Collection of primary data and information on the location of the Subotica Industrial Park
- 3. Collection of secondary data and information from the EU, in particular the Republic of Hungary, related to legal, economic, organizational and financial aspects of establishment of industrial parks in citys similar to Subotica,
- 4. Collection of data from ministries, agencies and institutions that support regional economic development on the territory of the autonomus province of Vojvodina and the Republic of Serbia
- 5. Creation of a questionnaire that will serve as basis for interviews with companies and institutions interesed in development of the Subotica Industrial Park. The structure and content of the questionnaire will be submitted to authorized members of the Ordering Client's team for verification
- 6. Organization of workshops and public panes for the purposes of verifying and disseminating the results of the research
- 7. Continuous two-way communicaton with institutions and individuals interested in development of the Subotica Industrial Park

- 8. Implementation of a situational analysis, comprising the location analysis within proposals listed in the Master Plan as well as prospective trends of development and networking with other institutions in the AP Vojvodina and cross-border regions in the republic of Hungary
- 9. Implementation of a market analysis comprising all aspects of the economic situation in the region, as well as a complete analysis of potentials of the human resources and institutions for development of the Subotica Industrial Park
- 10. Analysis of possibilities for attracting direct foreign investments on the industrial park location, in the form of green field and brown field investments
- 11. Creation of a marketing plan as the only adequate manner of promoting the location in the EU countries
  - <image>
- 12. Reporting in compliance with adopted EU standards.[4]

Figure 2 Construction Plan of the Industrial Park at the location of the Petar Drapsin army barrack [4]

### 3.3.2. The Feasibility Study Conclusion

The final general conclusion of the Feasibility study, if it can be expressed in a single sentence, is that the investment in setting up an Industrial Park on the territory of the former Petar Drapsin military barrack is not only profitable in itself, not only necessary for the development of the city, but is also likely to have multiple effects on the economy of Subotica and the quality of life in it.[4]

## 4. The Final Phase

The Serbian Government has adopted a conclusion on the transfer of right to use property, with compensation, between Ministry of Defense and Municipality of Subotica.

The subject of the contract is the military barracks complex Petar Drapsin – 26 buildings (total area of 9418 square meters) and the land (total area of 21 hectares 8 acres and 23 square meters). The government has accepted the assessment of the Tax Administration in the amount of RSD 121,406,330 for the market value of the said military complex. Subotica is the first city in Vojvodina, who has acquired military property.

### 4.1. The Establishment of "Industrial and Technology Park" Public Enterprise

Assembly of the City of Subotica established the Public Company "Business Technology Parks of Subotica" on the session in January 2010.

According to adopted statute, the new enterprise will have jurisdiction over the following main groups of activities:

• Management of construction land in state ownership with the right to use, or owned by the City of Subotica, which is located in the areas of labor and business-oriented manufacturing, commerce, commercial functions, defined in the General Plan Subotica-Palic to year of 2020, and the Spatial Plan of Municipality of Subotica

• Construction and maintenance of municipal property in the labor and business areas managed by the company

• Provision of general and specialized services to users of business parks.[5]

The aim of the company is to create the conditions for attracting domestic and foreign direct investment, effective delivery of services to investors, create jobs openings and promote economic development of Subotica.

# 5. Conclusion

The case study of Subotica, presented in the paper, is the significant example for local municipality, which didn't have the ownership right over suitable construction land for Industrial park. The solution for this problem, by contract with Ministry of Defence, will be applied in many cases in Serbia in the future.

Experience from Subotica may be usefull for other local municipalities, considering the idea to start with projects of Industrial parks.

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# Place and Role of Information Security (IS) in Modern Society

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In terms of modern markets, business success and economic security are inconceivable without the security of information. Information and information resources are the material goods and therefore the protection of information is an integral part of business. In order to introduce the basic settings of the protection of business information, outlined, analyzed the relations between business and information security: business intelligence, information lifecycle management, information security. Information security is a complex phenomenon that requires an interdisciplinary approach. Depending on the angle of observation in the treatment of IS, using different research methods: a mathematical, economic, social - psychological, legal and, even, and biological. In accordance with the limitations placed on the paper are presented some research methods and some the IS model. Model information security treats three aspects:

- 1. situation in which there are information (transmission, storage and processing),
- 2. security services (availability, integrity and confidentiality) and
- 3. anti measure security (in the field of technology, policies and procedures and training) thus defined three-dimensional model. Based on this model is written in the Canadian criteria for assessing information security, which we explain in this paper.

### Keywords

Information security issues, the problem of information protection, the consequences of inadequate protection of information, the ratio of price-performance information system security.

### 1. Introduction

Managing information security is increasingly being recognized as the business needs. Also, the management of information security in business, increasingly, directly or indirectly impose various regulatory provisions. Risk management is the process through which confirms the business justification for the selection of security solutions and controls that will ensure a sufficient level of security. Also, the process allows the development of risk management strategies and setting targets in the field of information security. The most important part of this process, but the most accessible error is the first step is risk assessment. Literature generally distinguishes qualitative and quantitative risk assessment. At a qualitative assessment of risk is estimated empirically, or descriptive, as opposed to quantitative estimates of risk that describes the numerical (financially). Given that the qualitative risk assessment based on highly subjective assessment, is subject to error. The paper analyzes some of the methods of qualitative (quantitative-qualitative) risk assessment, with particular emphasis on how different elements can affect the reliability of the results of risk assessment. Risk management is the process through which confirms the business justification for the selection of security solutions and controls that will ensure a sufficient level of security. Also, the risk management process enables the development of strategies and

objectives in the field of information security. Generally, the concept of risk as the probability of a combination of events and influences, and (negative) consequences of the event in case of realization of the threats that take advantage of a vulnerability. When it comes to information security, risk (R) for each resource is estimated to estimate its value ( eng. asset value - AV), the vulnerability of the resource (Eng. vulnerability - V), which may use threats and vulnerabilities (Eng. threat - T), probability of realization of the threat (Eng. probability - P) and consequences (Eng. impact -- I), which can happen if a specific threat be carried out. Therefore, mathematical, risk is a function of these variables (1).

$$R = f(AV, V, T, P, I)$$
<sup>(1)</sup>

Also, the results of risk assessment could be considered valid; the process must meet the following criteria:

- uniformity,
- objectivity
- reliability and
- repetability.

### 2. INFORMATION RESOURCE MANAGEMENT

Information is now the main resource of every business system. Therefore, it is necessary to adequately manage these resources as well as with other business resources. Because it is a considerable extent based on information and communication technology between the two focus there is a strong interaction. How to organize the management of information resources, the complex manager and a practical task, whose solution requires its concepts, methods and techniques. On the other hand, the high investments in information technology, infrastructure, management of information resources, often resulting in lack of successful results, and often a great disappointment. Therefore, the objective of this work to achieve effective and successful management of information resources through appropriate application of ICT. Aim is to set the basic idea, show trends, areas and methods in the management of information resources, and emphasize the importance and necessity of its implementation in practice. The aim is to identify problems of this type and master the methods and ways of their solving.

#### 2.1 Information as a strategic business resource

Information technology is not used properly. The new, complex relationships of information exchange used information system that was created solely from the need of control of hierarchical organization. All problems in the application of information technology as a result of the conflict of two information structures: one is the one that establishes a new way of doing business and the responses you search network economy, and the other it is inherited. In this lies the greatest challenge and threat as: "If you have a fifth-generation hardware, software, fourth, third, and staff organization of the second generation, the system will work in another generation!" Managers of organizations recognize the future challenges ahead, and it seems most revolutionary period in the history of business. For many who painstakingly trying to learn how to most effectively take advantage of the Internet, this is terrifying and exhausting period, but also extremely exciting. For those who instinctively know how to lead the organization through a crisis period it will be fun.

#### 2.2 Strategic advantages of information technology application

Short-term impacts of new technologies often overestimate, but their long-term impact often underestimated. People at the beginning of using new technology to do what they normally doonly better. Gradually begin to use technology to do new things that change the way we work and

live. New styles of work and life changing society and ultimately the technology. It was supposed to pass 20-tak years to computers won their place in business circles. For the next 15 years was spent on automation of vertical business processes to improve efficiency of management organization. Then it took another 10 years to be with the wholehearted support of personal computers (Bill Gates) significantly improve individual performance and productivity.

Five main areas in which information technology completely changed the life of the former:

- 1) Information technology as a replacement for the calculator (Excel)
- 2) Information technology as a replacement for the typewriter (Word)
- 3) Information technology as a replacement for the archive (database)
- 4) Information technology as a replacement for TV (graphics and multimedia)
- 5) Information technology as a substitute for the catalogue (WWW)

Areas in which it is possible to achieve a significant advantage over competitors or at least greatly increase the effectiveness and efficiency are:

6) Information technology as a replacement for phone and fax (digitization of information)

7) Information technology as a replacement for the man (much more effective and efficient business communication)

Directors serve as the "nerve centres" in the online processing of information, called the organization, where constantly collect, process and send information. How bad communication can mean bad management, executives need to communicate effectively, and with each other and with others, as within and outside the organization. Several factors determine the IT technologies that can be used to provide communication support to specific organizations or groups of users. They are as follows:

#### Participants.

Number of people who send or receive information ranges from two to many thousands.

- *Type of source and destination*. Source and destination information may include people, files, sensors and so forth.
- *Location*. The sender and recipient can be in the same room, in different rooms in the same location or at different locations.
- *Time*. Messages can be sent at a certain time and receive almost the same time. In such a case we say that communication is synchronous. Mobile phones, teleconferencing, meetings, face-to-face are examples of synchronous communication (real time). Induction of communication, on the other hand, refers to the communications when the recipient receives the message a little later after it was sent.
- Medium. Communication may include one or more media. Today computers can process several types of media such as text, voice, graphics, images and animations. When using different media for communication, can increase the effectiveness of messages, accelerate learning, and increase possibilities of solving problems. However, work with multiple media can reduce efficiency and productivity of the system (speed, capacity, quality) and can significantly increase costs.

As director of the financial sector today (CFO) can go to jail for negligent operation, as it would in the future could happen and responsible computer (CIO). Key issues for survival in today's turbulent market are:

- How bad is trained to use information technology?
- Are their logistics schedules?
- Do they lack vision and leaders who will take them in the right direction?
- How many of them no idea of what should be done to survive the market?

• Why are many raised their hands and surrendered without fighting (bankrupt)?

The answer is - they are the same as you have, know just what you know and do the work in the same way you do it. In other words, their IT strategies are not much different from your: This is the price that must be paid to lead work, but not something that will guarantee a safe success. If you have a general manager or the narrow leadership you more successful in their professional work if you understand how to build and use effective information systems and how they manage. You will also be useful if you know how to recognize and avoid systems failure.

### 2.3. How to set the strategy for information system?

With the progress of process oriented applications, which have shifted the traditional functionality of applications and an increasing selection of tools and technologies from which to assemble applications, many companies have different cups of applications that have become a great obstacle to progress. In other corporations the lack of a strategic IT orientation interferes with ability to make decisions that are in line with business needs. Factors that inhibit stop these corporations the ability to respond to today's critical business drivers, including:

- e-commerce to connect business partners
- global companies move geographical boundaries
- virtual companies connecting independent units through information technology
- connection with the user start of labour to the user site and directing users to cope with business processes
- flexibility of the process the process of processing used to be prepared for changes in the field of competition and regulation
- the ability to connect to connect organizations and infrastructures
- fast business solutions reducing the time needed for the appearance of the product on the market
- cheap delivery efficient use of IT resources and financial resources.

# 3. Strategic approach to information systems

IT system planning in the organization began developing an articulated strategise information technology vision that drives business. This strategy serves as the foundation architecture for business applications, information technology infrastructure and IT management. Architecture and help with setting up the initial list of priorities with IT projects and related plans necessary to implement the architecture.

Application architecture consists of three main parts:

- inventory of operational applications with information about their strategic, functional and technical quality,
- application strategy that defines orientation of the property portfolio and brings current set of rules for portfolio management, and
- future state model (the model of the future status) application portfolio that defines the future availability of each element of the current application portfolio, which is planned.

For organizations that are in the process of implementing new business applications, as well as those who must make decisions concerning the maintenance of existing applications and data warehouses, owners of functional architecture simplifies making many key decisions. It provides a mechanism for understanding and active portfolio management applications and data warehouses. Some of the major advantages are achieved:

- prioritization of investment projects based on alignment with business,
- applicative focused portfolio strategy for action based on the abundance of features, technical quality and alignment with business,
- increased quality of information constant definitions, ownership and data management and

• reducing risk - through a strategy that delivers a clear vision of the application and data portfolio companies.

### 3.1. Development projects in the field of information technology

The strategy is a fundamental document on trends and key factors of development, as well as activities to be implemented, concerning the course of a comprehensive reform of public administration and its re-engineering with the use of information -communication technologies. This challenging task can be achieved only by systematic and organized approach. This strategy lays down the lines of action regarding the following segments of the public administration:

- Process re-engineering of public administration,
- Technology-development basis of introducing e-government,
- Communication and IT infrastructure,
- Security and interoperability,
- Fundamental registers,
- Business process automation and computerization of functions,
- Electronic services and portals,
- Single counter.

Experiences of countries that have adopted similar development strategies show that, if achieved real and full political agreement on the necessity of developing this program, and open space for the participation of all relevant and key subjects and promotes the importance of using modern Information communication technologies provides a relatively achievable development plan e-administration. Risk management paradigm based on phase and continuous activities of the following six activities: identification, analysis, planning, monitoring, control and communication, as in the literature often depict the circular as a vicious cycle. The above paradigm of risk management is geared toward the promising future, and consists of six constructive principles of risk management, namely:

*Open communication*: Free flow of information on all levels and between them, enabling the formal, informal and accelerated communication, access to unique knowledge and results of risk identification;

*Integrated management*: risk management is an integral and vital part of project management, adaptation of methods and tools for risk management in the project infrastructure and culture;

*Continuous process*: constant vigilance and support in identifying safety and risk management through all phases of the life cycle of the project;

*Shared vision:* based on the general purpose and significance, divided ownership, collective communication, interest and focus on the achievement of planned results and

*Teamwork:* Required impeccably and cooperation in working for reaching common goals, pooling and synthesizing the talent, skills and knowledge.

Identification and classification of operational risk is performed by a particular method of risk, which consists of three hierarchical levels: class, elements and attributes. Three main classes are:

- *goal or task* The characteristics of operational targets and mechanisms to search for products and services, and the results of operational tasks,
- *working process* and list the aspects of the elections that the operational organization performs when deciding how to perform the task,
- *restrictions* to identify the external influences that interfere with operational tasks.
Each class consists of component parts and elements, each element is associated with the group of characteristics. All classes, elements and attributes are described in detail in the relevant documents. Procedures and processes to develop and describe in detail, and then create detailed instructions for the team and for the application of appropriate methods.

In the complex conditions of the continuous changes of key importance is finding appropriate ways of research result of the decisions and plans passed. The risk in general, as well as business risk, can speak only in the context of a specific alternative. The risk does not mean a safe, performing a negative effect, it is estimated only negative consequence of which is uncertain achievement. Though uncertainty management means managing the various sources of uncertainty, which increases the risk and shape. Understanding of the nature and significance of uncertainty is the basic prerequisite. For the efficient and effective risk management. In the contemporary literature are distinguished two basic approaches define the risk: one based on the causes and risks their uncertainty, and the other on the impact of risk. It is believed that the risk:

a) negative deviation from the set targets,

b) an event that may or may not happen, and if it occurs, can lead to positive, zero and negative result,

c) the risk of potential loss of resource opportunities. Relationship Management project to the risk and its impact is two-sided: first, the impact on the study of risk factors and second, to reduce the level of risk.

Significance of risk for the future of any work that is the subject of project management is great. The paradigm of risk management based on the phase and continuous service of six activities: identification, analysis, planning, monitoring, control and communication. It is promising is directed towards the future, and consists of six constructive principles of risk management: a view forward, open communication, integrated management, continuous process, shared vision and teamwork. Realistic view of risk of acquiring the confidence of investors that the project will be completed successfully and create the conditions for his support in overcoming the problems that the project implementation may occur. Risk assessment is a procedure that is done measuring the size of risk, which may cause the loss or failure, and also influence the risk of occurrence of the observed project.

Each new generation of technology and technological innovation requires each radical and fundamental transformation of organizations, business and society in general, to be able to use the maximum technological capacities that brings innovation and development of IT. As a result of the spread of information technology in organizations and society in general, the level of dependence between information systems has increased greatly, so that today it is difficult to speak of independent information systems is already thinking directed to identifying IS through information infrastructure. Such information infrastructure connectivity features hardware, software and procedures, which make a whole needed to predict behaviour in organizations and among the users. Information infrastructure can be represented as the output dynamic interaction between technology and people. This definition is much more convenient than the traditional settings of IT infrastructure as a set of functionality to standardize the organizational actions as the basis for organizational activities.

Development of IT influences the development of new organizational structure to:

- 1. IT organization
- 2. pulsating organization
- 3. organization as a network.

IT organization - the basic characteristics of these organizations are a great number of experts who are deployed outside the headquarters and administration, who have a significant operational role and responsibility. This organizational structure is flat and the shape resembles the structure of companies from a century ago. By Drucker process of transformation of these companies will threaten many jobs, the status of many people, especially middle-aged with long work experience, who are the least mobile and feel most secure in their jobs, on their positions

and relations and behaviour. The hardest problem will be the provision, preparation and testing of leading managers. Experienced business people should return to "school".

## 3.2. What Is Security Engineering?

Security engineering is about building systems to remain dependable in the face of malice, error, or mischance. As a discipline, it focuses on the tools, processes, and methods needed to design, implement, and test complete systems, and to adapt existing systems as their environment evolves. Security engineering requires cross-disciplinary expertise, ranging from cryptography and computer security through hardware tamper-resistance and formal methods to a knowledge of applied psychology, organizational and audit methods and the law. System engineering skills, from business process analysis through software engineering to evaluation and testing, are also important; but they are not sufficient, as they deal only with error and mischance rather than malice.

## 4. Conclusions

Powerful economic and business demands and new management methods that are not related only to the management of conventional resources, but also in knowledge management. The challenge for those who manage knowledge is twofold - they should implement a system that will regulate the flow of information so that employees can access specific knowledge important to their work and create processes to individuals in various business functions to enable knowledge sharing and practical use it. Many organizations are working on accelerating business processes and simultaneously build their knowledge resources. Combining the speed and knowledge leads to increasing the capacity of the organization. Organization absorb new information and new knowledge for better use and more efficient business strategy. In addition, knowledge becomes a product that can be offered on the market and to realize that a significant profit.

The human factor is the most important role in the process of work. Some technical and technological and social changes require a new staff profile, the required level of education increases, and the increasing division of labour leads to professional specialization, which in some sense restricts the mobility of human resources. Trip growth and development of the enterprise must be imbued with efforts to ensure adequate staffing structures and create conditions for its effective use, and the dynamism of staffing resources is the initiator of growth and other changes in the business. Since the main factor of staff to their business plan must be part of the overall strategy of growth companies. S To provide a connection between the strategy and development plans of staff can speak about three levels of planning:

- The first level is the level where the company is determined by the general staff and the importance of working conditions and therefore establishes the principles of personnel policy.
- Second level of organizational units companies that include consideration of allocation by organizational units, while
- Third level refers to the allocation of staff according to their functions and organizational units.

With the increasing number of users of information technology is an urgent need of solving the numerous issues related to information security. The term does not refer solely to technical protection measures, but also includes administrative measures (security policies, rules, regulations, and procedures) and physical measures (video surveillance, protection of facilities, physical access control). How would the information system was protected by the right way, it is necessary to successfully coordinate, implement and supervise all necessary protection measures. Information security in the modern economy has become one of the

key factors of development, which are established numerous standards that include best practices and recommendations for the safe management of information. The standards are guidelines for the development of security policies. Sometimes a general content, and therefore inadequate to the specific needs of organizations.

Security of information systems is very complex and broad issue. The fact is that without the quality of information system security is not possible to fully protect. Qualitative program allows the establishment of security at all critical points of the system, any segment of security, and one of the best programs for achieving this objective is the creation of security policies.

Today's time is the time information, knowledge, innovation, high technology, integration and globalization. Part of that process is intensive development and application of information and communication technologies that have penetrated into all pores of our society and life. Application of these technologies is present in banks, insurance companies, industrial companies, health care, state and local government, schools and colleges, research services, has entered into home use, etc.. From the basis of the changed way of doing business. The world has become a "global village";. Of course, this fact has its dangers. Adequate security of information and information resources are a necessary prerequisite in the realization of information systems. The previous solutions in this area are mainly focused on technical and physical aspects of care. The globalization and integration of today require not only protection programs have a complete security informative policy.

Information Security Policy is a set of rules, guidelines and procedures that define how the information system make it safe and how to protect its technological and informational value. Security policy user obliged to impose rules of conduct and responsibility to protect the information system, i.e. information located in information systems from external and internal undue influence. Policy Information Security organization or institution adapts to the needs and business processes, and therefore not equal for all.

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# Small and Medium Size Insurers and Economic Growth: Evidence from Eastern Europe

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The aim of this paper is to examine the impact of small and medium size insurance companies in promoting economic growth in Eastern Europe region. We focus on non-life insurance industry of eleven countries of the region in the period 2004-2008. The results of the study could be useful for regional governments that seek to improve economic growth.

## Keywords

Eastern Europe, economic growth, insurance, small and medium sized enterprises

## 1. Introduction

Earliest form of insurance emerged in order to protect enterpreneurs from risks arising from overseas commercial trading ventures, thus to facilitate the economic growth through increased trading. Nowadays, insurers act not only as providers of risk transfer and indemnification but also as financial intermediaries. A large body of theoretical literature (e.g. [1]; [2] and [3]) emphasise many benefits of insurance to the economy and society that include the following: 1) enhances financial stability of families and businesses, 2) facilitates competitiveness and development of trade and commerce by enhancing creditworthiness, lowering the total necessary amount and cost of capital and reducing total risk, which enables entreprenurs to enter new business ventures and take additional risks, 3) substitutes and complements public sector expenditures on security programs, 4) facilitates loss prevention either directly, by investing in loss prevention programs such as medical research, fire prevention or highway safety, or indirectly by tying premiums to loss experience, 5) increases liquidity, availability of total capital stock in an economy and efficiency of capital allocation. In addition, empirical evidence from developed economies demonstrates that insurers are one of the major employers, investors and tax contributors in the U.S. [4], in the U.K. [5] and in the EU-15 countries [6].

Although there are differences in the stage of the process of accession to the EU and the level of development, countries of Eastern Europe have similar political, cultural and social background. Historically, insurance markets of these countries have imposed significant barriers to entry, have been monopolistic, strictly regulated and governments dominated in the provision of insurance services. As such these countries does not have history of private insurance, which had been replaced with comprehensive social insurance and universal access to healt care and pensions. The absence of private ownership gave no incentive for the development of risk management and insurance as the only property that could be lost was government or socialy owned. Privatisation is one of the most important changes that have happened on these markets during recent decade. This is especially emhpasised when we know that investment effect of insurance companies on capital markets is a compelling argument that governments should not operate insurance companies.

The academic research of the determinants that promote economic growth focused firstly on capital and labour. Neoclasical growth theory emerged when Solow [7] and Swan [8] introduced technological progress as an additional determinant of economic growth. During late 1980's new growth theory or endogenous growth theory was developed in order to identify gaps that still remaind in explaining economic growth. This theory implies that investment and growth of one sector of an economy can provide positive esternalities to other sectors. When financial services industry is in question, most of the research assessed the impact of the development of banking and stock markets on economic growth (e.g. [9], [10] and [11]). While factors that affects insurance growth have been studied extensively (e.g. [12], [13] and [14]), the empirical research of the impact of insurance on economic growth is scarce. Additionally, the research of the complementarity of insurers', banks' and capital markets' development and economic growth has not been studied extensively. For a comprehensive descussion of these interactions, which might be positive and create synergies in stimulating economic growth or negative, see [15], [16] and [17]. Even when the research is available (e.g. [18], [16], [19], [20], [17] and [21]) it is mainly focused on developed and developing economies, excluding former communist European countries. The evidence on insurance market development in the region of East Europe mentioned above raises questions regarding the impact that the faster growth of insurance activity would have on economic growth. To our knowledge, the research focused on the issue of how small and medium size non-life insurerers promote economic growth for the Eastern European countries is non existent.

The lack of the previous research focused on the interaction between regional non-life insurance industry development and economic growth, its separate and joint impact with banking and capital markets, as well as the need of economies that belong to the Eastern Europe, to facilitate economic growth by own resources, served us as a motivator for the analysis on the topic. Therefore, the aim of this paper is to provide empirical evidence on the impact of small and medium sized non-life insurers on economic growth and interection of non-life insurance, banking and capital market development in promoting economic growth. The findings of this study will be of particular importance to policymakers who seek a better understanding of the determinants of economic growth. The study results will provide them information necessary to determine policies, such as tax policy, that will facilitate economic growth within constraints of limited available capital stocks, present excessive current accounts' deficits and foreign debt burden.

We apply linear country specific fixed effects model for panel data. Panel data encompass 11 formerly Communist European states outside the Soviet Union for the period 2004-2008. We have chosen fixed effects due to small number of control variables in each of three models for capturing the effects of unobserved variables that are potentially correlated with the observed regressors.

The reminder of this article is organised as follows. The second section presents theoretical framework that encompass the explanation of economic growth variables used in the research. The third section presents the data and methodology employed in the analysis. The empirical results are presented in the fourth section that is followed by the conclusion.

## 2. Theoretical framework

Our analysis focuses on the impact of small and medium sized non-life insurers on economic growth and interection of non-life insurance, banking and capital market development in promoting economic growth. Following simmilar approach in previous literature as a measure that depicts economic growth we use log of annual per capita growth in the rate of real GDP (*GDPCH*). Factors that we use as control variables that may explain economic growth include the following: small and medium sized insurers non-life insurance premium, banking and capital

market development, government consumption, export of goods and services, human and physical capital, and small and medium sized non-life insurance companies' investments.

Primary objective of our study is to determine how small and medium size companies in the nonlife insurance market can affect economic growth. As insurers collect premiums for their risk transfer and indemnification services, insurance premiums are used as a standard measure of insurance market development in insurance literature. However, some researchers use total premiums (e.g. [18] and [21]) while others use disagregated data for life and non-life insurance (e.g. [16], [17] and [22]). While recognising its weaknesses, due to small number of countries in the pool we use ratio of gross non-life premium written (*NONLFSM*) of small and medium sized insurers as a proxy for their insurance activities contribution to the economic growth. We hypothesise positive impact on economic growth.

Insurers act not only as providers of risk transfer and indemnification but also as an important financial intermediaries. Some authors (e.g. [23]) emphasise that financial intermediation provides the most important argument for insurers' contribution to economic growth as it links insurance market development to the accumulation of productive capital within an economy and improve the efficiency of investments. Althought the importance of insurers' investments is recognised in previous studies, neither of them test its contribution to the economic growth. Following the thesis provided Webb, Grace and Skipper [16] that life insurers reserves can be used as approximation of the investment function, we use technical reserves of small and medium sized non-life insurance companies as a proxy for their investment function (*RESSM*). The expected effect on economic growth is positive.

Numerious studies (e.g. [9], [10] and [11]) have showed that better developed financial systems have positive effect on economic growth. In the empirical literature inconsitencies exist regarding the complementarity and supplementarity effect between banks and capital market development and thus their conjoint effect on economic growth. In insurance related literature some researchers use only the effect of banking (e.g. [16], [18] and [21]) while others examine the effect of capital market development as well (e.g. [17]). We assume that both banking and capital markets are important for economic growth. As a proxy for the effect of banking (DC) on economic growth we use the ratio of total outstanding bank credit to private sector at end-of-year to GDP. We hypothesise positive impact of banking on economic growth. In order to measure conjoint effect of small and medium size insurance companies with banking we use interaction term (IB) between gross premium written and ratio of total outstanding bank credit to private sector at end-of-year to GDP. As a proxy for capital market development (STV) effect on economic growth we use total value of shares traded during the period, divided by the average market capitalisation for the period. We hypothesise positive impact of capital market development on economic growth. Using the same approach as with banking, we observe the conjoint effect between insurance and capital market development by using interaction term (IC) between gross premium written and total value of shares traded during the period, divided by the average market capitalisation for the period. We hypothesise that positive impact on economic growth of both insurance, banking and capital markets viewed separately is augmented due to the sinergy effect between them.

The government has an important role for the establishment of framework for private sector development in every economy. However, numerious theoretical and empirical research suggest that the larger government consumption the less developed will be financial system, and especially insurance industry. General government consumption is usually used as a control variable when depicting economic growth in insurance related literature (e.g. [16], [17] and [18]). We measure government expenditure (*GGE*) as a ratio of general government expenditures to GDP. We hypothesise negative relationship between government expenditures and economic growth.

Export is one of the factors, considered even in traditional Keynesian theory, that can facilitate economic growth. Empirical studies have confirmed that export positively affect economic growth (e.g. [24] and [25]). Foreign trade is also present as additional explanatory variable in insurance related literature that examines how insurance market development affects economic growth (e.g. [16] and [17]). We measure export of goods and services as a ratio of the value of all goods and

other market services provided to the rest of the world to GDP as a measure of export variable (*EXP*). We hypothesise that export positively affects economic growth.

Education level of workforce is benefitial for economic growth as it adds to productivity, especially for high-technology, services and small and medium-size companies [16]. Different measures of human capital are also used in insurance related literature when examining its impact on economic growth (e.g. [16], [17] and [22]). We measure human capital at a given national market by human capital index following methodology used by United Nations Conference on Trade and Development. This methodology uses following three variables with different weights: literacy rate as percent of population has a weight of 1, secondary school enrolment as percent of age group has a weight of 2 and tertiary school enrolment as percent of age group has a weight of 3. We hypothesize positive relationship between human capital index (*HCI*) at a given national market and economic growth.

Early studies of economic growth considered that it is driven mainly by physical capital and labour input growth. In insurance related literature physical capital stock is used as an additional explanatory variable for economic growth (e.g. [16] and [22]). Following previous literature, we use gross domestic investment per GDP data as a proxy for physical capital stocks. We hypotesise positive relationship beteen physical capital (*GCF*) and economic growth.

## 3. Data and methodology

Our data cover 11 countries, 5 of which were formerly constituent republics of Socialist Federal Republic of Yugoslavia, and 6 countries of the former East Block, over the time period 2004-2008. Countries included in our analysis are Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Slovenia and Serbia. Montenegro was omitted due to lack of relevant available data. Former East Block countries are the following: Hungary, Czech Republic, Slovakia, Romania, Bulgaria and Poland Number of observations for each country varies between 3 and 5 depending on data availability. Descriptive statistics for each variable depicting economic growth as well as expected signs of relationship are shown in Table 1.

	Exp.					Std.		
	Sign	Mean	Median	Maximum	Minimum	Dev.	Skewness	Kurtosis
GDPCH		0.056	0.055	0.104	0.012	0.017	0.359	4.522
DC	+	0.436	0.400	0.788	0.200	0.137	0.655	2.942
STV	+	0.352	0.210	1.186	0.005	0.326	1.029	3.002
GGE	-	0.414	0.426	0.519	0.312	0.054	-0.124	2.268
EXP	+	0.577	0.600	0.860	0.310	0.177	-0.068	1.602
GCF	+	0.259	0.265	0.316	0.193	0.030	-0.427	2.756
NONLFSM	+	3.340	3.415	4.162	1.736	0.526	-1.081	4.423
RESSM	+	3.275	3.560	5.716	1.458	0.879	-0.090	3.799
HCI	+	0.715	0.722	0.834	0.432	0.095	-1.479	5.416

**Table 1** Descriptive Statistics and Expected Signs of Relationship

Source: authors' calculations

Data are obtained from various sources. Non-life insurance premium and technical reserves data are obtained from individual countries' regulatory bodies and national insurance associations. GDP, domestic credit to private sector, stock trading volume, general government expenditure and gross capital formation data are obtained from European Bank for Research and Development (EBRD) economic statistics and forecasts published for each year in *Transition Report*. Population data for countries of ex-Yugoslavia are obtained from individual countries' statistical offices, except for Bosnia and Herzegovina, for which we use

EBRD's estimates of total population excluding refugees abroad. Total exports to GDP data we obtained from World Development Indicators Online (WDI) Database of the World Bank, updated as of October 8, 2009. Finally, adult literacy rate data are obtained from United Nations Conference on Trade and Development (UNCTAD) Human Development Reports for various years while gross enrolment ratio data are obtained from United Nations Educational, Scientific and Cultural Organization's (UNESCO) Institute for Statistics. All monetary values have been denominated to 2008 euro value and adjusted for inflation by authors

Given the cross-sectional and time-series data, we use country specific fixed effects panel data regression model with common coefficients across all cross-section members of the pool. The general equation to be estimated using pooled least squares is:

$$y_{it} = \alpha_i + x_{it}\beta + u_{it},$$

where  $y_{it}$  is a scalar dependent variable, i.e. profitability,  $x_{it}$  is a  $K \times 1$  vector of independent variables,  $u_{it}$  is a scalar disturbance term, *i* indexes country in a cross section, and *t* indexes time measured in years. Since the error terms  $u_{it}$  are potentially serially correlated and heteroskedastic, we propose an autoregressive process of first order:  $u_{it} = \rho u_{it-1} + e_{it}$ , where  $e_{it}$  is white noise. Model incorporates White's consistent covariance matrix [26], for dealing with heteroskedasticity.

Model incorporates the state of economy and it's return on investment as environment in which we observe influences of market liberalisation and concentration on overall profitability. Namely, we estimate the equation:

 $(GDP growth)_{it} = \alpha_i + \beta_1(HCI)_{it} + \beta_2(NONLFSM)_{it} + \beta_3(IBSM)_{it} + \beta_4(ICSM)_{it} + \beta_5(RESSM)_{it} + \beta_6(DC)_{it} + \beta_7(EXP)_{it} + \beta_8(GGE)_{it} + \beta_9(STV)_{it} + \beta_{10}(GCF)_{it} + u_{it}$ 

## 4. Results

The model used in this study has been introduced at the end of previous chapter. In this section we present original results and interpretations concerning the model observed.

The results of the empirical analysis is	s presented in Table 2.
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Variable	Coefficient	Std. Error	t-Statistic	Prob.	
RESSM	-0.0030	0.0168	-0.1780	0.8619	
NONLFSM	-0.0059	0.0400	-0.1479	0.8851	
IBSM	0.0693	0.0845	0.8198	0.4298	
ICSM	-0.0351	0.0936	-0.3745	0.7152	
DC	-0.5702	0.4814	-1.1844	0.2612	
STV	0.1371	0.3527	0.3887	0.7049	
GGE	-0.6678*	0.3253	-2.0526	0.0647	
EXP	0.0344	0.1389	0.2479	0.8087	
GCF	0.4770	0.4033	1.1827	0.2619	
HCI	0.8989*	0.4975	1.8069	0.0982	
R-squared	0.7927	Mean de	pendent var	0.0555	
Adjusted R-squared	0.4345	S.D. depe	endent var	0.0169	
S.E. of regression	0.0127	Sum squa	Sum squared resid		
F-statistic	4.6727	Durbin-W	atson stat	3.4849	
Prob(F-statistic)	0.0097				

Table 2	Parameter	estimates
	r al al licit	countateo

Note: Dependent Variable: GDP growth. Country specific intercepts have been omitted from the table. \*\*, \* denote statistical significance at the 5% and 10% levels.

Source: authors' calculations

Our results regarding general government expenditures and human capital index are as expected. As we hypothesised, general government expenditures show negative effect on Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 economic growth measured by change in gross domesctic product. The coeficient is significant at 10% level. This result is consistent with previous studies, which suggest that if government provide indemnification for property losses, disability, retirement and health care, individuals will have less incentives to purchase insurance, the fact that was especially emphasised during the communist era in Eastern Europe [3]. Also, greater government consumption is generally considered to decrease the efficiency of investments as its investments are directed by political and social considerations (e.g. [16] and [3]).

Furthermore, our results show that human capital index (HCI), that is the greater literacy rate, secondary school and tertiary school enrolement the greater gross domestic product growth would be. As we hypothesised, HCI shows positive impact on economic growth and the coeficient is significant at 10% level.

The results for other variables are rather unexpected. First of all, the impact of small and medium size insurance companies, measured by their gross premium underwriten and their investment activities measured by the volume of gross reserves, diverges from our hypotheses. We have found that none of the variables describing the activities of small and medium insurers have significant impact on economic growth.

Additionally, the results for the impact of banking and capital market development, export and physical capital are rather unexpected. For all of these variables we have found that their impact on economic growth is insignificant.

## 5. Conclusion

The main objective of this article is to examine whether small and medium size insurance companies promote economic growth in the Eastern European economies. The sample covers period from 2004 to 2008 and encompass data for following eleven countries: Bosnia and Herzegovina, Croatia, FYR Macedonia, Serbia, Slovenia, Hungary, Slovakia, Czech Republic, Poland, Romania and Bulgaria. The model observed focuses on the effects of financial sector, government expenditures, export and physical and human capital on economic growth.

The results are partially consistent with previous studies focused on developed and developing countries. The insignificant impact of small and medium size insurers, capital market development and banking signalise urgent necessity for the introduction of stimulative government measures for the development of small and medium size insurance companies.

The research findings are especially important for Eastern European economies as they strungle for financial resources and regulatory framework that will provide physical and social development. The results provide important information for policy makers who seek a better understanding of the determinants of economic growth in order to determine policies that will facilitate economic growth within constraints of limited available capital stocks, present excessive current accounts' deficits and foreign debt burden.

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## Competitive Positioning and Innovation Activities of SMEs: a Strategic Approach

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Innovation and innovation projects are key components of increasing organization competitiveness and overall business performance. Through design activities, creation of new or improving an existing product is conducted, while it's differentiation from other related features in the organization. The design activities in the qualitative and quantitative terms are specific and different from other activities in the organization. Unique perspective of the innovation and design activities can significantly affect the increase in market share and the scope of the overall competitive advantage of the organization. The paper analyzes the reflexive relationship between innovation, creativity and design with special attention to competitive positioning of SMEs. The findings of the research indicate innovation activities as a significant factor of SMEs competitive positioning, therefore offering sound basis for strategic positioning and further gaining of competitive advantage.

## Keywords:

Innovation, Competitive Positioning, Competitive Advantage, Strategic Management, SMEs

## 1. Introduction

Research of this paper is the various dimensions of innovation, design of innovation in the context of innovation and implementations of innovation in SMEs. When it comes to innovation and innovation projects, we can say that the design is a key component of increasing competitiveness and overall business performance. Through the activities of design create a new or improving an existing business.

Invention is the creation of new ideas or of technological knowledge, while innovation is the process by which the idea or knowledge is covered into marketable products or productive techniques, diffusion the routes and time profile by which the innovation is adopted by others. Increasing innovation performance of organizations is a significant task for managers, because organizational culture and strategy in their organizations strives to maintain the efficiency, cost reduction, incremental changes, and focuses on the business of today until tomorrow. But the problem is more complex.

In this research the importance and role of design is also investigated in terms of business and innovation strategy for the SMEs.

Studies of Norwegian companies have found that SMEs that knowingly use the higher level of design with innovative activities, product much higher income from innovation, and above all, they are much more profitable organizations comparing to organizations that are not using the design.

With detailed analysis of the traditional economic model of business, based on supply and demand, the SMEs came to the important conclusion that the new opportunities in the market are not based on the reduction of costs and increase profits in the business model, but primarily consist of the creation of new sources income based on the innovative models. It is clear that changes that occur in the world, dictate economy where the backbone is industry, where machines play a major role, to the economy whose backbone consists of people and puts the focus on customers. Today we are faced with a completely different system of values than five years ago. Speed is replaced by stability and intangible assets have become more valued than the material. Come to the conclusion that creativity as a crucial input of growth becomes more important than capital. A single idea can change the whole future of the organization.

Because of all stated above, it is necessary to identify the importance and role of design in the definition of business and innovation strategy of the SMEs, i.e. to analyze the relation between managers and designers, to emphasize the importance of design management and to show that the design must manage. It should be a strategic decision of top management in the organization, in whose implementation should be participating both the managers and designers and all other employees in the organization.

The right type of innovation is a key component of innovation, which brings great opportunities and long-term profitability of SMEs that have a strategic approach to design and innovation, and that this component should be implemented in daily business operations.

## 2. SMEs and innovation types

The importance of SMEs within the industrial sector in the Republic of Serbia is indicated with next data's:

According to official statistics, in the Republic of Serbia at the end of last year was a total of 76,394 enterprises, of which 75,729 or 99.1 percent of small and medium enterprises.

According to the latest, updated data, the Serbian Business Registers Agency (SBRA), currently there are about 86,000 companies, which can be categorized as small and medium. Also, according to official statistics, at the end of last year, all companies in the Republic of Serbia employed a total of 1.138 million people. Privately owned companies had 407,819 employees, of which 278,264 small, 71,879 to 57,694 medium and large companies.

Private small and medium enterprises at the end of last year had 52,441, of which 44,769 to less than 10 employees, and this is by the most dominant type of enterprise in the Republic of Serbia - a small privately owned company with fewer than 10 employees [1].

It is said that small and medium enterprises are essential for economic development, and that SMEs sector promotes private property and development of entrepreneurial skills. The dominant opinion is that the SMEs are a synonym for the private sector in the figurative sense of entrepreneurship.

The comparative advantage of these companies is that they are flexible, adaptable to changes and flexible to market demands.

Of the total 23 million businesses and 100 million employees in the SMEs sector, as it is in the European Union, nearly 99 percent are small and medium enterprises (in the U.S. there are 25 million; 5 million in Japan). It contributes to the overall EU GDP with 60 percent and provided over 80 million jobs. This means that in the SMEs sector are working two-thirds of the total number of employees in the private sector in the EU. In EU countries, governments adopt regulations that are focused on supporting small and medium enterprises and to stimulate their growth and competitiveness.

Many of the innovation studies in large firms revealed that management requirements for managing normal and existing activities and developing incremental innovations are different

from those required to develop and manage radical innovations. It has been suggested that radical innovations are characterized by uncertainty, knowledge intensity, and boundary crossing. Therefore, in order to develop radical innovations, corporations need to build adjustments into their design, which allow for flexibility and the ability to manage the requirements for developing this type of innovation. It has been argued that radical innovations, which tend to generate very high returns, are more predominant in SMEs compared to large companies [2]. This is because it is easier for SMEs to make such adjustments compared to large organizations [2].

At a general level there have been various classifications of innovation types in large companies. For example, product innovation, service innovation, etc. Product innovation can include new product offerings or improvements of existing products what is most common innovations. Service innovation has become increasingly important. It is important how to make services more attractive to consumers.

There is one more interesting type, process innovation, which involves creating or improving methods of production, service or administrative operations as well as developments in the processes, systems and reengineering activities undertaken to develop new products [3].

There is also a type of innovation that is often referred to as organization innovation [4]. This refers to innovation in management initiatives. Organization innovation is a firm level type innovation in management initiatives. Previous studies on innovation types and their impact on performance have mainly focused on large companies. Figure 1 depicts conceptualization which combines two broad categories of determining factors, namely internal and external which determine the appropriate innovation type.



## Figure 1 Conceptual model [4]

Therefore we focus on a product/project level type innovation because comparative studies on large companies have adopted this focus.

The three types of innovation considered are: product, service and process. From that we can conclude the essential: What types of innovation (product, service and process) are predominant in SMEs?

## 3. Predominant innovations in SMEs

There is a lot of research which shows that for significant number of SMEs is a greater focus on incremental innovation (that is improvements to products, services and/or processes often in response to customer needs) than on radical innovation (that is, new products, services and/or processes and/or new markets) [5]. It also corresponds to studies on innovation types in large companies [6]. This focus on existing core market demands a profound understanding of the needs of the customers in that market and the ability to improve products/services in response to those needs. In other words, innovation is actually related to an increase in sales turnover growth. This may be a challenging message for those entrepreneurs who are constantly seeking the next new product idea and the next new market. It is also a useful message to large companies seeking SMEs for takeover based on the latter's apparent focus on radical innovations.

It is known that there is a link between innovation and sales turnover growth in SMEs and that is an important contribution and has important implications. It confirms the importance of innovation and provides support for the encouragement of innovation in SMEs. Policy and government initiatives directed at SMEs should tend to encourage the development of radical innovations (for example, grants for R&D) and entering new geographic markets (for example, the various programmes to encourage export). Thus, perhaps policy initiatives could also be made to encourage SMEs to focus o incremental innovations based on concentration, focus, deep understanding and rapid response to a core existing market. We find that the age of SMEs is not related to a focus on either radical or incremental innovation. Intuitively, it could be argued that newly established SMEs are more likely to focus on radical innovations than older SMEs. This is based on premise that SMEs are established to exploit something new or radical innovations [7].

## 4. CONCLUSION

Operations of companies today are going on in the dynamic and changing market conditions, which are difficult to predict, which requires a strategic management and monitoring changes that occur in the business environment, as well as training and finding new and better ways to satisfy the increasing consumer needs. Globalization of operations and all the faster pace of technology require innovation and shorter product cycle, and all that has influence to the intensity of competition in certain activities. Basic need is that managers must see the opportunities on time and risks in the market and constantly evaluate the influence of the fundamental importance of competition: the competitive power of consumers, the competitive power of suppliers, and the danger of appearing the new competitors, the danger of appearing deputy products. Differentiation strategy aims to achieve competitive advantage through unique products in the overall market. According to the obtained results, the essence of this paper is that the process of design and innovation is needed in the production process, so it could take place among the leading competitors; then we need to try to find new solutions to meet the needs of consumers; innovation and design mostly are not low-cost solution of problems, but it is the only long-term solution that will bring success.

of the research confirm that the usefulness of the application of information technology is necessary in business nowadays and that without it companies will be difficult to survive on the market and be competitive. They also confirmed that the appropriately formulated and implemented strategy and the choice of adequate decisions are very important for competitive positioning of SMEs, as well as innovation and design. According to the obtained results, the courses of further researches imply continuous monitoring of the reflexive relationship between innovation, creativity and design with special attention to competitive positioning of SMEs, especially under the circumstances of global recession.

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# **Business Incubation Management and Leadership**

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In all economies, small and medium enterprises (hereafter SMEs) are a major source of employment and income as well as a breeding ground for entrepreneurs. In today's world in which innovation is critically important, we can derive advantage from competing on our differences, whether these are cultural, or result from superior insight into particular markets, or from a particular expertise in applying technologies, or from specialist scientific, technological or business expertise. However, to SMEs in developing countries these attributes of competitiveness is somewhat of a science fiction concept as they are faced with numerous bureaucratic, fiscal and political obstacles in their day-to-day activities making the environments in which they operate less business encouraging, let alone being innovative. In order to help SMEs deal with what seems to them insurmountable challenges in their daily pursuit for continued existence, the role of business incubation management and leadership gains an even more intrinsic and important role. Managers and/or leaders have to be the most informed ones, they have to be the first ones to know what is happening, they have to focus and raise their attention to a global level in order to act locally and support their SME tenants, their products, clients, and business environment, and create strategies to seize the benefits of technology and turn it to the benefit of the SMEs they support. Business incubation management and leadership is all about passion, commitment and drive to contribute to creating a favourable doing business environment for SMEs.

## **Keywords**

Business start-ups, incubators, leadership, management, SMEs

## 1. Introduction

Every economy is driven from the success of SMEs. If conditions are created for these enterprises to function in a successful way, then the whole economy grows and reaches a level of increased employment and job creation growth is secured. It is crucial for SMEs to have the necessary support to face with business obstacles, especially in transitional and development economies.

In fact, given today's problems, we need small business innovation more than ever. We've need to create an infrastructure that allows a rapid flow of specialized knowledge in a way that new ideas can be moved into the marketplace, quickly and easily. And we can't allow barriers such as physical proximity, or increasing regulatory measures, to slow down the process. The financial environment is anything but positive right now. Credit availability is tight. That means making better and more effective use of available resources. [1]

One solution to boosting economic growth, job creation and innovation is business incubation. Support for SMEs and entrepreneurship promotion, through instruments such as business incubation is a crucial for an economy. The business incubator is a facility which provides an opportunity for new and existing small businesses to reduce some of the risk

involved in operating through shared services, reasonable rent, access to commonly required administrative support services and access to management, financial and technical assistance. In fact, incubators are promoting entrepreneurship and are helping SMEs to move easily in the world of business. [2] The process of business incubation as a social and managerial process is aimed for supporting and development of the services or products offered from the companies under the incubator cap. Thus, while a business incubator refers to the social organizational environment of the firm, in contrast, business incubation refers to the programs, activities, and events that systematically identifies and evaluates new and emerging opportunities with the objective of bringing a community orientation and collective action to improvements in existing products or processes or the development of totally new products, new technologies and new business models. Under these conditions, the collective role and contribution of entrepreneurial firms, new start-ups, and small businesses have increasingly become indispensable to regional and national economies. This is predicated on the reality that the most essential assets of the modern business enterprise are not embedded in the natural and physical resources, but in the people – the human capital. [3] Business incubators have an essential role in transitional economies, making management and leadership something that needs special attention. In Western Balkan countries, in the recent years several Business Start-Up Centres (hereafter BSCs) were opened, which together with Business Incubators are taking the challenge to help the transition and development of respective economies. Therefore, in this paper through the example of BSC and Business Incubator Bitola the importance of management and leadership of the business incubator in creating favourable environment for promotion of entrepreneurship is shown.

## 2. Business Incubation Management and Leadership in Business Incubator Bitola

## 2.1 General Information about Business Start Up Centre and Business Incubator Bitola

Business Start-up Centre (hereafter BSC) Bitola is ignited by SPARK through a grant of the Dutch Government. It was established in 2007 and since then has been functioning successfully. Main goal of BSC Bitola is to encourage and develop entrepreneurship in the Pelagonija region, through opening of new SMEs, or supporting already existing ones. The Business Incubator was established in December 2008 and is an integral part of BSC Bitola, playing the key role in development and growth of SMEs. The Incubator offers young entrepreneurs, women, vulnerable groups up to the age of 40 years, trainings, consultancy, working space and access to micro-credit which leads to establishment of new and innovative SMEs.

The Pelagonija region is one of the less developed in Macedonia with a high rate of unemployment in 2008 of 34, 5 percent [4]. Therefore, the existence of a Business Incubator in the region is essential for the growth of the local economy. Business Incubator-Bitola is focuses on supporting SMEs through offering different kind of services needed for complete development of new or existing companies in the market. The growth of SME sector in a developing country such as Macedonia is difficult and confronting with daily bureaucratic, fiscal and political obstacles and in this environment the role of business incubation management and leadership is becoming more important. The Incubator in Bitola until now has been successful while striving to produce successful businesses that are able to function independently and are financially viable. Its results for one and a half year are showing the success of management and leadership in this incubator and actions taken in order of accomplishing these results for the abovementioned period.

## Table 1 Results of Business Incubator

Number of supported companies	87	
Number of new opened companies	46	
Job places supported	256	
Gender representation of the owners of the companies	66 male	21 female
Support of SMEs through microcredit's	200 000 €	
Number of business skills training conducted	90	
Number of participants in the business skills trainings	2000	

Sector	% of companies	% of all sectors	employees	% of all employees
Agriculture	8	9,20%	9	3,50%
IT	12	13,79%	30	11,80%
Services	23	26,44%	64	25,10%
Small Industry	20	22,99%	103	40,40%
Retail	7	8,05%	22	8,60%
Tourism	4	4,60%	4	1,60%
Trade transport & Logistic	4	4,60%	4	1,60%
Sports	2	2,30%	2	0,80%
Energy	2	2,30%	2	0,80%
Training and Education	1	1,15%	10	3,40%
Building and Construction	1	1,15%	2	0,80%
Financial Services	1	1,15%	1	0,40%
Healthcare	1	1,15%	2	0,80%
Wholesale	1	1,15%	1	0,40%

#### Table 2 Distribution of companies in sectors

The results of that the Business Incubator has achieved are presented above. The successful management of the incubation process takes a number of actions, measures and strategies which have to be put into practice. In the following text the importance of the incubation management and leadership is described for encouraging the growth of SMEs and creating conditions for their sustainable development.

## 2.2 Business Incubation Management

Managing the business incubation simply refers to managing the process where start-up businesses are nurtured through the tough business stages and supported by providing the environment and facilities for them to thrive. In the following text through the practical example of the Business Incubator in Bitola, we explain how the process of management is functioning in an incubator.

"Managers must encourage the development and socialization of entrepreneurs and provide them with incentives and rewards so they can unleash their creativity and innovation to create value and generate productive outcomes for the firm's stakeholders." [5]

In the specific case of Business Incubator Bitola, managing the incubation environment means balancing the internal environment as well as the external, a delicate balance between internal HR resources, organizational climate and external factors as policy, regulation etc.

The Incubator manager is the key person for successful managing of the Incubator. There are a number of skills which a successful manager should have: "verbal and written communication, organizational skills, sound business management background-essential for the operation of the incubator and counselling small business owners, financial management, and community

relations-for interaction with the community surrounding the facility. Marketing an incubator is an unusual mix of processes." [6]

"Business incubators embody a systematic approach to new enterprise development which can be described as consisting of five dimensions:

- Enterprise development
- A business consultancy network
- Entrepreneurial synergy
- Flexible affordable working space
- Shared office services

These five dimensions describe the purpose, benefit, design and management of business incubators. The rationale for the incubator concept lies in its capacity to enhance the initiation, survival and growth of enterprises. If business incubators are to deliver economic development benefits, then more attention needs to be paid to promoting business growth among incubator clients. The components of best practice of one business incubator management rest on how incubators are designed and operated to rapidly move through the initial, real estate focused phase of their development, to concentrate their time and effort on enterprise development by providing value-adding management services to their clients.

The incubator manager will process experience particularly early in the life of a client firm, he will bring expertise in strategic planning for small enterprises, and be well connected to small business resources and contacts in the business community, as links to information and advice. Further, the incubator manager may have established a business development network and is most often the access point to that network. "[7]

Professional business consultant	Project manager	Hard-nosed buyer
Business trainer	Policeman	Persuasive sales rep
Free legal adviser	Everybody's agony aunt	Font of all knowledge
Computer expert	Housekeeper	Endless source of contacts
Health and Safety officer	Trusted counsellor	Rent collector
Social worker	Ambassador to all	Arbitrator

#### Table 3 The many disguises of the incubator manager [8]

Table 3 is presenting the roles which every manager has to perform in order to achieve successful incubation management in its incubator.

In Business Incubator Bitola, the manager is managing:

- The facilities to be always in a right condition for the tenants and virtual members
- The finances of the incubator to be balanced
- Initial and existing businesses to participate in the Business Plan Competition
- Administrative and legal costs to be reimbursed to the new companies
- The business consulting services, mentoring, couching targeted to meet the specific needs of the Incubator tenants and virtual members,
- Customized trainings to be offered to the SME sector
- Companies to apply for credit lines under favourable conditions.
- SME's to become beneficiaries of a specialized program for co-financing international standards
- Creating models of networking activities
- Promotion and marketing of the companies supported (printed promotional support, on-line promotion, web-promotion, business fair promotion, conference promotion and informal promotion of BSC/BI companies and their products/services.)

The example of the Business Incubator Bitola shows how the process of incubation management functions, using different strategies and tactics according the local conditions but the management machine is driven by the leadership which is described below in the text.

## 2.3 Business Incubation Leadership

"Becoming a leader is synonymous with becoming yourself. It is precisely that simple, and it is also that difficult."

Warren G. Bennis

When talking about leadership in the business incubation process, a process of incessant change and not so chivalrous challenges, core traits of a good leader such as integrity, competence, courage, vision, and inspiration become the essential essence to success. Where the manager administers; the leader innovates. Where the manager has a short- range view; the leader has a long-range perspective. Where the manager asks how and when; the leader asks what and why. Where the manager has his or her eye on the bottom line; the leader has his or her eye on the horizon. Where the manger accepts the status quo; the leader challenges it.

The good leader must have the discipline to work toward his or her vision single-mindedly, as well as to direct his or her actions and those of the team toward the goal. A leader must be able to communicate clearly and passionately, as passion is contagious.

The essence to success is mastered through:

*Integrity* is the integration of outward actions and inner values. Honest dealings, predictable reactions, well-controlled emotions, and an absence of tantrums and harsh outbursts are all signs of integrity.

*Dedication* means spending whatever time or energy is necessary to accomplish the task at hand. A leader inspires dedication by example, doing whatever it takes to complete the next step toward the vision. By setting an excellent example, leaders can show followers that there are no nine-to-five jobs on the team, only opportunities to achieve something great.

*Magnanimity* means giving credit where it is due. A magnanimous leader ensures that credit for successes is spread as widely as possible throughout the company. Conversely, a good leader takes personal responsibility for failures. This sort of reverse magnanimity helps other people feel good about themselves and draws the team closer together.

Leaders with *humility* recognize that they are no better or worse than other members of the team. A humble leader is not self-effacing but rather tries to elevate everyone.

*Openness* means being able to listen to new ideas, even if they do not conform to the usual way of thinking. Good leaders are able to suspend judgment while listening to others' ideas, as well as accept new ways of doing things that someone else thought of. Openness builds mutual respect and trust between leaders and followers, and it also keeps the team well supplied with new ideas that can further its vision.

*Creativity* is the ability to think differently, to get outside of the box that constrains solutions.

Creativity gives leaders the ability to see things that others have not seen and thus lead others in new directions.

*Fairness* means dealing with others consistently and justly. A leader must check all the facts and hear everyone out before passing judgment.

Assertiveness is the ability to clearly state what one expects so that there will be no misunderstandings. A leader must be assertive to get the desired results. Along with assertiveness comes the responsibility to clearly understand what followers expect from their leader.

A *sense of humor* is vital to relieve tension and boredom, as well as to defuse hostility. Effective leaders know how to use humor to energize followers. Humor is a form of power that provides some control over the work environment. And simply put, humor fosters good camaraderie.

## 3. Conclusions

The importance of building the management and leadership capability of key individuals within the incubation process is recognized as paramount at international, national, regional and local Proceedings of International Conference for

Entrepreneurship, Innovation and Regional Development ICEIRD 2010 levels. The incubation community in Bitola now recognizes the management and leadership need of the sector and the market opportunity that is emerging. However, it is likely that continuing professional development needs across the sector will remain strong and grow for many managers and leaders, whatever their specific context. [9]

In all economies, SMEs are a major source of employment and income as well as a breeding ground for entrepreneurs. However, to SMEs in developing countries these attributes of competitiveness is somewhat of a science fiction concept as they are faced with numerous bureaucratic, fiscal and political obstacles in their day-to-day activities making the environments in which they operate less business encouraging, let alone being innovative. In order to help SMEs deal with what seems to them insurmountable challenges in their daily pursuit for continued existence, the role of business incubation management and leadership gains an even more intrinsic and important role. Business incubation management and leadership through sound management decisions is all about passion, commitment and drive to contribute to creating a favourable doing business environment for SMEs.

The manager of the Incubator should invite initial and existing businesses to participate in the Business Plan Competition, model used in Business Start-Up Centre and Business Incubator Bitola. The process of support, networking, creating different activities (marketing, accounting consultations, mixed consultations) will allow companies to build new business relationship and use business opportunities and that are the main roles of the manager for providing results.

Therefore we have seen through the example of the Business Incubator Bitola, how the process of management and leadership is a successful model, creating positive results.

The positive energy spread by the leader is another part of the puzzle that helps and motivates companies to keep working in most difficult moments. Knowledge and competencies are one of the key values of the leader. Previous experience in business is crucial. Real assessment of a situation is necessary in everyday situations and work, where for certain issues, the actions taken must be with undesirable end. Integrity of the leaders is vital for leadership; the creativity and initiative are source of a lot of new ideas, innovations, because the world is driven by new challenging ideas.

Business incubation management and leadership through sound management decisions is all about passion, commitment and drive to contribute to creating a favourable doing business environment for SMEs.

If these two parts are defined in just one word, that word would be synergy.

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## **Value Co-creation and Innovation**

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Value co-creation, is an emerging business and innovation paradigm, however, there is not enough clarity on the distinctive characteristics of value co-creation as compared to more traditional value creation approaches. The present paper summarizes the preliminary results from a first empirically-derived research study focusing on the relationship between the degrees of value co-creation and innovation in sample 273 firms that were selected for being representative of the breadth of their value co-creation activities. The results include the identification of the key components of value co-creation based on a research methodology using web search and Principal Component Analysis techniques as well as the innovation performance of the firms derived on the basis of a similar, web search-based approach. It concludes with an analysis of the results from a linear regression analysis examining the relationship between the degrees of value co-creation and innovation. To the best of our knowledge this is the first study providing clear-cut results about a positive relationship between value co-creation and innovation.

## Keywords:

Value co-creation, innovation, quantitative study, principal component analysis, empirical research, online innovation metric

## **1** Introduction

Value co-creation, is an emerging business and innovation paradigm describing how customers and end users could be involved as active participants in the design and development of personalized products, services and experiences (Prahalad & Ramaswamy, 2004; Payne, Storbacka, & Frow, 2008; Sawhney, Gianmario & Prandelli, 2005). One could identify several research streams that have provided a solid starting point for the discussion of different value co-creation perspectives, including: customer involvement in the value creation process (Ramirez, 1999; Ulaga, 2003; Prahalad & Ramaswamy, 2004; Laukkanen & Lauronen, 2005; Sawhney, Gianmario & Prandelli, 2005; Etgar, 2007; Kohlbacher, 2008; Payne, Storbacka & Frow, 2008); value chain, value constellation and value net management (Norman & Ramirez, 1993; Bovet & Martha, 2000; Möler & Svahn, 2006; Huemer, 2006; Hearn & Pace, 2006; Flint & Mentzer, 2006); service dominant logic of marketing (Lusch & Vargo, 2006; Flint & Mentzer, 2006; Cova & Salle, 2008; Vargo, Maglio & Akaka, 2008; Michel, Brown & Gallan, 2008; Michel, Vargo & Lusch, 2008); customer involvement in design activities (Berger, Möslein, Piller & Reichwald, 2005; Piller, Schubert, Koch & Möslein, 2005; Sanders & Stappers, 2008); knowledge co-creation in product

development and innovation processes (Blazevic & Lievens, 2008; Kohlbacher, 2008); design and development of virtual customer environments (Nambisan & Nambisan, 2008; Nambisan & Baron, 2009); user-driven innovation and user innovation toolkits (von Hippel, 2001; Baldwin, Hienerth & von Hippel, 2006; Piller & Walcher, 2006); customer-driven business models (Pynnönen, 2008; Pynnönen, Hallikas, & Savolainen, 2008); and, value co-creation activities in marketing (Cova & Salle, 2008; Zwick, Bonsu, & Darmody, 2008).

The majority of existing research studies on value co-creation typically focus on the and gualitative analysis of a relatively small number of cases by means of deeper ethnographic description of their co-creation practices aiming at the conceptualization of the different types of the interactions between end users, the firm and its value network partners. Although very useful, such studies miss the advantages of the typical empirically-driven quantitative approaches that would be able to benefit from larger size samples of firms and that could be more appropriate for theory building through the development and testing of specific research hypotheses. In addition, the majority of the existing studies tend to stay at the descriptive stage of the theory development process (Carlile & Christensen, 2005) and there is little knowledge about the potential outcomes of different value co-creation approaches in terms of innovation, profitability, customer retention and satisfaction, market share or competitiveness. The goal of this paper is to provide preliminary results from a first empirically-derived model describing the relationship between the degrees of value cocreation and innovation. The results are based on a sample of 273 firms that were selected for being representative of the breadth of their value co-creation activities. More than 25% of the firms in the research sample are Open Source (OS) firms. Almost 40% of the firms are members of the Eclipse OS Foundation (www.eclipse.org). The specific selection of the types of firms in the sample is based on the assumption that a parallel study between the OS and the value co-creation paradigms could only benefit value co-creation research.

## 2 Research objective and methodology

## 1. Objective

Our research study has three main objectives: *first*, to use website content and exploratory factor analysis techniques in developing and validating a model that can be used to identify the key components of value co-creation and provide a categorization of the distinctive approaches employed by a large sample of companies using the internet as a key channel for value co-creation with end users and customers; *second*, to apply a similar keyword web search-based approach to measure the innovation capacity of all the firms included in the research sample, and *third*, to examine the relationship between the degrees of value co-creation and innovation. Our key underlying hypothesis is that firms' systematic use of value co-creation approaches enables them to better capture the innovative contributions of its partners and customers and enhances their capacity to introduce new products, processes and services (Tanev et al., 2009). We therefore expect to find a positive relationship between the degree of firms' value co-creation activities and their innovation performance.

## 2. Research steps

Hicks (2006) and Ferrier (2001) pioneered the concept that an analysis of frequency of specific keywords use on public websites can be an accurate representation of the degree of importance the website owners place on the concepts those keywords were chosen to represent. Allen et al. (2009ab) and Tanev and Ruskov (2009) applied this concept to

studying value co-creation practices and articulated the key steps of the data gathering and analysis work flow. All these researchers show that factor analysis of the keyword frequencies can be used to extract dimensions of the key aspects underlying the type of phenomenon that is being studied. Some of the key preliminary assumptions of this research are: i) value co-creation is a fundamental part of the open source development model, ii) open source firms are generically co-creative, iii) studying open source firms could help other (non-software) firms to 'translate' value co-creation insights into their own business and development processes. The key steps in our research process can be summarized as follows.

*Research step # 1.* The process started with a detailed study of the research literature on value co-creation to come up with some of its key characteristics.

*Research step # 2.* The next step consisted in associating the preselected characteristics with specific keywords that are expected to be found on companies' websites. The association of the characteristics with the keywords starts with information from research publications (for example, Prahalad & Ramswamy, 2004) but is then complemented with a keyword verification and enrichment procedure based on the visual inspection of particular websites (TSMC.com, Second Life, Facebook and Android) and a visual inspection of co-creation blogs, developer sites and/or community forums. The initial pass resulted in a list of more than 100 combinations of keywords. We have used logical combination of terms (keyword engineering) to reduce the initial set of keywords to less than 60.

*Research step # 3.* The sample selection included firms that are well known for employing co-creation as key article of business model and firms that were used as examples of co-creation in research literature. To reduce the influence of outliers, firms with less than 50 and more than 1.5 million web pages were excluded from the sample.

*Research step # 4.* The next step consisted in the application of factor analysis. Factor analysis requires the ratio of [sample size (# firms)] / [# of variables (# keywords)] to be between 6 and 10 (Costello, 2005). This is why the focus at this stage of the process was to select approximately 300 firms.

*Research step # 5.* The data was gathered by using keyword search tool based on Google Atlas search API. It scans specified websites and returns two values - the number pages beneath the site and the keyword counts normalized by the number of pages.

*Research step # 6.* The factor analysis was done using SPSS based on the following criteria<sup>\*</sup> (Field, 2005): i) determinant of the SPSS correlation matrix should be larger than  $10^{-5}$ ; ii) KMO test for sampling adequacy should be larger than 0.5; iii) Bartlett test of sphericity should be less than 0.05; iv) Factor analysis must converge. Using these criteria the initial set of keywords was iteratively reduced to less than 30 through logical combinations between keywords and through elimination of correlation singularities in the SPSS correlation table.

*Research step # 7.* The extraction of the factors was done by PCA. The Varimax rotation was chosen since it provided the highest values for the rotated component matrix loadings. The number of factors was determined by examining the Scree plot (Field, 2005). The three factors included all variables with a loading larger than 0.5.

*Research step # 8.* The meaning of factors was interpreted on the basis of the combinations and the loadings of the variables (keyword combinations) within each of the factors. The composition of the factors was used to construct the value co-creation components for each of the firms in the sample.

<sup>\*</sup> http://www.statisticshell.com/factor.pdf Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

*Research step # 9.* The procedure was replicated to gather data on the innovation capacity of the firms. The innovation was measured by a modified web search tool searching for a combination of keywords related to innovation<sup>†</sup> (Souitaris, 2002; Weerawardena & McColl-Kennedy, 2002) such as new products, services, processes, features, versions, releases etc.

*Research step # 10.* The next step was to perform linear regression tests to examine the relationship between value co-creation and innovation (Tanev et al., 2009). The SPSS software was used to provide a preliminary descriptive statistics for all the variables. The normality of the variables was determined by examining their Kurtosis and Skewness values.

3. Unit of analysis and sample selection

The unit of analysis is the website of an organization actively engaged in value co-creation. The sample included 273 firms and four types of firms (described in Table 1).

 Table 1. Breakdown of sample organizations: ECL – firms from the Eclipse Foundation, OSS firms, OSS+ECL – OSS firms from the Eclipse Foundation, GEN – general profile firms.

Ту	pe of firms	Frequency	Percent	Valid Percent	Cumulative Percent
1	ECL	108	39.6	39.6	39.6
2	GEN	65	23.8	23.8	63.4
3	OSS	75	27.5	27.5	90.8
4	OSS+ECL	25	9.2	9.2	100.0
	Total	273	100.0	100.0	

## 3 Summary of results

## 1. Keyword selection and factor extraction

The set of keywords consisted of 24 combinations of words (Table 2). The starting point of the factor extraction process is the examination of the determinant of correlation matrix.

Table 2. List of the combination of keywords used in the web search and in the analysis

No	List of keyword combinations
	Keywords retained after the initial screening based on the correlation matrix coefficients
1	customer+OR+user+dialog+OR+dialogue+OR+OR+conversation+OR+feedback+OR+call+OR+interact+
	OR+"information+exchange"+OR+"information+sharing"+OR+"information+access"+OR+engage
2	customer+OR+user+OR+forum+OR+connect+OR+network+OR+networking
3	lease+OR+rent+OR+license+OR+"self+serve"+OR+"self+service"
4	customer+OR+user+cooperate+OR+cooperation+OR+collaboration+OR+partnership
5	customer+OR+user+suggest+OR+suggestion+OR+input+OR+request+OR+demand
6	internal+expertise+OR+resource
7	customer+OR+user+risk+manage+OR+management+OR+control+OR+assess+OR+reduce+OR+
	reduction+OR+potential+OR+exposure
8	customer+OR+user+IP+OR+"intellectual+property"
9	customer+OR+user+learn+OR+learning
10	product+OR+process+OR+service+evolution+OR+evolve
11	customer+OR+user+experience
12	customer+OR+user+test+OR+trial+OR+beta
13	integrated+online+services
14	simulation+OR+simulate+OR+model+OR+modelling+OR+"virtual+world"+OR+"reference+design"+OR+"reference+

<sup>&</sup>lt;sup>†</sup> The combination of innovation keywords were designed on the basis of insights from the Oslo Manual, Organization for Economic Co-operation and Development http://www.oecd.org/dataoecd/35/61/2367580.pdf Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

-	
	ference+flow"+OR+"demo+application"+OR+toolkit+OR+tutorial+OR+sdk+OR+"software+development+kit"
15	product+OR+process+modularity+OR+modular+OR+module
16	customer+OR+user+produce+OR+assemble+OR+manufacture
17	customer+OR+user+options+OR+choice+OR+choose
18	design+OR+process+flexibility+OR+flexible+OR+adaptable
10	customer+partnerships+OR+interaction+OR+relationship+OR+participate+OR+participation+OR+
19	activity+OR+action
20	cost+reduce+OR+reduction+OR+saving
21	customer+OR+user+survey+OR+review+OR+voting+OR+vote+OR+rate+OR+rating
22	trust+OR+honesty+OR+integrity+OR+transparency
23	customer+OR+user+disclose+OR+inform+OR+disseminate+OR+reveal
24	customer+OR+user+dashboard+OR+statistics

Table 3 shows the determinant of the correlation table and the results of the Kaiser-Meyer-Olkin (KMO) and Bartlett's significance tests indicating an adequate degree of correlation for the factor analysis to converge (Field, 2005).

Metric		Actual value	Limit value
Correlation table determinant		1.7 x 10 <sup>-5</sup>	> 1.0 x 10 <sup>-5</sup>
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.892	> 0.5
Bartlett's Test of Sphericity	Approx. Chi-Square	2890.198	
-	Df	276	
	Sig.	0.000	<0.05

Table 3. Factor extraction validity tests

Table 4 shows the composition of the principal value co-creation components in the case of a three component solution. These results were used to construct three value co-creation component variables for each of the firms by adding the frequencies of each of the keyword combinations weighted by their specific loadings. Another fifth total co-creation variable was constructed by adding all the three co-creation component variables. Table 5 shows the normalized variable descriptive statistics of all three co-creation variables.

Table 4. Composition of the principal components in the case of three component solution

	Three principal component version		Value co-creation		
		components		s	
No	Keyword combinations	1	2	3	
1	customer+OR+user+produce+OR+assemble+OR+manufacture	.727	-	-	
2	product+OR+process+modularity+OR+modular+OR+module	.705	-	-	
3	customer+OR+user+IP+OR+"intellectual+property"	.669	-	-	
4	design+OR+process+flexibility+OR+flexible+OR+adaptable	.599	.524	-	
5	internal+expertise+OR+resource	.554	-	-	
6	lease+OR+rent+OR+license+OR+"self+serve"+OR+"self+service"	.550	-	-	
7	product+OR+process+OR+service+evolution+OR+evolve	.521	-	-	
8	customer+OR+user+disclose+OR+inform+OR+disseminate+OR+reveal		-	-	
9	simulation+OR+simulate+OR+model+OR+modelling+OR+ "virtual+world"+OR+"reference+design"+OR+"reference+flow"+OR+ "demo+application"+OR+toolkit+OR+tutorial+OR+sdk+OR+ "software+development+kit"	-	-	-	
10	customer+OR+user+survey+OR+review+OR+voting+OR+vote+OR+rate+ OR+rating	-	-	-	
11	customer+partnerships+OR+interaction+OR+relationship+OR+participate+ OR+participation+OR+activity+OR+action	-	.778	-	
12	customer+OR+user+risk+manage+OR+management+OR+control+OR+	-	.698	-	
Proc	Proceedings of				

	assess+OR+reduce+OR+reduction+OR+potential+OR+exposure			
13	customer+OR+user+cooperate+OR+cooperation+OR+collaboration+OR+ partnership	-	.691	-
14	cost+reduce+OR+reduction+OR+saving	-	.685	-
15	trust+OR+honesty+OR+integrity+OR+transparency	-	.647	-
16	customer+OR+user+experience	-	.627	-
17	customer+OR+user+dialog+OR+dialogue+OR+OR+conversation+OR+ feedback+OR+call+OR+interact+OR+"information+exchange"+OR+ "information+sharing"+OR+"information+access"+OR+engage	-	-	-
18	integrated+online+services	-	-	-
19	customer+OR+user+learn+OR+learning	-	-	.752
20	customer+OR+user+suggest+OR+suggestion+OR+input+OR+request+OR +demand	-	-	.737
21	customer+OR+user+OR+forum+OR+connect+OR+network+OR+ networking	-	-	.716
22	customer+OR+user+options+OR+choice+OR+choose	-	-	.524
23	customer+OR+user+test+OR+trial+OR+beta	-	-	.512
24	customer+OR+user+dashboard+OR+statistics	-	-	-

Table 5. Normalized variable descriptive statistics in the case of three principal components

	Ν	Mean	Std. Deviation	Deviation Skewness Kurtosis		tosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Component_1**(1/3)	273	2.290	.821	.087	.147	105	.294
Component_2**(1/4)	273	1.857	.556	.028	.147	.251	.294
Component_3**(1/2)	273	5.984	2.457	.264	.147	126	.294
Component_All**(1/3)	273	3.973	1.105	078	.147	238	.294

## 2. Innovation metric

The measurement of innovation performance should equally include product, process and service types of innovation. The innovation metric was constructed by means of a combination of keywords related to new products, new services and new processes (Weerawardena & McColl-Kennedy, 2002; Souitaris, 2002) (Table 6). This combination of keywords enables access to product related company web pages discussing new products, new products, new product features, versions, releases etc.

 Table 6. a) Combination of keywords related to the online innovation metric. b) Normalized descriptive statistics of the online innovation metric

a)	new AND product OR service OR process OR application OR solution OR feature OR release OR version OR
	launch OR introduction OR introduce OR "new product" OR "new service" OR "new process" OR "new
	solution" OR "product launch"

b)	N	Mean	Std. Dev.	Skewness		Kur	tosis
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Innovation**(1/2)	273	4.745	1.760	126	.147	286	.294

## 3. Linear regression analysis – relationship between co-creation and innovation

The next sections will present the main results showing the relationship between value cocreation in the case of three principal value co-creation components.

a) whole research sample

Table 7. Models describing the relationship between value co-creation and innovation for the whole sample: 1) R Sq. value 0.452; 2) Adj. R Sq. value 0.490.

Model		Un-std C	oefficients	Std Coefficients	t	Sig.
		В	Std. Error	Beta	В	Std. Error
1	(Constant)	.792	.276		2.869	.004
	Component_2**(1/4)	2.129	.142	.672	14.951	.000
2	(Constant)	.645	.268		2.412	.017
	Component_2**(1/4)	1.599	.177	.505	9.010	.000
	Component_3**(1/2)	.189	.040	.264	4.708	.000
		Dopondonty	ariable: Inpov	ation**(1/2)		

Dependent variable: Innovation\*\*(1/2)

## b) Non-OS, non-members of Eclipse - GEN

Table 8. Model describing the relationship between value co-creation and innovation for GEN-type firms: R Sq. value 0.431.

Model		Un-std C	oefficients	Std Coefficients	t	Sig.
		В	Std. Error	Beta	В	Std. Error
1	(Constant)	.469	.597		.786	.435
	Component_2**(1/4)	2.349	.340	.657	6.914	.000
		<b>-</b>		(****(***		

Dependent variable: Innovation\*\*(1/2)

c) OSS firms

Table 9. Models describing the relationship between value co-creation and innovation for OSS firms: 1) R Sq. value 0.417; Adj. R Sq. value 0.457.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		В	Std. Error	Beta	В	Std. Error
1	(Constant)	.043	.706		.061	.952
1 .	Component_All**(1/3)	1.225	.169	.646	7.225	.000
	(Constant)	101	.679		149	.882
2	Component_All**(1/3)	.714	.248	.376	2.877	.005
	Component_2**(1/4)	1.239	.455	.356	2.723	.008
	5			**( 1 (0)		

Dependent variable: Innovation\*\*(1/2)

### d) Eclipse firms

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		В	Std. Error	Beta	В	Std. Error
1	(Constant)	.347	.406		.854	.395
	Component_All**(1/3)	1.060	.095	.735	11.148	.000
2	(Constant)	.227	.403		.563	.575
	Component_All**(1/3)	.656	.207	.455	3.170	.002
	Component_2**(1/4)	.903	.413	.314	2.187	.031

## **Table 10**. Models describing the relationship between value co-creation and innovation for Eclipse<br/>firms: 1) R Sq. value 0.540; 2) Adj. R Sq. value 0.551.

Dependent variable: Innovation\*\*(1/2)

## e) OSS firms members of Eclipse

**Table 11.** Models describing the relationship between value co-creation and innovation for OSSEclipse firms: 1) R Sq. value 0.645; 2) Adj. R Sq. value 0.723.

Model		Unstand Coeffi	lardized cients	Standardized Coefficients	т	Sig.
		В	Std. Error	Beta	В	Std. Error
1	(Constant)	101	.810		125	.901
	Component_2**(1/4)	2.509	.388	.803	6.464	.000
2	(Constant)	-1.212	.795		-1.523	.142
	Component_2**(1/4)	2.023	.374	.648	5.410	.000
	Component_3**(1/2)	.317	.107	.353	2.952	.007

Dependent variable: Innovation\*\*(1/2)

## 4 Analysis of results

## 1. Factor interpretation

The first out of the three value co-creation components includes the following keywords:

#### Component 1

No	Keyword combinations	Comp. 1	C2
1	customer+OR+user+produce+OR+assemble+OR+manufacture	.727	
2	product+OR+process+modularity+OR+modular+OR+module	.705	
3	customer+OR+user+IP+OR+"intellectual+property"	.669	
4	design+OR+process+flexibility+OR+flexible+OR+adaptable	.599	.524
5	internal+expertise+OR+resource	.554	
6	lease+OR+rent+OR+license+OR+"self+serve"+OR+"self+service"	.550	
7	product+OR+process+OR+service+evolution+OR+evolve	.521	

This co-creation component could be interpreted as "Customer and user involvement in production, assembly and manufacturing aiming at design and process flexibility based on product modularity, internal expertise, resources and self service, where IP becomes a key issue." The second out of the three value co-creation components includes the keywords:

#### Component 2

No	Keyword combinations	Loading
1	customer+partnerships+OR+interaction+OR+relationship+OR+participate+OR+ participation+OR+activity+OR+action	.778
2	customer+OR+user+risk+manage+OR+management+OR+control+OR+assess+OR+ reduce+OR+reduction+OR+potential+OR+exposure	.698
3	customer+OR+user+cooperate+OR+cooperation+OR+collaboration+OR+partnership	.691
4	cost+reduce+OR+reduction+OR+saving	.685
5	trust+OR+honesty+OR+integrity+OR+transparency	.647
6	customer+OR+user+experience	.627
4	design+OR+process+flexibility+OR+flexible+OR+adaptable	.524

This co-creation component could be interpreted as "Partnerships and cooperation for cost reduction, design and process flexibility aiming at better customer and end user experiences based on risk management, transparency and trust." The third out of the three value co-creation components includes the following keywords:

#### **Component 3**

No	Keyword combinations	Loadings
1	customer+OR+user+learn+OR+learning	.752
2	customer+OR+user+suggest+OR+suggestion+OR+input+OR+request+OR+ demand	.737
3	customer+OR+user+OR+forum+OR+connect+OR+network+OR+ networking	.716
4	customer+OR+user+options+OR+choice+OR+choose	.524
5	customer+OR+user+test+OR+trial+OR+beta	.512

"Learning mechanisms based on the existence of user networking forums enabling customer suggestions, input, demands and requests, and leading to multiple options for users through involvement in test and beat trials."

## 2. Value co-creation and innovation

The analysis in this section will focus on the relationship between the three value co-creation components and the innovation metric. Our results lead to the following findings:

- a) For the whole sample and for all types of firms there is a positive relationship between the innovation metric and some or the value co-creation component with an average explanatory power of 53.04%.
- b) The second value co-creation component appears persistently in the models as one of the key independent variables.
- c) The third value co-creation component plays a complementary role to the second component in the case of the whole sample and in the case of OS firms members of the Eclipse Foundation. Its inclusion in the models increases their explanatory power.
- d) OSS and Eclipse Foundation firms are quite representative since in each of these cases the positive relationship between the innovation and value co-creation is based on both, the total and the second, value co-creation components.
- e) The linear regression model with the highest degree of explanatory power (72.3%) is found in the OSS firms members of the Eclipse Foundation. It involves both the second and the third value co-creation components as independent variables.

- f) The linear regression model with the lowest degree of explanatory power (43.1%) is found in the non-OSS firms, non-members of the Eclipse Foundation. It involves as independent variable only the second value co-creation component.
- g) The best linear regression model for the whole sample has an explanatory power 49.0%. It is based on both the second and the third value co-creation components.

The summary of the results given above clearly supports our initial hypothesis about the existence of a positive relationship between value co-creation and innovation.

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## Networking as a Key Factor for Successful Implementation of Innovations (Comprehensive Analysis of Russian and European Experience)

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The purpose of the paper is to describe how the network of the innovative companies, government bodies and universities can provide a best solution for implementation of current innovations under turbulent business environment. Using a sample of different Russian and European innovative companies preconditions and methods of building of successful networking were examined in order to make a comparative analysis and to analyse differences in implementation of of innovations and to analyse causes these differences. the It was found that the differences in implementation Russian and European companies were engendered by the complex of the specific economic, politic and cultural (human) reasons. This research helps to better explain the ways to create a successful networking between different parties to provide better opportunities for implementation of innovations in current economic situation. The current research has the practical implication that it is important to understand the results of this research when deciding how to find a better way/network for the implementation of innovations. This study examines different situations in several countries using samples of different Russian and European companies.

## Keywords

Innovation, Networking, Venture Finance

## 1. Introduction

The systematic review from which the findings in this paper are presented was motivated by a quest to establish the extent to which Russian and European companies are engaged in networking activities when looking for develop their innovative capacity. Specifically, the objectives of the paper were to:

- 1.1) Establish the nature of the relationship between networking and innovation
- 1.2) Compare the degree and impact of networking behavior in different countries.
- 1.3) Explore examples and literature on the failure of business-to-business networks

# 2. Inter-Relationships Between The Networking infrastructure and Networking Interface

For the purposes of this paper a network has been defined as: "*a firm's set of relationships with other organisations*" [1]. The literature provides two major reasons to explain why business-to-business networks form.

The first focuses on the resource requirements of firms where they are *induced* to form network relationships with other firms as a way of obtaining access to technical and/or commercial resources they lack [2]. From this perspective, the availability of opportunities to form relationships tends not to be viewed as a constraint. The second argues that *opportunities* to form links tend to reflect prior patterns of inter-firm relationships. A firm's ability to develop network relationships with other firms is consequently based on its existing relationships and network capability [3].

The relative ease with which business-to-business networks form was also found to be influenced by social institutions. Empirical evidence shows that these institutions can shape the cultural conditions and infrastructure for networking, as well as, acting as brokers and intermediaries in network formation. Institutions such as: the legal system; the banking and finance system; the structure of labour markets, the education system and the political system [4] all shape the development of the infrastructure that is required to assist the formation of business-to-business networks.

Alliances enable firms to gain access to resources, particularly when time is of the essence [5]. Networks enable small business owners to link into R&D that is contracted out by larger firms, to engage in joint R&D ventures and to set-up marketing and manufacturing relationships [6]. Shan, Walker and Kogut [7] suggest that the number of collaborative relationships that a firm is involved in is positively related to innovation output, while conversely, closed networks have been found to foster innovation more than open ones [8]. The nature of networks encountered in this review illustrate that the optimal design for a network is contingent on the actions that the structure seeks to facilitate.

The evidence on network configuration shows a number of key points:

2.1) The nature of network configuration and its utility for innovation and competitiveness depends on the strategic requirements of individual firms [9].

2.2) Firms will use networks in different ways and will reconfigure them if necessary [10].

2.3) Network configuration often differs between different forms of innovation required by actors; networks for product innovation are quite different rom networks for process innovations [11].

2.4) All types of network configuration constantly change and adapt depending on the requirements of partners and the context within which the network operates [12].

To summarise, regarding networking formation and network configurations for innovation a number of points can be established from the empirical data. Networking can have a positive impact on innovation in all organisational contexts (i.e within established large organisations, small businesses and new entrepreneurial start-ups).

Research on 'innovation systems' has recently illustrated that innovation occurs more effectively where there is exchange of knowledge between systems, for example: between different industries; regions; or between science and industry [13]. Based on this work the importance of diversity of relationships in networks has been shown to have an impact on innovativeness [13]. The value of diverse partners for innovation is demonstrated in Kaufmann and Tödtling's [13] empirical research and were supported by Perez and Sanchez's [1] work on technology networks in the Spanish automobile industry and Romijn and Albu's [14] work on small high technology firms in the UK. These studies show that innovation is influenced by many actors both inside and outside the firm and that the most important partners are from the business sector, customers first (33.5% of firms) and suppliers second (21.9% of firms). Studies on partnering have also shown that the willingness of firms to co-operate outside of these 'direct' relationships was rather limited. For example, co-operation with Universities was 8.9% of firms in Kaufmann and Tödtling's work. In contrast, however, research in Germany highlights significant national differences with respect to involvement with research institutes and universities and illustrates the importance of scientific partners in some industry sectors [15].

The types of partner firms engaged in networking appears to be related to the type of innovation occurring. For example, incremental innovators rely more frequently on their customers as innovation partners whereas firms that have products new to a market are more likely to collaborate with suppliers and consultants. Advanced innovators and the development of radical innovations tends to demand more interaction with universities. This point is supported by Gemünden, Heydebreck and Herden's [16] survey of 4564 firms in the Lake Constance region (on the border between Austria, Germany and Switzerland).

The evidence shows that the innovation process, particularly complex and radical innovations benefit from engagement with a diverse range of partners which allows for the integration of different knowledge bases, behaviours and habits of thought. More risk adverse firms, however, tend to link their innovation activities and networking relationships to customers because knowledge of clients' demands as the risk of failure for the innovating firm is perceived to be lower. Innovation is no less valuable but is more incremental and productivity gains are more modest. This suggests a direct relationship between type of networking activity and innovation type (e.g. radical or incremental). The studies highlighted [15], [16] also show that firms that do not network possess much lower levels of competence in innovation.

The integration of suppliers in the innovation process has been highlighted as one of the factors leading to frame-breaking innovation [13], [1], [14].

The supply chain literature on networking behavior and innovation shows that supply relationships are one of the most important networking arrangements affecting innovation performance and productivity. Such relationships can be managed if firms are committed to collaboration are skilled in managing network relationships and are prepared to invest in research and development. Although much of the evidence points toward the important role of suppliers, co-suppliers and distributors in the innovation process it is to customers that businesses most often turn when seeking network relationships on issues associated with innovation [17].

Von Hippel [18] was one of the first researchers to highlight the pivotal role of customers or users in innovation processes. He highlights two forms of approach to innovation and networks and argues that customer focused approaches are the most effective as opposed to product focused ones. Customers should play an active role in the innovation process and are capable of identifying novel ideas for development [18].

In Gemünden et al's [16] study, for example, 75% of companies engaged customers in the innovation process and nearly 50% identified it as a precondition for innovation success. Conway [19] also found in his study of 35 successful innovations that customers were crucially important at the idea generation stage of the innovation process. Companies that stated they received essential information from customers were more successful with technological innovation and had greater commercial success.

The nature of the value of networks with key customers needs to be treated with some caution. Such networking relationships appear to be ideal for promoting incremental innovation and customers can usefully help innovators identify market opportunities. The role of third parties, such as professional associations, trade associations and publicly funded bodies specifically aimed at promoting innovation, such as technology transfer centres, have a positive impact on the development of interorganisational networks and innovation.

Whilst the review focused principally on business-to-business networks, science partners play an important role as independent network brokers and intermediaries within business networks. The important role of informal personal relationships in networks outside of the market interface was also evident in the wider research on science partners [20], [13]. As well as direct benefits of interaction between science and industry, science partners provide an important role as intermediaries within networks acting as network nodes where the exchange of knowledge can occur [21].

The importance of appropriate venture finance and loan finance for innovation has been widely documented [22]. The evidence base on venture capital networks and innovation

shows a number of key issues. Coinvestment between venture capital firms in entrepreneurial businesses has been shown to be both beneficial for venture capitalists and provides better quality and larger funds for entrepreneurial businesses [23], [24]. The quality of links between venture capital firms, therefore, provides an important networking infrastructure for the commercialisation of innovation [25].

Examining the evidence on finance networks shows that they are important within the networking infrastructure and that cooperative investment appears to be beneficial for both investing firms and entrepreneurial businesses.

Institutional mechanisms designed specifically to create and facilitate networks come in many forms, the most common forms are clusters, incubators and centres for cooperation. Despite the paucity of evidence, it is possible that innovation policies and regional infrastructures can assist networking activities leading to innovation.

The evidence on incubation tends not to focus specifically on the networking advantages of firms operating within incubators, however, it does illustrate some general benefits where networking is cited [26], [27], [25].

## 3. Network Management

Network management is also considered crucial for successful innovation and firms need to improve their proficiency [28]. The evidence on the management of networks shows that managing informal and formal agreements, while establishing trust, means that the management of network relationships is inherently difficult. Those responsible for managing network relationships need to learn core network competencies over time, for example, being able to identify when an agreement needs a contract or should be based on good faith; the role that friendship or reputation plays in the identification of partners and, the kinds of milestones or interventions are needed to ensure a project stays on course [29].

## 4. Network Limitations

The vast majority of the evidence analysed was extremely positive about the value of business-to-business networks and their impact on the innovation process. All networks have rules of engagement which constrain the partners' behaviour [30]. These rules are governed by the network's governance mechanisms and the infrastructure (particularly industrial culture) within which the network is embedded. Although the positive impact of networking on innovation performance appears conclusive some studies show that innovation can occur more effectively within large organisations.

Although networks have been shown to contribute to innovation and competitiveness, this paper has already demonstrated that they can also inhibit innovation by encouraging anticompetitive behaviour, suggesting that the ultimate value of a network is dependent upon what it is used for. The use of networking has also been shown to conflict with the strategic interests of particular companies at certain times.

From the review of the evidence a number of other limitations of networking have been demonstrated.

4.1) Love and Roper [31] when modelling UK, German and Irish investment in research and development in manufacturing find no link between external networking and innovation performance. Instead they find that innovation is more dependent on internal organisational networks. Tanichev [32], [33] pointed differences in the networking and innovation performance for Russian companies.

4.2) Harris, Coles and Dickson [34] find that inter-firm networking can facilitate the innovation process but it will not necessarily lead to innovation success.
4.3) Tomas and Arias [35] also point out that closely connected networks also encounter drawbacks for example, increasing the complexity of the innovation process; losing ownership control of the innovation; and, information lop-sidedness where partners have very different understandings about the nature of agreements.

# 5. Conclusions

This paper of the evidence base concerning the relationship between networking and innovation has highlighted a number of areas in need of future research. The first obvious gap in the literature concerns the relationship between networking and different forms of innovation, such as, process and organisational innovation. To date the focus of research across disciplines has been primarily on product innovations. Whilst process and organisational innovation may be, by their very nature, more difficult to study, the types of networking activity occurring in the development, diffusion and implementation of process and organisational innovation warrants serious attention. It may then be possible to compare networking activities and configurations across these different types of innovation and derive useful conclusions about the differences.

More generally, perhaps the most significant area for future research is in the area of network dynamics and network configurations. The evidence suggests that there is considerable ambiguity and contestation within the literature regarding appropriate network configurations for successful innovation. Whilst networking configurations are clearly contingent upon such factors as sector, type of innovation (radical vs. incremental; product vs. process), far more systematic research needs to be conducted in this area.

The review also highlighted that study on innovation and networking attracts interest across many disciplines and it is useful to suggest here that funding be provided for more interdisciplinary research in the areas that have been highlighted here. The paper has also highlighted that dense networks have a positive impact on long-term innovation.

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# Measuring Knowledge Management and Relation with Balanced Scorecard

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The implementation of knowledge management (KM) is a strategic process and needs careful measures setting in order to monitor its effectiveness and performance. While investing in Information Technology (IT) within the KM initiative, organisations need to measure their value-added for the core business processes and for the knowledge management (KM) impact. Deploying, for instance, groupware, CRM or decision support tools, this should be validated on the basis of the contribution to KM. The paper discusses measuring of knowledge management in organizations as a corporate strategy. Going through the process of developing measures, organizations should keep in mind the difficulties to create metrics for knowledge sharing and knowledge management as a whole with one-to-one correlation between knowledge management actions and business results. There is hardly anything more difficult in knowledge management than developing metrics that assess organizational knowledge-based assets because of the intangible nature of such resources. In theory and practice different methods are considered for measuring the performance of corporate strategies, some of which are referred to in this paper. A special emphasis is given on using Balanced Scorecard (BSC) methodology. Some suggestions are given as well for relying on best practice in the measurement process. Finally, a performance measurement development process is proposed and a preliminary set of predefined indicators for each of the BSC perspectives.

#### **Keywords**

Strategy Planning, Measuring Knowledge Management, Metrics, KPI, Performance Measurement

#### 1. Introduction

The development of global information and communication networks in the last century contributed to a fast changing environment in all areas of the economy and the society. The Information and Communication Technology (ICT) uptake facilitated enormously the creation of new knowledge and the emergence of new scientific disciplines. In the new economy knowledge in both of its forms – tacit and explicit – has become one of the main factors for sustainable development and competitive advantage. The fast speed of knowledge creation, on its side, has lead to faster innovation, sophistication of products and services and their supply and demand, and business processes have become more dynamic than ever before. Subsequently, within the competitiveness and economic growth objectives of the European Union set at the Lisbon Summit in 2000, the concept of knowledge has emerged as main

differentiator and unique resource, and European companies and organizations have become more concerned how to successfully manage their knowledge resources and gain benefits from them [1], [2], [4].

Knowledge management (KM) has emerged as response to the increased complexity in the business world and the need to take advantage of the available knowledge assets in organizations. It has developed as a new practice-oriented scientific discipline, exploring the opportunities of new management methods, cultural and organizational approaches and technology infrastructures in service of the companies. However, its proper implementation strongly depends on the initial deep analysis of knowledge resources availability and gaps, their flows and usage in organizations, and later monitoring its results and impact on the organization. Exploring the available tacit and explicit knowledge in the organization, and how knowledge processes underpin business processes and create value for them, which is the organizational framework related to technology, culture and leadership, the study of all these issues should provide input for building the knowledge management system, and measuring its successful implementation [2], [3], [4], [5].

It is generally accepted that measurement of intellectual capital, and subsequently knowledge assets, creates large difficulties. Most companies are aware of the importance of measuring innovation and knowledge creation results, and have acknowledged their shortcomings. Unfortunately, there is a lack of a generally accepted methodology for valuing intangible assets [1]. Therefore, this paper is providing an overview of some methodologies used for measurement of intellectual capital, and in particular knowledge assets in organizations. A special focus is made on the Balanced Scorecard (BSC) methodology of Kaplan and Norton and its proper usage for knowledge management monitoring.

# 2. Measuring success in Knowledge Management as a corporate strategy

There is a lack of a generally accepted methodology for valuing intangible assets. Sveiby [9] suggests four categories of measuring approaches for intangibles. These categories are an expansion of the classifications suggested by Luthy [8] and Williams [7], namely:

• Scorecard methods (SCM): The range of components of intangible assets or intellectual capital is identified and some indicators and indices are generated and reported in scorecards or as graphs. SCM methods are similar to direct intellectual capital methods. The difference is that SCM do not estimate the financial value of the intangible assets.

• Direct intellectual capital (DIC) methods: They estimate the financial value of intangible assets by identifying their diverse components. After identification of these components, they can be evaluated either individually or as an aggregated coefficient.

• Return-on-assets (ROA) methods: The well known formula of ROA method is the average pre-tax company earnings for a period of time divided by the average tangible assets of the company. The result is a company ROA that is then compared with its industry average. The difference is multiplied by the company's average tangible assets to calculate average annual earnings from the intangibles. Dividing the above average earnings by the company's average cost of capital or an interest rate, one can derive an estimate of the value of its intangible assets or intellectual capital.

• Market capitalization methods (MCM): calculate the difference between a company's market capitalization and the book value of its shareholders' equity as the value of its intellectual capital or intangible assets.

Sveiby [9] points out that the different measurement methods offer diverse advantages. In merger and acquisition situations or for stock market valuations, for example, ROA and MCM methods are useful as they are financial methods that offer financial valuation. These two

methods can also be used for comparisons between companies within the same industry. Financial value of intellectual capital could be assessed also by these two methods. DIC and SCM are much more of full-value methods. Their advantages are that they can create a more comprehensive picture of organisations health than financial metrics.

On bases of survey of metrics used for intellectual capital measurement, Liebowitz et al. [6] consider some quantitative measures which could be used also in KM measurement. For example, as possible new metrics are proposed:

- number of new colleagues relationships
- reuse rate of knowledge
- capture of new expertise (number of new concepts) from knowledge repositories
- number of new ideas generating innovative products or services
- number of lessons-learned and best practices applied to create value-added
- number of new knowledge created (including patents, trademarks, articles, books written, conference talks, etc.) per employee
- investments for professional development/ training and R&D per employee.



Figure 1 IT balanced scorecard, Source: [10]

In order to provide the necessary background for strategic planning, and to monitor and control future strategy implementation, it is important to integrate in the whole process suitable key performance indicators (KPI). In strategic management, for measuring of the performance of organisations are used a number of recent approaches such as Balanced Scorecard (BSC) of Kaplan and Norton, Six Sigma, etc. [11], [12], [13]. For example, Kaplan and Norton provide an approach for linking strategic planning with performance measurement, which gains popularity in last few years. Their BSC methodology evaluates four main different perspectives: Financial, Stakeholders, Internal processes, and Learning and Growth [11]. When implementing BSC methodology for the purposes of KM, by developing the four perspectives are analysed both, the main internal and external aspects of the organisation, and on this base are defined strategy objectives [14]. Keyes [10] considers that

the BSC methodology could be adapted successfully also to KM performance measurement including a new aspect – the strategic management of IT (Figure 1).

Another approach was suggested by Lehner et al. [15]. The authors propose to start with the strategic goals of the organisation, and on this base to derive the specific success factors for its individual areas. The following five steps should be followed:

- analysis of the key strategic goals of the organisation
- Identification of their specific success factors
- Development of indicators for measurement of the success factors and determining the information requirements thereof
- Establishment of a sample of measurement points, carrying out the measurement and the analysis of the results
- Presentation and transformation of the results into action programmes and projects.

## 3. Defining indicators for measurement of Knowledge Management

There is a slight compromise on what to measure at each strategic level and perspective, how to measure it, how often to measure it; or even how often, when and why to reengineer the metrics. However, KPIs should be rolled up into the overall corporate strategy.

The way of thinking about modelling and implementing metrics is different at every company. There are different methodologies for modelling and implementing corporate strategy, particularly KM strategy, and corresponding correct metrics [18].

At the vanguard of innovations normally are companies, therefore researchers shall benefit from working more closely with companies to verify how they deal with innovation, research, and efficiency.

In the process of identifying indicators there are always two key question rising. "Which indicators are most urgent?" and "Which indicators are most immediately feasible?" Key Performance Indicators are of peak priority for the executive management. Thus, relaying on best practices' measurement should include [16]:

- Limiting the number of measures
- Including measures for all perspectives and all strategies
- Seeking balance among measures
- Developing solid baseline date
- Developing measures for past, present, and future
- Not over-relying on output, process and input measures
- Watching for unintended incentives
- Holding people accountable for results

When establishing metrics, an organisation should be aware of some potential challenges, such as:

- Complexity (too many metrics, excessive detail, or heavy data capture) can make metrics too difficult to use
- Metrics aimed at short-term performance often have unintended long-term
- Consequences employees tend to perform well in activities which are measured, and neglect those which are not monitored
- Knowing the difference between in-process and end-process metrics, whereas inprocess metrics are used to help understand what is working, and end-process metrics measure process effectiveness
- Quantitative metrics often miss important subjective elements (i.e., qualitative factors)

• Lagging, current, and leading metrics should all be included. Knowing the past is a chance to understand the future and determine if change is occurring, and predict the future based upon sound data.

The measurement, analysis and management processes examine how an organisation selects, gathers, analyzes, manages, and improves its knowledge and how it manages its information systems. Subsequently, the following process could be suggested (Figure 2) [16].



Figure 2. Performance Measures Development Process

There is a general understanding that additional analysis of existing indicators in the organisation (if such exist at all), adapting and linking them is a more pragmatic approach than developing new ones. Therefore, on bases of authors' experience, an attempt is made here to predefine a base set of strategic KPIs. It would be beneficial for the organisations to use such set of predefined indicators for speeding-up the process of implementing the measurement, and strategy as a whole. Nevertheless,further research and experiments are needed in order to select and define more comprehensively and accurately a base set of predefined KPIs. The indicators given in Table 1 are based on the BSCs main perspectives.

Perspective	KPIs
Financial	Adjusted operating profit and related growth
	Adjusted operational costs
	Improved cost structure
	Revenue growth
	Expanded revenue opportunities
Customers	Total communications revenue
	Achievement gap
	Improved management costs
	Enhance customers value
Internal	Enhanced company image
	Expand R&D
	Enhance Collaborative Community
	Support Collaborative Activities
	Estimated Investments
	Increase employees engagement
	Optimize existing processes
	Improve efficiency internal processes
Learning & Growth	Potential for future growth
	Workforce cross-training rates
	Empowering people
	Productivity
	Improving infrastructure
	Remuneration - compensation, incentives and reword
	Motivation
	Attractiveness
	Employee alignment

#### Table 1 Set of strategic general KPIs

#### 3. Conclusions

This paper makes an attempt to enter the debates on measuring knowledge management performance in organisations. It is obvious that in this new scientific area a number of challenges exist in order to ensure, first, a proper knowledge management framework, and second, to monitor and evaluate its impact and benefits for the organisation and for achieving its corporate goals and higher business performance. The paper, thus, considers a possible process for performance measurement and some KPIs which could be used as a set of predefined indicators. While these indicators could be fully utilised for measuring the effectiveness on the organisation as a whole of the knowledge management strategy, there is a need to focus on some more details linked to usage of information technology and its impact on KM success. However, 'soft' issues linked to human resources and tacit knowledge capturing and sharing need some more detailed measures. Knowledge audit approaches and techniques' details should be studied as well in order to ensure a strong coincidence of initial KM steps and the regular monitoring of its implementation and measurement of the performance based on knowledge processes in the organisation and the management of its knowledge assets.

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# Understanding the Recession Effect on Entrepreneurial Activity Focused on Innovation and Technology in South-East Europe Countries Using Global Entrepreneurship Monitor (GEM) Indicators

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This paper analyzes entrepreneurial activity indicators focused on innovation and technology as the significant instrument by which entrepreneurs contribute to economic development. GEM estimates the innovation of entrepreneurial ventures in different ways. The objective of this paper is to show the effect of recession on entrepreneurial activity based on innovation and technology in South-East Europe (SEE) countries, participants in the world's largest academic entrepreneurship research. The second objective of this paper is to promote the results of the GEM research in order to emphasize a real potential of these results for the creation of policies aimed at improvement of entrepreneurship in certain countries by using horizontal and vertical comparison of indicators of entrepreneurial activity in different phases of entrepreneurial process.

#### Keywords:

entrepreneurial activity, innovation and technology, recession

## 1. Introduction

Global entrepreneurship monitor (GEM) is a not-for-profit academic research consortium whose goal is to make high quality international research data on entrepreneurial activity readily available to as wide an audience as possible. GEM is the largest single study of entrepreneurial activity in the world. GEM was initiated in 1999, as cooperation between London Business School and Babson College. In that year, research was conducted in 10 countries. In 2009, the number of countries participating in GEM increased by 25%, so a total number of them is 54 and they vary greatly in terms of economic development. In order to provide better presentation, GEM countries are categorized as follows: factor-driven economies in which, as the name implies, economic development is mainly based on natural resources, efficiency-driven economies in which the main driver of development is economy of scale and innovation-driven economies.

The year 2009 will be remembered for an economic recession in most countries across the world. As governments search for the ways of rebuilding their economies, our understanding of the relationship between entrepreneurship and development is still incomplete. Partly, the reason for this lies in the fact that research in these two fields is separate. This understanding is also limited by a lack of nationally harmonized data on entrepreneurship.

Traditional analyses of economic growth and competitiveness have mainly neglected the role of small and medium enterprises in country's economy. GEM uses a comprehensive approach and

takes into consideration the degree of involvement in entrepreneurial activity in a country, identifying different types and phases of entrepreneurship. GEM focuses on three main objectives: (1) to measure differences in the level of entrepreneurial activity among countries; (2) to uncover the factors that determine the levels of entrepreneurial activity; (3) to identify the policies that may enhance the level of entrepreneurial activity.

Entrepreneurial activity can have different forms, but one of the most significant aspects is the level in which citizens of a certain country create new business activity, as in absolute amount as well as together with other economic activities such as business discontinuation. There are different types of entrepreneurial activity within new business activity. The best approach for assessing entrepreneurial activity is to observe it as a process, not as an event. This is the reason why GEM measures entrepreneurial intentions, new and nascent entrepreneurial activity, established business activity and business discontinuation.

In order to indicate at a more complete understanding of the recession effect on entrepreneurial activity focused on innovation and technology in SEE countries, this paper includes an overview of key indicators of situation and changes in the period of recession.

# 2. Understanding the process of entrepreneurial activity in the GEM model

In accordance with its objectives, GEM takes a broad view of entrepreneurship and focuses on the role which individuals have in the entrepreneurial process. Unlike most entrepreneurship data sets which measure new and small enterprises, GEM studies the behavior of individuals when they start and manage a business. This is the difference between the GEM data and other data sets, most of which record firm-level data on new firm registrations. New enterprises are mostly started by individuals. Even in established organizations, entrepreneurial attitudes, activities and aspirations of individuals are different.

The second leading principle of the GEM research is that entrepreneurship is a process. In accordance with that, GEM observes the actions of entrepreneurs who are at different phases of the process of creating and sustaining an entrepreneurial venture, what is shown in Figure 1.



Figure 1. Entrepreneurial process and GEM operational definitions

The conception phase lasts for three months in which "nascent entrepreneur" paid wages. The conception phase ends with the birth event of actual business. Individuals who currently own and manage a new venture that paid wages for more than three months but not more than 42 months are labeled as "new business owner-managers". Established business owners own and manage an established business that is operational for more than 42 months.

There are two indicators in this entrepreneurial process: early-stage entrepreneurial activity rate and established business activity rate. Nascent entrepreneurs rate and new business owners-managers rate observed as one present the indicator of early stage entrepreneurial activity in the country, which present the dynamics of activity of new firms. High rates of established business owners may indicate positive conditions for enterprise survival on the market. However, this is not necessarily the case. If a country experiences a high degree of established entrepreneurship combined with a low level of early-stage entrepreneurial activity, it indicates a low level of dynamics of entrepreneurial activity.

# 3. The analysis of the effects of recession on entrepreneurial activity in SEE countries

Recession that started showing its effects in mid-2008, spread to almost all countries in the world, including the GEM countries as well. Recession is defined as a periodical slowing down in the economic activity of a country, which is accompanied by a parallel decline of the general economic environment. This ultimately implies a fall in entrepreneurial activity. Recession is characterized by the fact that it appears in cycles in one country. After that, it takes several months or quarters for it to spread to other countries. In some countries recession lasts longer and it is much more widespread, which definitely makes its overcoming more difficult.

In order to examine the effect of recession on entrepreneurial activity in 2009 GEM research, the Adult Population Survey respondents were explicitly asked these two questions: (1) How does recession affect new entrepreneurial activities? (2) To what extent is entrepreneurship used as a mechanism that turns the downward trend into an upward trend? By analyzing the answers to these questions and comparing entrepreneurial activity through certain stages of entrepreneurial process in 2008 and 2009, it is possible to take a stand regarding the effects of recession on entrepreneurial activity.

The main indicators of entrepreneurial activity for SEE countries that participated in the GEM research in the past two years are given in Table 1.

Country	Year	Nascent entrepreneurial activity rate	New business owners	Early entrepreneurial activity (TEA)	Established business owners	Business discontinuation
Efficiency	/-driven econ	omies				
BiH	2008.	6,4	2,7	9,1	8,7	5,0
	2009.	3,1	1,3	4,4	3,9	3,1
	Difference	-51,56%	-51,85%	-51,11%	-55,17%	-38,00%
Croatia	2008.	4,9	2,8	7,6	4,8	2,9
	2009.	3,5	2,2	5,6	4,8	3,9
	Difference	-28,57%	-21,43%	-26,32%	0,00%	34,48%
Serbia	2008.	4,0	3,6	7,6	9,3	3,7
	2009.	2,2	2,8	4,9	10,1	1,9
	Difference	-45,00%	-22,22%	-35,53%	8,60%	-48,65%
Innovatio	n-driven ecor	nomies				
Slovenia	2008.	4,1	2,4	6,4	5,6	1,3
	2009.	3,2	2,1	5,4	5,7	1,3
	Difference	-21,95%	-12,50%	-15,63%	1,79%	0,00%

Table 1 Entrepreneurial activity indicators for BiH, Croatia, Serbia and Slovenia

One of the main items in Table 1 is early entrepreneurial activity (the TEA index). The TEA index is the measure of adults aged 18 to 64, who are involved in entrepreneurial activity either as nascent entrepreneurs or new business owners. It is common that the increase in economic development results in the decline in a total level of early entrepreneurial activity. To a certain degree, this explains the 2009 decline in early entrepreneurial activity in Bosnia and Herzegovina which, in 2008, was in the group of factor-driven economies. The decline in early entrepreneurial activity was registered in other SEE countries as well. After BiH, the largest decline was registered in Croatia (35.53%) and Serbia (26.32%), whereas the smallest decline was registered in Slovenia which is the only country in the third group which includes innovation-driven economies. Less start-up businesses can be explained by the fact that entrepreneurs in recession see less entrepreneurial chances. However, it should not be undermined that recession can sometimes release outdated markets and resources while some people can even see new chances for starting a business due to the change of situation caused by recession. The things that matter are: the type of entrepreneurial activity which is started, motivation and entrepreneurs' aspiration. The 2009 GEM research results give an insight into this issue, since methodology considers variations in different types and stages of entrepreneurial activity.

It is interesting that Bosnia and Herzegovina is the only country in which the decline in established businesses was registered. In Croatia, this indicator stayed at the level registered in the previous year whereas in Serbia and Slovenia this indicator is on the increase. The rate of this indicator corresponds to anti-recession measures taken by certain governments. This leads us to the conclusion that Serbia had the most efficient measures aimed at supporting established businesses. The relation between the TEA index and the number of established business owners also decreases by higher economic development. This also reflects a lower rate of transfer from the category of new business owners to the category of discontinued businesses, which is particularly evident in innovation-driven economies.

GEM studies entrepreneurial business innovation in many ways. First of all, it evaluates early entrepreneurs and established business owners, bearing in mind to what extent their products/services are new (or unknown) to customers. The other way in which GEM evaluates entrepreneurial business innovation is to measure the level of competition, i.e. whether owners-managers notice that many, some or no companies offer similar products and services. By combining these innovation measures, product novelty and competition level, the index is created which serves as that basis for ranking countries into groups, according to the rate of early entrepreneurial innovation. Basically, this index measures the percentage of early entrepreneurial activities that offer new product-market combinations. This index has its own limitations which is the reason why other GEM indexes are used to fill up gaps. The most important is the super index of entrepreneurship – global entrepreneurship index.

The rates of the GEM research central indicators aimed at business innovation at an early entrepreneurial activity are given in Table 2.

Country	Year	Sample	TEA%	TEAJOB	TEANPM	TEATEC
Efficiency-driven economies						
BiH	2008.	1.586	9	15,33%	8,49%	2,03%
	2009.	1.999	4,4	13,84%	11,91%	1,38%
	Difference		-51,11%	-9,72%	40,28%	-32,02%
Croatia	2008.	1.696	7,6	19,67%	9,07%	3,14%
	2009.	1.665	5,6	23,18%	18,30%	1,36%
	Difference		-26,32%	17,84%	101,76%	-56,69%
Serbia	2008.	1.813	7,6	20,24%	12,37%	3,91%
	2009.	1.766	4,9	10,91%	27,62%	1,26%
	Difference		-35,53%	-46,10%	123,28%	-67,77%
Innovation-	driven econo	mies				
Slovenia	2008.	3.019	6,4	17,33%	28,11%	9,17%
	2009.	3.030	5,4	19,46%	37,21%	6,63%
	Difference		-15,63%	12,29%	32,37%	-27,70%

Table 2 GEM innovation indicators for BiH, Croatia, Serbia and Slovenia

TEAJOB is an indicator that shows the expectation that a business will open at least 10 new jobs in five years after starting the business (or in the next five years in case of the existing company – with the additional prerequisite of at least 50% growth in business). The results show that entrepreneurs in Serbia have the lowest expectations regarding the opening of new jobs. They are followed by entrepreneurs from Bosnia and Herzegovina whereas entrepreneurs in Croatia and Slovenia showed rather high expectancy rate for new jobs. These results can also be analyzed in the context of the EU membership or country's expecting to join the EU.

TEANPM is an indicator by which businesses express their new market-product combination: a product is new to all or the majority of buyers, there are few or no competitors. The fact that entrepreneurs in all countries, especially in Serbia, showed the ability to present new products to the market during recession is encouraging. Such expectations are in accordance with the theories that state that the best innovations are initiated in recession (or depression such was the one in the 1930s), when the society is more open to changes. The recent research conducted by Koellinger and Thurik (2009) shows that entrepreneurship is the major indicator of business cycle phases. By using the GEM data for OECD countries, they show positive correlations between innovative (and nascent) entrepreneurial activities based on noticed chances and the actual GDP cycle measured two years later. This shows that entrepreneurship is neither independent of the cycle nor is it clearly pro-cyclic or againstcyclic phenomenon. It is rather "over-cyclic". In the years prior to recession, there were chances for investment in research and development of some, potentially productive sectors such as "green technology", but the prevailing business models, that are still regarded as successful, do not allow for these new elements to be introduced. In recession, while the leading businesses still try to recover from the shock caused by changes, new (young) businesses can stabilize their positions since all old facts are challenged.

TEATEC is an indicator that shows the level of business activity in the sector of high or medium technology, according to the OECD classification. These indicators are completely harmonized with The Ease of Doing Business Index (EDBI), The Index of Economic Freedom (IEF) and The Global Competitiveness Index (GCI) that, along with the Global Entrepreneurship Index – GEI make the so called "diamond". They are also harmonized with the indicators included in the Report "SME Policy Index 2009: Progress in the Implementation of the European Charter for Small Enterprises in the Western Balkan". A low level of the TEATEC indicator in 2008, and its further decline in 2009, clearly show the

problem related to the present and future competitiveness of Bosnia and Herzegovina, Croatia and Serbia.

# 4. Research on recession effect on innovation and technology that support entrepreneurial activity in SEE countries

Research results based on data analysis which were collected through National Experts Survey-NES show scores of experts on entrepreneurial environment through nine entrepreneurial framework conditions (EFCs) for development of entrepreneurship in national economies. Among them there are scores on growth, development and innovation. The objective of this survey is to develop a dialogue with the country experts about entrepreneurship and to identify their attitudes and suggestions regarding the ways entrepreneurship can be increased and/or encouraged in their country.

The National Experts Survey measures attitudes and opinions of experts collected through a standardized questionnaire which consists of several categories of questions related to entrepreneurial environment. Interview is mostly used as a technique for this survey. The sample included 36 national experts. A national expert is someone who is directly involved in delivering or assessing a main aspect of an entrepreneurial framework condition in the country, and they could be: entrepreneurs, politicians, scholars, government officials, etc. Although the sample does not satisfy strict scientific criteria of representativeness, special attention is given to proportional representation of experts from different levels (national, regional and local).

Experts' opinion on growth, development and innovations are expressed through answers to 28 questions grouped in 5 units: market openness, research and development transfer, intellectual property rights, attention to high growth, and interest in innovation.

		Market	R&D	Intellectual	Attention	Interest in	Average
		openness	Transfer	Property	to High	Innovation	
				Rights	Growth		
BiH	2008	2,67	1,81	1,78	2,08	2,83	2,23
	2009	2,41	1,77	1,95	2,22	2,64	2,20
	Difference	-9,74%	-2,21%	9,55%	6,73%	-6,71%	-1,35%
Croatia	2008	3,02	2,2	2,66	2,62	2,96	2,69
	2009	2,61	2,26	2,54	2,67	3,11	2,64
	Difference	-13,58%	2,73%	-4,51%	1,91%	5,07%	-1,86%
Serbia	2008	2,98	2,24	2,15	2,92	3,23	2,70
	2009	2,28	2,49	2,27	2,97	3,19	2,64
	Difference	-23,49%	11,16%	5,58%	1,71%	-1,24%	-2,22%
Slovenia	2008	2,85	2,46	2,99	2,81	3,02	2,83
	2009	2,61	2,56	3,08	2,83	3,07	2,83
	Difference	-8,42%	4,07%	3,01%	0,71%	1,66%	0,14%
Average of	2008	2,71	2,26	2,64	2,84	3,24	2,74
all	2009	2,71	2,38	2,77	2,96	3,36	2,84
countries	Difference	0,00%	5,31%	4,92%	4,23%	3,70%	3,65%
participants							
in the							
project							

**Table 3** Scores of experts on market openness, growth, development and innovation in SEE countries

 participants in the GEM research

Unweighted average of scores for five analyzed fields show that experts from Bosnia and Herzegovina, Croatia and Serbia gave the lowest scores in relation to average scores of all countries participants in the GEM research, while it is not the case with Slovenia. The presented data show that experts from all countries gave the lowest scores for development in analyzed fields in 2009 in relation to 2008, which can be referred to as an effect of economic recession. Also, one of the reasons can be a lack of activities aimed at the improvement of policies for development of the analyzed fields. Structures of experts' scores from SEE countries in two previous years, grouped by specific fields relevant for the stimulation of dynamics of entrepreneurial activity in the field of innovation is given in Figure 2.



Figure 2. Structure of experts' scores on market openness, growth, development and innovation in SEE countries participants in GEM research

Low scores for five analyzed fields (which are similar to average scores of all countries participants in the GEM project) are extremely lower, which is the case of Bosnia and Herzegovina. This emphasizes the fact that there is a need for more active involvement of governments, universities, research institutions and business sector in the field of creation and development of new technological solutions for improvement and encouragement of entrepreneurial activity. Experts' scores in Table 3 present the situation and its changes in certain countries which will not be examined further in this paper. Individuals who are interested in more detailed information on mentioned data can find questions for specific fields and scores of experts in the GEM report for Bosnia and Herzegovina "Recession reduced entrepreneurial activity in BiH".

#### Conclusion

The results showed that more than a half of surveyed entrepreneurs think that it was more difficult to start a business in 2009 than in 2008. Efficiency-driven economies, where Bosnia and Herzegovina, Croatia and Serbia are categorized, are extremely connected to world markets and entrepreneurs' attitudes in these countries were, on average, most negative.

In general, entrepreneurs had more positive attitudes regarding the growth of a business than starting a business. However, established business owners, in most cases, had pessimistic attitudes. From Schumpeterian point of view it makes sense. Established entrepreneurs can face difficult tests for their business models which achieved success during the period of expansion.

William Baumol, in an article on entrepreneurship and development, claims that constant "rate" of entrepreneurship across societies exists, while institutions, rules and norms in societies determine to what extent entrepreneurship is productive and facilitates economic development. If Baumol is right, it could be agreed that the recession has caused a shift in the balance of the set of different entrepreneurial activities rather than a decrease in entrepreneurship itself.

Scores of experts for entrepreneurial framework conditions, especially relevant for development of innovation and technology, point out that the governments of SEE countries must work harder to improve conditions in order to stop the downward trend and create the basis for the change of its course.

We believe that presented results can be stimulating for the creators of policies aimed at improvement of entrepreneurship, since GEM generates original data on institutional framework for entrepreneurship and entrepreneurial attitudes, activity and aspirations by using its own methodology which is implemented in a unique way in all countries participants in the GEM project.

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# High-growth Ventures: Work of competent entrepreneurs or fortunates

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This paper is about competences, which are needed by entrepreneurs in order to successfully run a growing business. Although extensive research evidence has been available on different scopes of entrepreneurship in growing businesses, not much has been revealed about peculiarities in the entrepreneurial competences which has attracted a certain degree of both professional and research interest in the past decade or so. This qualitative research was conducted in September 2009. Data collection was based on semi-structured personal interviews with the 23 entrepreneurs, preferably establishers/owners of businesses. Interview encompassed 15 specific questions for interviewees. Ten perceived competences were recognised from literature and entrepreneurs were asked to rank them from a given list. Results show that Understanding Customer Needs is the most perceived skill, followed by Persevering, Creative thinking, Story telling and Building trust.

#### **Keywords**

Entrepreneurship, Entrepreneurial competences, Financing, R&D, Technology commercialization

#### 1. Introduction

Small and medium sized companies now account for the majority of employment in the private sector. Studies, which focus only on small firms reveal a lack of attention to the issue of administrative, organizational and managerial development over the past twenty five years. Given that the growth and development of small firms is regarded as fundamental for providing economic growth, prosperity and employment choice, maximizing the development of competence through appropriate training, in order to optimize growth potential is of paramount importance. Therefore one of the primary components of a small firm success are managerial and entrepreneurial competence of the owner – manager [1].

Entrepreneurs are, by definition, pioneers in that, they innovate new products/services, create new processes, open new markets, or organize new industries. Dramatic changes in the global environment suggest that successful entrepreneurs must master three key strategies: (1) develop a clear vision; (2) manage cash creatively, or learn to "bootstrap"; and (3) be able to persuade others to commit to the venture using social skills. This article discusses pioneering strategies and offers guidance on how to implement these [2].

Since the early days of strategic management, research scientists and managers have tried to find general rules for developing successful business strategies. Numerous articles have been published based on studies that explore research questions like: why are some competitors more profitable than others or what are successful strategies to outperform a competitor. In the beginning of strategic management research, the theoretical background for explaining the strategic behavior of firms and business units was not very sophisticated. Most studies were purely exploratory and, in general, small-scale case studies were the basis to generate assumptions on the causes of business success. A fundamental

breakthrough towards a broader theoretical basis for strategic planning was the adoption of concepts and research methods from economic theory in the seventies of the last century. For more than 20 years, the structure–conduct–performance paradigm of industrial economics has served as the fundamental framework for large-scale empirical research in strategic management and strategic marketing [3].

The response to the question `"why do firms exist?" is often based on the idea that transaction costs in viable firms are lower than they would be if production was coordinated through the market. However, the work on organizational learning and cultural transmission reinforces a competence-based explanation of the existence and relative efficiencies of firms, and this approach can also provide answers to the original question posed. Accordingly, the development of a research program involving a conjoint evaluation of both competence-based and transaction cost approaches is proposed [4].

SMEs have begun to play a critical role in international trade. Statistics from the Organization for Economic Cooperation and Development (OECD) and other sources indicate that SMEs now account for a very substantial proportion of exports from most industrialized nations. But very little is known about the effect of having an international entrepreneurial orientation, or the role of specific strategies associated with this construct, on the foreign performance of such firms (Knight, 2001). It is not business experience per se which is important but that it is the relative change in experience that truly impacts upon export performance [5], [6].

The main motivation to pursue this research was an ambition to get a more insight view on required competences for sustainable business growth. The research so far has been conducted more in the fields of »hard« facts such as finance, investments, adequate capital requirements etc. The objective of this particular study is to determine the perceived skills needed by entrepreneurs to be successful. The paper goes as follows: after the introduction, the theoretical framework is set in order to build the main proposition of the study. Methodology and sampling which is of qualitative nature is explained after. Results are presented both in qualitative and quantitative manner. The paper is finished with discussion and possible implications for further research, and training and consulting facilitation of growing businesses.

## 2. Literature Review

Firm growth is almost universally portrayed as a good thing, and is commonly used as a measure of success. Firms which grow without first securing high levels of profitability tend to be less successful in subsequent periods compared to firms that first secure high profitability at low growth. The profitable low growth firms are more likely to reach the desirable state of high growth and high profitability. In addition, they have a decreased risk of ending up performing poorly on both performance dimensions compared with firms starting from a high growth, low profitability configuration [7]. There are four types of factors of a firm growth: (1) individual entrepreneur characteristics; (2) firm characteristics; (3) relational factors (such as social networks or value chains); and (4) contextual factors (such as the business environment) [8]. It seems evident that much of what we consider 'entrepreneurial' activity is intentionally planned behavior. Witness the tremendous emphasis on the business plan in virtually every academic and practical treatment on starting a new business. Even in cases where a unique catalyzing event like being downsized may spur the individual to the entrepreneurial act, there are often indications of a long time interest and desire to be in business for one's self. Promoting entrepreneurial intentions by promoting public perceptions of feasibility and desirability is not just desirable; promoting entrepreneurial intentions is also thoroughly feasible [9]. Entrepreneurs of small organisations describe growth differently [10]. Growth strategy of these organisations is a function of industry structure and performance, entrepreneurial motivation, attitude, and competence of the entrepreneurs in strategy

planning. Two major patterns are emerging. In 'relationship based strategy' entrepreneurial vision towards strengthening relationship is the basis for growth planning. Trust, cooperation, community and society benefit are important dimensions. In 'technology based strategy' the entrepreneurs choose technology to achieve excellence in product and process performance, and need investment and risk bearing capability [11]. Theories of firm growth suggest that managers must resolve sequential crises at key stages. Explicit in these models is the accumulation of resources, including knowledge, which must be applied and (re)configured in order to create new structures and systems in order to overcome the crises at each stage. By re-conceptualizing knowledge not as a resource, but as an activity, this provides an alternative perspective on growth models [12], [13].

SMEs are increasingly dependent on external technical competences because the process which generates new technologies is becoming more complex. However, before having access to the knowledge held by competencies centers, SMEs need to develop and structure their own capacities. One way to achieve this goal is to hire technically gualified manpower [14]. SMEs show several weaknesses in technological development. This introduces opportunities for public intervention aimed at sustaining technological development in SMEs. especially through technology transfer processes [15]. Although the need for this kind of action is widely accepted, how to implement, it is still unclear, as regards both the choice of potential beneficiaries and the actual implementation of the transfer process [16]. This paper investigates the tensions that exist in young and growing technology-based firms between (1) increasing technological opportunities for further growth and (2) the costs of developing these opportunities. Tensions between technological opportunities and the costs of technological development in young technology based firms are created due to both the advances in science and technology and the firms' growth process itself [17]. Human capital development efforts catalyze both the external absorption and the internal emergence of new competences. Stronger emphasis on product features and broader market access stimulate the effective replication of extant capabilities, yielding immediate payoffs. Process-focused strategies are a double-edged sword: they facilitate the acquisition and incorporation of external insights yet bound internal capability development [18]. In addition, human capital of founders figures prominently in explaining the firms' start-up size [19]. Founders' years of university education in economic and managerial fields and to a lesser extent in scientific and technical fields positively affect growth while education in other fields does not. Prior work experience in the same industry of the new firm is positively associated with growth while prior work experience in other industries is not. Furthermore, it is the technical work experience of founders as opposed to their commercial work experience that determines growth. There are synergistic gains from the combination of the complementary capabilities of founders relating to (i) economic-managerial and scientific-technical education and (ii) technical and commercial industry-specific work experiences [20]. Utilizing theories on social capital, business networks, social networks and relationship value, we explore the aspects that provide specific value in relationships with different actors in the software industry. The motive for the study is the assumption that some relationships are regarded as more important than others, and companies strive to focus on fewer relationships with greater outcomes. The aspects of social capital, like the sources of relationship value, vary systematically by the types of relationships [21].

Entrepreneurship research engages in an intense debate about the value of business planning. Empirical findings have been fragmented and contradictory. However, results indicate that planning is beneficial, yet contextual factors such as newness of the firms and the cultural environment of firms significantly impact the relationship. A concomitant and dynamic approach that combines planning and learning is proposed [22]. A firm's entrepreneurial intensity is influenced by the nature of its strategic management practices and by its competitive strategy. Moreover, it is important to note the greater impact of the competitive strategy compared to the strategic practices on the degree of entrepreneurship.

From the point of view of the strategy, firms competing by means of an innovation based differentiation are more entrepreneurial, compared to the rest [23]. The relationship between entrepreneurial strategy making and performance is moderated by both environmental factors and firm competences. Specifically, entrepreneurial strategy making has a positive relationship with performance when the environment is highly uncertain and when the firm has strong marketing competences [24]. Different diversification strategies are distinguished and related to the business life cycle and corporate strategies. This is the process of the systematic identification and assessment of diversification opportunities within a diversified firm. It also describes how the diversification opportunities can be gradually filtered out through increasingly detailed assessments. The process can be focused by identifying adequate search fields. This systematic approach distinguishes between competence- and market-driven search strategies. It shows how these strategies should differ depending on how related the search is to existing markets and competencies with the coordinating role of corporate planning and the particular roles of R&D, venture funds and other contributors in the process [25].

Firms seeking growth are best served by selecting and entering growth markets and industries. On the other hand, if strong positive cash flows are the primary objective, attention to combinations of resources is more important. For instance, owner-founders having a strong business and managerial background, and industry experience will need less formalized systems, whereas those owner-founders with weaker managerial resources might benefit from more formalized procedures and skilled staff [26]. Key features of competence-based marketing are: the alignment of supplier's competencies with the customer's business processes, the experiential communication of supplier's competencies, and the delivery of competencies to the buyer's business processes. Within the strategies for creating value-for-customers, these findings contribute to the understanding of the use of competencies to induce purchases [27].

Alliances continue to be fostered by the transition to a knowledge-based and information technology-driven economy where cooperation delivers superior value to single-company competitors. Several trends are identified in the business environment that suggest a growing role for inter-firm cooperation in three broad areas, regulatory factors, other changes in the business and economic environment, as well as changes in industry practice and strategy [28]. Strategic alliances are increasingly gaining favour over go-it-alone strategies for organisations to achieve fast and economical growth. »Soft« facts such as trust are important for alliance success, but not on their own sufficient. Also »hard« facts such as strategic compatibility and appropriate governance mechanisms have an important influence on alliance success. Careful strategic planning and good partnership preparation are essential for alliance success, but the full value of an alliance has to be developed as it evolves [29]. The conditions for building partnering competence are found in the firm's culture and climate in the form of learning intent, receptivity, and transparency. In addition, learning-related activities would generate some positive influence on specific inter-firm relationships [30]. The effective performance of collaborative ventures is contingent on the circumstances facing particular management teams, highlighting the complexity of managerial decision making. More specifically, vision and entrepreneurial managerial style should be considered as variables contributing to the performance of collaborative ventures [31].

Existing approaches at explaining accelerated internationalization of born global firms are incomplete as they do not capture the learning that is undertaken by these firms and their founders prior to the firm's legal establishment. A set of dynamic capabilities that are built and nurtured by internationally-oriented entrepreneurial founders enable these firms to develop cutting-edge knowledge intensive products, paving the way for their accelerated market entry [32].

Based on the literature survey a research proposition was developed covering the main expected competencies for business growth as considered from entrepreneurs and experts: Among other, ten competences postulate the framework for successful business growth. Those are (1) understanding customer needs [33], [34], [35], (2) superiority in technology [36], [37], (3) creative thinking [38], (4) building trust [39], (5) team building [40], (6) thinking strategically [41], (7) planning operationally [42], (8) executing [43], (9) possessing interpersonal skills [44] and (10) nurturing human capital [45], [46].

#### 3. Methodology and sampling

The research has been concentrated on twenty growing businesses operated by owners/managers, additionally we interviewed two professors working for Entrepreneurship faculty and person working as competence developer for well known Slovenian company. Three of them have established or run their own companies and they can therefore link theory and practice and help to the research with in-depth competences explanation. The examined businesses are located in nine different cities/towns in Slovenia. A case study method was used as a qualitative research approach in order to answer the research questions.

The research was conducted in September 2009. Data collection was based on semistructured personal interviews with the entrepreneurs, preferably establishers/owners of businesses. Interview encompassed 15 specific questions for interviewees. One of the reasons for choosing the particular qualitative research is that this appears to be a prevailing methodology in business research on new phenomena worldwide. However, the lack of the data base on growing businesses which would include contact details (i.e. name, phone and address) determined the need for developing a flexible and cost effective methodology which would allow the researchers to identify, reach and communicate with the target population and the adapt the techniques of data collecting to the circumstances found. On the other hand, quantitative approaches would be challenged with conditioning sampling methodology and in terms of potential bias.

The sample was composed out of high growth companies in Slovenia, mainly gazelles. 45 of them were chosen on opportunistic approach basis. The Gazelle of the year award has been an ongoing project in Slovenia for several years and candidates for different prize-categories earn a substantial focus from the media. From those publicly revealed impressions about "who may be an appropriate participant for the study" a list of target entrepreneurs to be addresses was pulled together. Entrepreneurs were contacted via e-mail and invited to participate in the research. 24 of them replied as willing to participate, 4 interviews were not carried out because of limited stay of interviewers group finally, 20 interviews with entrepreneurs were conducted.

Team of researchers was conducted of six MBA students from Canada and three Slovenian teaching assistants, who formed three teams, each composed of two Canadians and one Slovene. By the time of visit students from Canada were finishing their Executive MBA studies in a joint Cornell University (USA) and Queen School (Canada) Executive MBA program. They visited GEA College of entrepreneurship in order to carry out these interviews, with objective to determine the perceived competences needed by entrepreneurs to be successful in Slovenia and to use this information to renovate entrepreneurship training product in GEA College.

All interviews were conducted by teams of three in English. Using English was inevitable and could represent an obstacle as some of the interviewees were not confident in foreign language. However they were more open when talking to foreigners and didn't have issues with talking about problems and obstacles on their entrepreneurial path. Voice-taping was used to document the data combined with hand written minutes were taken and the story was transcribed immediately after the interview. In all cases interviews took place at the

premises of the company. The interviews took place at various times of the day, during the working days. Entrepreneurs proposed a day and time of the interview, so they were not disturbed by other tasks. It is believed the timing and place of the interview did not influence on the readiness and openness to reveal data and information. Basic data about the research sample has been collected and is summarized in the Table 1.

Stage of Develop.	Number in sample	Average Time in biz	Average number of employees	Average revenue Euros
Start-up <3 yrs	3	1.8 yrs	15	1.1 m
Growth 3-9 yrs	4	7.0	62	11.9 m
Mature 10+ yrs	13	23.0	110	30.9 m
	20 + 3 academics			

Table 1	Data	about	research	sample
	Data	about	103001011	Sample

#### 4. Results

As presented in former chapter, ten potentially by entrepreneurs perceived competences were recognised from literature survey and entrepreneurs were asked to rank them from the proposed list. Entrepreneurs were asked to rank the competences from 1 as the most important competence for running/developing business and growth to 5 as still important. They only ranked top five most important competences out of ten given. When mentioned first it gets 5 points, if mentioned as ranked 6th or later a competence is rewarded with 0 points. The total number of points is calculated as the sum of received points in all the surveyed companies. Thus, the theoretical maximum of number of points is five times number of firms (23), which makes 115 points per listed competence. Results ranking competencies are presented in table 2.

	Competence	Points
1.	Understanding Customer Needs	91
2.	Persevering	46
3.	Creative thinking	41
4.	Story telling	41
5.	Building trust	28
6.	Team building	21
7.	Thinking strategically	14
8.	Planning operationally	8
9.	Executing	7
10.	Possessing interpersonal skills	6

Table	2	Ranking	from	aiven	list	of	perceived	skills
able	~	ranking	nom	given	1131	UI.	perceiveu	SKIIIS

If the results in the table 2 are compared with the ones listed in the main paper proposition one can see that eight out of ten competencies proposed upon the literature survey confirmed to be true by perception of the interviewed entrepreneurs. Surprisingly, superiority in technology and nurturing human capital turned up not to be confirmed. Instead of those Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 two preserving and story telling were inserted on the list and even ranked second and fourth position. Thus, the proposition can be regarded as mostly confirmed.

In order to emphasize the recognized competencies, several citations by interviewed study participants were chosen to emphasize the importance of the revealed results:

- Understanding customer needs: "you can only come to clients with proposal, if you hear what they are saying and prepare proposal they want (AP)<sup>1</sup>".
- Persevering: Entrepreneurs, we have to be persistent, even when we have problems, it would be easier to go on a break, but you have to deal with problems and go on. You need to be in love with what are you doing first and persistence simply comes," says PV<sup>2</sup>. Further on BŠ says: "People tell me that I have changed over last 1 years, I have become even more persistent. My management team is even more persistent, they are on business trips all year round and they have been working for this company from eight to fifteen years. This is not a short term business".
- Creative thinking: "My opinion is that it is impossible to start a new business and be successful without innovative product, however creativeness is crucially important in all times (MČ)<sup>3</sup>.
- Story telling: important customer from Germany, who has 25 years of experience in this specific industry, visited us and asked us very complicated questions. He realised that we understand the field as well or better that multinational companies and that was a big breakthrough for us. I can say that we sold our story.
- *Building trust*: Clients don't prefer radical ideas, when we come to very conservative client, we need his trust, otherwise we won't be able to sell him new and great idea (AP).
- *Team building*: It is crucial to build team and network. We were three partners that established this company and there was and is great chemistry between us (AP).
- *Thinking strategically*: Entrepreneur needs to know exactly the strengths of his product and its advantages comparing with competitors, if not, he can't expect the company to survive or even grow (MČ).
- *Planning operationally*: Entrepreneur ČJ<sup>4</sup> used words of Eisenhower who said: "Just a plan is nothing, planning is essential! And we are planning, if you are planning, you can adapt to new situation on a market."
- *Executing*: When we were gaining seed/venture capital, I taught that this is the most difficult part of the business, however now I see that managing high growth business is far more difficult," says DR<sup>5</sup>. DR continues: "Many people can prepare marketing plan, but few are able to develop product, sell it and execute this marketing plan."
- Possessing interpersonal skills: "If I were a mentor to a young entrepreneur I would recommend to him to share his ideas and problems with friends and even competitors, because he needs to know that he is not the only person in the world with problems. Networking is very important or even of crucial importance when starting a business."(J)<sup>6</sup>

Proceedings of

<sup>&</sup>lt;sup>1</sup> AP - founder of marketing communication company.

<sup>&</sup>lt;sup>2</sup> PV- co-founder and entrepreneur of company which deals exclusively with computes service on customers homes.

<sup>&</sup>lt;sup>3</sup> MČ – founder and CEO, Development of program solutions for electronic business

<sup>&</sup>lt;sup>4</sup> ČJ- founder and director, company is developing and providing Enterprise Content Management solutions <sup>5</sup> DR- CEO, online tourist reservation system

<sup>&</sup>lt;sup>6</sup> J- founder and partner in Web desing and development company

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We expected that it will be difficult for entrepreneurs to rank competences, following quote confirms our expectations: "It is difficult to rate, if you don't listen, you won't be able to propose and to sell anything, if you want to sell it for good price, you need good negotiation skills in persuading what you have done, without strategic thinking you are just executing something someone else says, you have to be creative thinking because you have to better than the others, I would give to all of them 5 points"(AP).

# 5. Conclusions

While it is difficult to generalize from case study research, the outcomes of this study show how particular competences within contexts and relationships are important in establishing the saliency of sustainable growth of a company. We can also see that processes are not linear and sequential. Issues of leadership, co-ordination, control, delegation and collaboration as typical managerial tasks are not solved, but are recurring problems that require managers and entrepreneurs to conceptualize, how these issues will be addressed within the enterprise. Why a particular issue is given prominence at a particular time depends on how entrepreneurs make sense of them. The expressed competences (such as alertness to the market and the internal organizational issues of the company) are both the result of how past solutions to problems and challenges were applied, and the nature of conceptualization of current and future activity, which can be mainly regarded as prominently a personal entrepreneurial characteristic of an individual. That is, in these cases, organizational growth is ultimately dependent on resolution to the crisis of not-knowing-how. It can be seen the embedded nature of organizational systems that structure activity in the organization, and consequently, such systems also influence the nature of interactions both within and between companies. Moreover, the inability to utilize competences crisis from within available resources may trigger a search for alternatives which often means a shift from knowledge exploitation to knowledge exploration. Thus, identifying and classifying knowledge resources are active processes, but they are experimental, improvised and negotiated practices. Entrepreneurs display them intentionality and rationality. The highlight of this research is not only the contextual nature of strategic practice, but also that individuals through their day-to-day activities provide forces for change which is an urge for growth. They provide a link between the micro practices of strategizing and macro structures of organizing. It is possible to expose how company's innovation and growth is partly structural (dependent on systems, processes and divisions of labor already embedded within the organization), partly social (dependent on ways of interaction and relationships), and partly intentional (where a "rational" actor has a crucial role in the process of "knowing"). By reconceptualizing knowledge as both a resource and an activity, we can see that resource dependencies do not create linear changes, as suggested by growth models. The recommendations of entrepreneurs are influenced both by historical experiences and their role within a real life business practice. As such, attention to "stage of growth" is less important than sensitivity to specific social contexts, and particularly to the social structures and relations that define possibilities for growth.

The application of this research is mainly in support provision for growing companies. Understanding support as both, consultation and training, this should be re-conceptualized within the forced change of structure of strategizing against particular growth objectives, both within external social context and internal organizational challenges. Thus, no such thing as generalized programs can be applied but tailor-made applications of idiosyncratic particles of body of knowledge composed and re-conceptualized on the basis of on-going research of perceived needed competences for company's growth.

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# **Concept of Crisis Management Model**

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In order to be able to strategically manage the crisis situations within business environment, it is essential to talk about the process of crisis planning, as well as strategy management within the organization. To achieve that an adequate training of staff is necessary, in addition to that the analysis of the situation and search for alternative solutions are required. To be able to properly get prepared for a crisis planning and strategy management process, both scholarly discussions and practical solutions are necessary. Action planning enables management to not only evaluate the dynamics within a business environment, but also evaluate similar changes related issues. In this way, action planning based on crisis management model may be helpful in integration the constituent parts of a strategy process and developing the crisis management perspectives.

#### Keywords

Crisis situations, crisis management, crisis development, management, theoretical model.

#### 1. Introduction

*Scientific problem:* a conceptual paradigm of the phenomenon under discussion is applied: crisis planning and management strategy within the business environment is analyzed, at the same time emphasizing the synthesis of social sciences. The analysis of this social phenomenon requires a multidisciplinary approach. The object of the analysis is an axis for several social sciences. The strategic dimensions of employee identification in organization have theoretically been based.

*The object of the article:* - strategy of crisis planning and management basing on the crisis management model.

*The aim of the article* – present the theoretical aspects of crisis planning and management strategies using them in formation of crisis management model.

The objectives:

- 1. To analyse the theoretical aspects of crisis planning and management strategies in the context of different social science fields.
- 2. To construct the crisis management model seeking to improve the crisis situation diagnosis in a company.

The methods of data collection and analysis: the analysis of scientific literature, deduction logic – practical construction method of theoretical perspective.

#### 2. Conceptual analysis of crisis planning

Recently most attention in the research literature has been paid to analyze the corporate crisis issues. Research literature mainly deals with economical crisis aspects. To analyze corporate crises, the following scholars, such as Altman (1968;1971;1983), Ellliot (1995), Ansoff (1987), Alešina (1997), Fink (1986), Kash (1998), Darling (1998), Čumikov (1998),

Roselieb (1999), Hauschildt (2000), Bartl (2000), Šarafanova (2001), Barvin (2002), Petuchov (2007) devoted their publications. In Lithuania the topic under discussion has been reflected by the publications by Janulevičiūtė (2003), Bielevičienė (2003), Dambrava (2003), Garškaitė, Garškienė (2005), Virbickaitė (2006; 2007), Valackienė (2007, 2009), Krašenkienė (2007); Stundžienė (2006), Boguslauskas (2006), and others.

The authors structure the crisis situations, point out their economical expressions, and describe the crises diagnostics methodology and the ways of solving them.

However, the social aspect of this phenomenon has been researched to a lesser extent. If crises are treated as a social phenomenon, then the reasons for the crises are more complicated to define and assess.

While doing research into the abovementioned social phenomena – an employee's selfidentification and crises management, the following methodological difficulties are encountered: preparation of the research instrument and presentation of the analysis.

I dare say that the management in each organization should know the weak points in their personnel management and should have a built-in advance employee identification strategy, which would accelerate the process of the employee's adaptation to the organizational goals and values and stipulate his/her efficiency and work satisfaction, in order to manage crisis situations. Complicated business environment encourages looking for new ways to evaluate the situation in which changes have taken place, as well as adapt and manage the continuity means for further activities. In crisis planning process discussions and future perspectives are essential. The plan has to be formulated and tried out in order to see whether or not it will be efficient and useful to the organization.

While evaluating the plan it is firstly necessary to renew and evaluate all the most essential aspects of crises planning. For that adequate staff training is necessary, alongside with the analysis of the situation and search for alternative solutions. Consequently, both internal and external aspects of analysis are essential in the crises planning process.

It has been proved by *public communications researchers* P. Shrivastava, I. Mitroff, D. Miller, A. Miglani (1988), that mass media is a very important external agency acting as an intermediary after a crisis has taken place. After a crisis has taken place, the management of the organization should cooperate with the media in order to maintain the reputation of the organization, to present truthful information which might be quite distorted if mass media is avoided. It also functions as a means of information to the clients, suppliers and all interested parties; therefore it is essential that the information presented is clear, accurate and informative. The management of the organization should have the public information prepared beforehand, as speaking on the spot presents a possibility to even worsen the crisis situation of the organization, but also in the absence of a crisis, as an organization should have good relationship with mass media representatives, a factor essential in implementing the process of the organization's strategy.

P. Schoemaker (1997) notes that crisis management is like a multidisciplinary process, which cannot be left only to the public relations department. This social phenomenon is treated in the convergence of separate sciences: personnel management, psychology and management.

In the aspect of personnel, crisis management requires the involvement of managerial groups.

In the process of crisis management system people have to take active participation, otherwise it may lead to the collapse of the organization. However, there are managers who are not convinced that crisis management is worth the effort.

I. Mitroff (2004) states that if the managers' readiness is not appropriate, then crisis management and communication with external agencies becomes problematic. Failure to give a timely response, inappropriate or distorted information through poorly functioning communication channels, detailed external control cause serious consequences and high stress level to the managers.

A crisis management process may have various consequences to the organization. Some organizations plan and respond to each imaginary crisis that might make a descent on them. A wide overlook of possible issues is a welcome factor. Managers should try to discuss solutions which might help find a compromise regarding the position and reputation of the organization, although such ways might also cause a risk. Staff involvement into the crisis management process should not be emphasized. All this has to be considered in advance. This is closely related to crisis planning.

*Research literature on psychology* offers typical crisis management approaches. Z. Sheaffer and R. Mano-Negrin (2003) note that organizations may be characterized by two aspects: preparation for a crisis and recovery after one. Preparation is such a state within the team, when it is prepared to forecast both the internal and external circumstances of their competitors. A recovery after a crisis is a positive state, when all of the abovementioned components cease to exist. An existing crisis management plan is necessary, although it is not sufficient, as there is a danger that the organization will ignore the warning signs or will cause a threat for a crisis to take place due to a very high degree of dependability to the existing plan. Plans may create wrong sences of preparedness, which in reality do not seem to exist.

Analysing crises management in the managerial aspect, it has been proved that it is still an unexplained field and it covers several methodological schools.

The main startegic thinking within an organization is to use technological analyses and decision making processes. This strategic thinking was applied for various type enterprizes and in most industries, mainly as a result of growing and competitive functionality. J. Thompson, F. Martin (2005) divided the strategic process under three main features: formulating a strategy, implementing a strategy and evaluating it. Some authors object to this kind of division and states that this division of a strategy under three features seems more convenient rather than realistic, therefore he promotes a holistic view to the whole strategy process.

The decision making strategy finds it very useful to analyze intermediaries and their impact to the organizational culture. The attractiveness of the potential strategy is its capability to support the factors which are welcome within an organization, as well as what it is possible to do with the resources and competences available.

Implementing a strategy is related to choosing an efficient strategy within an organization, which means implementing the strategy in practice. Strategy implementation always determines efficient management and may significantly influence implementation of success for the whole strategy. The evaluation of the strategy is probably a less researched part of the strategy, although it is a very important factor in successfully choosing a strategy. This is not only related with execution or means of execution, it also signals when it is time to make corrections to the strategy and quicly change the external environment.

The evaluation of strategic thinking and moving planning towards strategy management helps the strategic thinking remain heterogeneous. Various technologies have been invented to promote wider thinking regarding the stage of strategy formulation and one of such stages being action planning.

Action planning, as an approach to strategy, acquires a high degree of unexpectedness in the business world. It has its roots in the military planning during WWII, although it was not until the 1970s when it was related to business. Action planning helps organizations analyze the external environment. P. Schoemaker (1997) describes action planning as "a disciplined method to imagine a possible future". In this way it helps avoid the thinking, such as "what has happened" and "who is going to work now?" when alternative future is being considered. This demonstrates that action planning is related to unrest and confusion. Therefore, both action planning and strategic thinking are closely related to crises management and all the three elements are directly interrelated. The more organization management direct their strategic thinking to action planning, the easier crises management process is going to be with fewer negative consequences.

External business environment and organizational structures tend towards changes. Globalisation, demographic changes, changes in the social structures and events related to economy has gained a dramatically scale in the recent decade and this scale is going to remain in the future. Such an observation about increasing changes and difficulties influenced the increase in sceptical commentaries related to the rational attitude to the strategy. Action planning helps properly look to the future.

In order to decrease the level of uncertainty in action planning it is important to set the action rules, which will act as guidelines executing the complicated action planning. P. Schoemaker (1993) emphasizes that rational planning is important, although not sufficiently long tem in the business environment. Each action plan has a story behind it, in terms how various elements can interact under current conditions. Action planning most often encompasses the elements which cannot be easily modelled; therefore a story about them makes the action plan more easily understandable. P. Schoemaker (1993) offers integration into the strategy process, expanding its role into the internal and intermediary analysis.

Analysing strategy management, it is seldom when the crisis management aspects in the strategy process are substantiated. An occurrence of crisis may alter the enterprize's orientation in terms of limitations of operations or making the enterprise cut on costs. Crises may also make organizations go another direction. Crisis management and strategic management have similarities, such as evaluation of environmental conditions, including the evaluation of intermediaries and their importance to the management.

J. Preble (1997) states that crisis management has to be an important part of the strategy management process and that the managers have to recognize the importance of strategy in the crisis management. Among other things he notes that various personal, psychological and behavioural processes affect this attitude. Most enterprises have detailed crisis management plans, however a very small part of those plans are realistic in the strategy process. If both processes – crisis management and strategy management are correctly evaluated, the organization can be looked at with a perspective.

People play an important role in the strategy planning and implementation. An individual's involvement into a project, its execution and the evaluation of the crisis management plan are truly essential in the organization. Human resources are an essential part in both processes – strategy and crisis management.

Strategy planning creates certainty and reduces ambiguity. This is the initial precondition, as well a process in any organization. Action planning enables the organization to move from the first stage to the second stage of crises process, if this is integrated into the strategy management actions as a dymamics and a tool for further learning.

D. Pollard, S. Hotho (2006) state that the more an organization is prepared for crisis situations, the better it can be managed, decision making in the crisis situation will be better thought over and efficient. Action planning means creating an alternative future action plan for the organization, to be provoked for the beforehand forecast actions of the environment changes, has to be seen as a significant intellectual action, which in its turn may move towards a useful integration of the organization's team members, at the same time increase its abilities while solving crisis challenged reputation and action related difficulties.

Both crisis management and strategy management depend on the creative and intuitive thinking. The efficiency of crisis management depends on the manager's ability to evaluate possible sources of the crisis and make corresponding decisions.

While analysing research literature on crisis management process another important managerial element showed up: managers do not always pay dequate attention to a crisis and solve only when it ocurrs.

Stress and ambiguity often follow crises, which negatively effect decision making. The sooner the managers are able to find the main factors for risk, the more the crisis plan is efficient regarding decision making. Crisis management requires collaboration with systems,

efficient internal and external communication, setting the persons and their roles expressed by special duties and responsibilities, effective collective decision making, control and collaboration responsibility.

S. Smits and N. Ally (2003) note that while solving the effect of strategy plans and potential crisis it is essential to estimate the intermediaries' involvement. Most managers will agree that good relationship with intermediaries is an indispensable part in the enterprise's strategy plan. After a crisis has occurred, with the help of media it is very important to maintain good communication with intermediaries. This should be the main detail in the strategy management process in order to solve the crisis.

Managing communication during the crisis period is not an easy task. Managers come across a wide choice in their relationship with intermediaries, while a t the same time it is necessary to find the reasons for the crisis mechanism and its influence.

D. Pollard, S. Hotho (2006) state that maintaining relationship wit the media has certain benefits. Media related communication may be included into crisis planning. Before crisis ocurrs, the organization can quickly and efficiently pass information to the press. In communication with the media, managers play an important role, especially when passing over and disseminating information regarding the crisis situation. They perceive the press with hostility and take a position in defence. This could be a reaction to the possibility that information has been lost or mistakenly presented.

I. Mitroff (2004) emphasizes that human relationship and communication might be efficiently utilized in a crisis situation, therefore employees need information and specialist training. Efficient management of the strategy process may have impact on the organization in taking action to minimize the crisis. Prevention is the most efficient way in solving crises, as most reasons for crises are influenced by external management control. Relating crisis planning with the strategy processes within an organization, a strong basis ocurres, with the help of which future problems could be solved. Communication may have additional positive benefits in setting up the roles and responsible structures in a critical situation. In relationship with the intermediaries it is important to consult and revise potential intermediaries' roles in supporting the organization in crisis situations (Pollard, Hotho, 2006, 733 p.).

Although planning of computer related disasters may more influence formal and rational planning processes, certain features of the process may be used as lessons for crisis management system development. The main essential qualities are:

- The need to involve most people into the process;
- Event identification and their impact on the organization;
- Success factor indentification in overcomming problems;
- Necessity to try out plans and practice application;
- The need to renovate.

All these qualities are really essential and useful for the organizations getting ready for crisis situations. This should be the basis for the company strategy in creating an action plan. Analysing these qualities is the main task in the company in solving the issues that occurred and which could develop into crisis situations.

J. Preble (1997) states that planning crisis management may destroy efficient work of the organization, therefore a paranoid attitude is unwelcome. Crisis management should clarify the reasons for crises within the organization. While analysing crisis management and strategy management integration, the attitude that "one size fits all" is unsuitable. It is clearly realized that organizations have different cultures and management styles, which are based on the main principles and which may help in planning crisis management, implementation and execution. Therefore crisis management plans and their actions will differ among organizations even writhing the same industry.

# 3 Strategic dimensions of employee identification management in organization using crisis management model

Considering the main goals, all the employees should be informed. Employee identification with organization as motivating force is known for the employers, but still its motioning and maintaining problems arise. Though identification is defined in many dimensions, still it is important to emphasize that the first steps of an individual in organization and his relations with the other members can become a certain catalyst for the other objects successful chain arrangement. Today it is lack of identity with organizations, which is mainly based on the strategic purposes. So the struggles of any employee to seek for the higher quality, efficiency and good service have been missed. From the previous loyalty of employees to their organization the apathy, complaint, hostility have been left and social forces increasing the abyss among executives, organizational culture and employee disposition appeared. Labour moral and motivation face the loss (Šimanskienė, 2000).

There are a lot of different scientific crisis management models, but the main their features can be defined following (Janulevičiūtė, Bielevičienė, Dambrava, 2003):

- the design of crisis prevention program;
- the identification of crisis nature;
- the operative actions when crisis appears;
- the liquidation of crisis consequences rehabilitating organizational reputation.

These managing strategies are the parts of the *active crisis management model* structure. Each company's model can be different, because it is determined by the personnel, activity success, traditions and a lot of other factors. According to the theoretical attitudes of Digman, (1995); Hausschildt (2000); Roselieb, (1999); Bartl, (2000), the following types of models are defined in the scientific literature: general crisis management model; active and passive models.

The passive model is determined to apply by the following conditions:

- Late reaction to the changes.
- Indecision choosing and changing further performance strategy.

**Having chosen the passive management model,** on of the main objectives is continually to evaluate the situation in a company. There are a lot of evaluation methods. The main estimate the financial state of a company or separate its branches seeking to notice negative tendencies and start responsive actions. Therefore the requirement rises up to evaluate not only financial rates – company performance results, but to control the causes influencing on the financial situation.

The conceptualization of the scientific literature and data analysis of the combined research (having applied two research methods: questionnaire and structural interview) **enabled to** form the optimal theoretical model of the employee social identification in organization managing crisis situations.

#### The model includes two structural parts:

1. The priorities of employee identification dimensions in organization.

#### 2. Crisis situation management in organization.

In the model (fig.1) is emphasized that every dimension of employee identification in organization (vertical axis in the model) in its different stage matches crisis management strategy (horizontal axis in the model). The particular compound parts in the model (the dimensions of employee identification in organization) require for the particular crisis situation management. One of the most important organizational goals become crisis prevention and implementation of the management technologies, seeking for the rational executives and other members performance, therefore *the crisis situation management is described as a closed cycle in the model*. Organizations face the crisis situations constantly, so they have always to be ready for them.



#### Crisis management in organization

Figure 1 Model of employee's social identification in organization managing crisis situations

#### Stage one: "Formation of crisis prevention program".

**Executives should prepare the program of crisis situation prevention in every dimension of employee identification in organization, considering the priority of the employees.** Different means should be used to increase the efficiency of individual social identification in organization: introduction with staff and new work place, the main work standards in organization: division of labour, organizational structure, payment system, organization mission, clear and secret functions, information about the goals and tasks, help, applying new work methods and relations, employee education and training, the choice of technologies and their usage, financial resources, motivation programs, the appointment of the responsible person for the crisis situation management in organization.

#### Stage two: "Identification of crisis situation".

It is noticed that crisis situations do not appear unawares – there are a lot of signals, which point it out - it is important to notice them in time and properly to interpret them. *Effective crisis situation identification is done by analysing the strategic forecast, contingency, problems, scenarios (including the analysis of contingence and objectionable situations)* 

#### Stage three: "Operative actions".

It is the state which requires immediate actions. It is important to foresee the alternative crisis situation decisions, threats, and priorities and operatively and decisively operate. Crisis situation management needs the physical force and financial resources and puts a strain in organization. Therefore the "clear" mind helps in this situation as well as professional analysis, evaluated company's state, operativeness and prepared action plan. It is important to split the needed information for the employees, society and media.

#### Stage four: "Liquidation of crisis consequences".

In this stage the information flow is being decreased; the conclusions have been made; the plans and instructions have been changed according to the received experience; the information is being changed for everyday's performance; the further activity trends have been decided and the new crisis situation prevention programs are being prepared.

Presented theoretical model would help manage crisis situations and improve the efficiency of employee identification in organization.

## 3. Conclusions

- 1. The analysis of this social phenomenon requires a multidisciplinary approach. The object of the analysis is an axis for several social sciences. In crisis planning process discussions and future perspectives are essential.
- 2. Having conceptualized the theoretical positions of the researched phenomenon, the relations of social identification of organization and individual construction was emphasized: the concepts of socialization, adaptation and identification are closely related: adaptation success depends on the personal features as well as social environment requirements and maintenance; identity depends on the value and functional social reality aspects and is concerned as adaptation correlation factors. Basing on the research performed the model of crisis management was constructed.
- 3. A new theoretical construction has been presented the model of employee social identification in organization managing crisis situations. The theoretical model emphasizes the importance to prepare a program of crisis situation prevention for every employee identification dimensions in organization concerning the priority to the employees. In this model crisis situation management has been described as a closed cycle involving the following stages: the preparation of crisis situation prevention program, the identification of crisis nature, the operative actions when crisis appears and the liquidation of crisis consequences rehabilitating the organizational performance. The cycle reopens with the preparation of new crisis situation management programs.

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# Strategic Development of SMEs Export Performance in the Light of Best Practices of Officially Supported Export

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The globalization of production, the increased regionalism, the emergence of trade blocs, and especially the global financial crisis that began a little more than a year ago, have played a vital role on reshaping the international trade framework. This enlarged complexity of trade must be taken into account while reviewing the current business economic, structural changes, growth of the competitiveness of the domestic economy, as well as the economic and political changes circumstances in the Republic of Serbia. Although the legal and macro economical frame of Republic of Serbia is still in a process of development, the export oriented SMEs should be given an adequate state support, thorough export credit agency, to increase the export performance, especially because of the expected membership of Serbia in the EU. On the avenue of increasing the export performance, the support for strengthening the capacities of small and medium size enterprises and the development of separate products for this target group must not be left out, in accordance with the adopted practices in developed countries. This article will explore the current situation on state supported export credit insurance and export finance for SMEs, in the light of the best practices of developed countries, while proving that SMEs in the Republic of Serbia do need institutional support for the export revitalization.

#### **Keywords**

Export financing, SMEs, Export credit agency, Strategic development, Serbia

#### 1. Introduction

In the course of previous years, Serbia has made significant progress concerning formulating and implementing policy of development of SMEs, especially in the process of implementation of European Charter for Small Enterprises. In the report on the "SME Policy Index" of the European Commission, OECD, ETF and EBRD, it is particularly emphasized that Serbia has very quickly moved from the phase of policy elaboration and defining strategic goals to the phase of policy realization, especially in the fields such as support of innovation SMEs, start-up enterprises, providing business services, rendering information via online services, and improving dialogue on SME policy between the public and the private sector.

In the last quarter of the 2008, the Government has developed Strategy for Developing Competitive and Innovative SMEs for the period 2008-2013, with a specific Action Plan [1]. This strategy represents an important framework for creating development policy of SMEs

and fostering entrepreneurship. This strategic development document is based on five pillars, which are in accordance with priorities for SMEs. The Regulatory Reform Strategy of the Republic of Serbia for the period 2008-2011 is of special significance for improving business activities of the SMEs sector, as it has been estimated that administrative costs for business would decrease by at least 25% by 2011.

Within the scope of non-financial support, tangible results were achieved in the area of human resources development in SME sector, as well as in advancing knowledge and skill level of entrepreneurs, SME owners and employees.

The key measures for development of SME sector adopted by the Government of Republic of Serbia concern financials support. Considerable financial assets were provided from the government budget for start-up entrepreneurs, the unemployed, undeveloped municipalities, innovators, as well as for financing the program of SME business internationalization, cluster development and infrastructure supply of business incubators. In this paper the emphasis will be placed on the importance of role of the Government in the support of SMEs export performance, mainly by providing export credit financial support, in light of the best practices of SMES export support in the world.

## 2. SMEs and export support during the current economic crisis

Comparative analysis of SME sector in Serbia and in EU countries puts Serbia on the level of EU average, with regard to SME sector participation in total number of enterprises and employment, as well as concerning realized profit. In 2008, SME sector recorded 66,6% of total turnover and 59,1% of gross value added in non-financial sector. The SME sector constituted 58,7% of realized profit, while the SME sector profitability was on the level of non-financial sector profitability. Constant growth of number of SME resulted in 303 449 economic entities in 2008, an increase of 7 363 new enterprises and entrepreneurs. However, there is a notable tendency of decreasing enterprise formation rate (newly established SMEs in relation to active SMEs) from 22,3% in 2006 to 18% in 2008. The dissolution rate rose from 10,6% to 13,2% in the same period.

Although the absolute number of SMEs has increased, the improvement of structure of SME sector is not dynamic enough. Micro enterprises still dominate the SME sector, representing 95,7% of it. As in previous years, the unfavorable tendency of directing a large number of SMEs to merely two sectors (*Wholesale and retail sale* and *Processing industry*) and to existence in two most developed regions (The City of Belgrade – 29,3% and South Backa District - 9,2%) continued.

On the other hand, SME sector shouldered the main burden of transition process, and that is job creation. In the period 2004-2008, number of jobs increased by 24,9% (187 419 workers), which neutralized reduction in number of employees in large enterprises, due to restructuring (163 620 employees or 26,3%). The SME sector is a net creator of new jobs. Regarding the investment structure of SME sector, it is noticeable that this sector puts nearly a half of its investments in equipment, which could favorably influence growth of production and services and competitiveness in the following period.

In the year 2009, the World Economic Crisis has influenced currency liquidity fall and Dinar depreciation in financial sector in the second half of the year. In real sector, economic activity, import and export slowed down. In 2008, SME sector had export value of 274,5 billion Dinars and import value amounting to 751,8 billion Dinars, which constitutes 45,9% of export and 60,5% of import of non-financial sector. If ranked by size, the greatest number of exporters (8 288 or 62%) and importers (16 326 or 70,4%) belong to micro enterprises category (including entrepreneurs), but the highest value of import and export was made in small- and medium-sized enterprises (4 703 enterprises – 35,1% of export; 6 409 enterprises – 44,8% of non-financial sector export). Nevertheless, the satisfactory level of internationalization still has not been achieved.

Values of key indicators of foreign trade activity for the period 2005-2008 point out to the low level of competitiveness [2]:

- Greater absolute growth of number of importers than of number of exporters.
- Regarding foreign trade activity of SMEs, they moved into deficit in all of the observed years.

• Export/import coverage ratio is below economy average and big systems average (36,5% in 2008, compared to 48,2 and 66,1, respectively).

Due to the World Economic Crisis, which substantially affects enterprises engaged in international trade, there was a smaller participation of number of exporters and importers in the total number of enterprises in international trade in 2008. The revealed comparative advantage index (RCA) indicates that the level of competitiveness of SME processing industry is low – deficit amounts to 10,4% of total exchange (in processing industry, exchange surplus was 4,3%).

Even though the fastest foreign trade activity growth is recorded in high technology products, Serbian economy still depends on export of industries of low technology intensity. The situation is equally unfavorable in SME sector: low technology products are principally a subject of foreign trade activity; they also have a fastest growth since 2005. Export based on these products cannot provide a respectable competitive position of an enterprise in the long run.

That is why the Serbian SMEs need the government support for export revitalization. Moravcsik[3] outlines that export credits are the "financial lubricant" of international trade. In times of crisis, the government steps in and increases their support for export insurance (official export credit). A key premise behind government-sponsored export credit insurance schemes is that they will serve to boost exports. While the structure of ECAs varies from country to country, virtually all operate in close cooperation with their national government, and most operate with government financial support of some type.

Export credit finance is distinctive for being one of the few banking businesses that could benefit from the crisis affecting global capital markets. Stephens [4] analyses the role of trade financing and related government policies in preventing and coming out of crisis. Export credit agencies (ECAs) use government guarantees, or central bank schemes to secure trade financing and working capital can be useful complements in times of financial sector turmoil and disruptions in orderly trade financing.

At an extraordinary World Trade Organization meeting in 2009, participating governments reported a 30% increase in ECA business over the previous 12 months. Ex-Im Bank authorized a record \$4.4 billion – nearly 21 percent of total authorizations – in direct support of U.S. small businesses as primary exporters in FY 2009. The Bank approved 2,540 transactions that were made available for the direct benefit of small-business exporters. These transactions represented 88 percent of the total number of transactions approved.

Increased levels of support are now also being made available in the UK, where Export Credits Guarantee Department (ECGD), received a temporary £1 billion (\$1.43 billion) guarantee system through ECGD for smaller UK exporters. The French government has created the Société de Financement de l'Economie Française (SFEF). While focusing on SMEs, some instruments have been enhanced (cover from 95% to 100%), modernized and simplified (confirmation of letters of credits, market survey financing, partnership between Coface and exporters to subscribe in advance for a limited number of well identified customers / countries).

Germany introduced a \$21.2 billion low-interest rate loan program, "Sonderprogramm", to be operated by the state run development bank, KfW. It will allow reduced-interest rate loans not to exceed 50 million Euros (\$70.3 million) to be granted up to the end of 2010 for a maximum period of eight years. After the end of 2012, the companies will pay market interest rates on the loans. Italian ECA SACE has been mandated to provide additional support through financial guarantees on working capital facilities and cross-border bank-to-bank financing [5].

The Croation HBOR (Hrvatska banka za Obnovu i Razvoj) has launched four new loan programmes this year that are intended for the financing of working capital – Manufacturing Finance, Permanent Working Capital, Liquidity and Exports-IBRD. The new programmes provide exporters access to long-term working capital and directly strengthen their competitiveness and liquidity. The highest number of loans was extended in support of exports and SMEs.

The Serbian ECA (Agencija za osiguranje i finansiranje izvoza a.d. Beograd-AOFI) [6] provides support to the Serbian exporters by the following products: short-term financing, export-credit insurance, factoring, foreign buyer financing, and refinancing of a foreign buyer via its commercial bank. The AOFI provides short-term loans to exporting companies, amounts range from EUR 30.000 to EUR 1.500.000 with repayment period up to 6 or 12 months. Interest rate depends on

the export value with 3 % p.a. for export over EUR 10 mln., 4 % p.a. from EUR 5 to 10 mln., and 5 % p.a. from EUR 1 to 5 mln. Up to now, AOFI has supported 13.3% of total Serbian exports in 2007, and 10.8% in 2008.

#### AOFI Portfolio structure, 2008



■ small ■ medium □ large

Figure 1. AOFI Portfolio structure, 2008

# 3. The best market practices in official export credit support of SMEs

One of very important problems in business activities of export credit agencies is the issue of cooperation with small and medium exporters. In comparison with large exporters, small and medium-sized exporters face larger problems in the process of exporting. Small exporters are a significant, politically sensitive subject in most countries for various reasons, and not only due to the fact that they can significantly contribute to the overall export [7].

For instance, some of the problems that small- and medium-sized enterprises in the financial and banking sector face are [8]:

- Lack of experience, especially in business evaluation and supervision of SMEs, which results in the attitude that SME financing is too risky.
- Absence of secondary market makes insurance evaluation difficult to perform and it is difficult realize collateral in case of delay of payment.
- Lack of business records of an entrepreneur and SME in the previous period in the correlation with the fact that the environment is changing very rapidly; it seems that the inherent risk of the project is far greater than the risk in a comparable western economy.
- Lack of diversified financial institutions and lack of appropriate legal procedure and experience, as well as resources.
- Absence of government support measures for motivating financial institutions to finance SMEs.
- Administrative expenses of SME financing are very high and the credit value is too low to cover these expenses.
- Lack of transparency in the assessment of market placement and insufficient training of financial institutions when it comes to doing business with SMEs.
- SMEs cannot provide a collateral and/or a collateral instrument that is required by credit institutions and
- There is neither reliable market information nor track credit history of potential debtors.

According to Stephens and Smallridge [9], transactions of international trade are very complex, and export documentation is often complicated and very detailed. Large and experienced Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010 exporters have more experience in that domain. Small and medium-sized enterprises usually have less experience and expertise in the international trade. Small exporters will have more problems understanding the typical ECA products. Furthermore, these products may be complicated and expensive for them. It is a fact that they would be reluctant to fill this knowledge and resource gap by hiring an external expert, due to the additional costs.

It is not in interest of ECAs to set out different conditions for small-sized exporters, nor to reduce premiums. Special programs may be a solution for SMEs, but they are not necessarily less costly; on the contrary – they could even prove to be more expensive. The key concept in dealing with small exporters consists of simplicity of approach, providing help with the necessary documentation, as well as using most efficient administrative procedures. SMEs will also need advisory services of an ECA in the process of choosing a program, and sometimes even during its implementation and duration.

ECAs derive a high income, mostly from export activities of large companies. ECAs use this profit to provide the operational infrastructure (for instance, information about foreign buyers, specialized expertise, IT platform), which they require in order to have fast, internationally competitive and efficient service. It is important to emphasize that ECAs defray expenses for developing new, special programs for SMEs, while the level of insured business per policy is small. ECAs face a demanding task when making an attempt at balancing the focus, priorities and resources devoted to SMEs. Programs designed for SMEs usually result in high operational costs, mostly because of diseconomies arising from their size. Although the administrative expenses per contract may be equal to those of large exporters (or even higher, because SMEs need more advisory services), the premium income per contract will often be lower.

If the programs designed for SMEs are characterized as small-profit programs from the start, there is a danger of assigning them a lower priority and less qualified staff, resulting in a lower level of service and customer care. This is certainly not in the best interest of small and medium-sized exporters. The guiding principle for ECAs and their governments is to ensure a priority for development of special products and services that meet special demands of export that SMEs deal with.

The main and most important role of an export credit agency is to ensure support for export with programs of their financing and insurance. Based on the analysis of best supporting practices from Export Credit Agencies in different countries face the authors tried in their work to establish the key guidelines of the most effective approach to small- and medium enterprises in the market:

- Small and medium-sized enterprises must be identified as a distinct client group that needs to be addressed under unique conditions. Export credit agencies have had to define their knowledge about this market segment, to determine what exactly small- and medium-sized enterprises are exporting and which financial tools could be of most use to them. After acquiring this knowledge, export credit agencies have to form a special team (like US Ex-Im Bank did) which will deal with small- and medium-sized enterprises. If ECAs skip this step, SMEs could be considered as 'bores' because the staff are busy dealing with large exporters and more complex transactions.
- The cost of administrative processing should be accessible and adapted to small and medium-sized enterprises. Administrative processing needs to be simplified and export credit agencies should include the consequent costs in premium costs. Some countries, such as Italy, do not charge administrative processing to small enterprises;
- A very important component of successfully implemented strategies for SMEs is simplification of product description. Procedural information needs to be as brief as possible and written in simple language. For example, Germany, Hungary and Turkey have simplified the application procedures, reduced bureaucracy and described products in the simplest possible way in order to be small exporter-friendly. In FY 2009, 72 percent of the Bank's small-business transactions were submitted through Ex-Im Online, the Bank's online business system. Ex-Im Online provides exporters, particularly small businesses, with the benefits of electronic application submission, processing and insurance-policy management. The system automates the Bank's primary transactions processes, including export-credit insurance, export-loan guarantees and electronic claim filing. The system also provides users with online tracking of the status of their applications. Additionally, US Ex-Im Bank participates in the "One Stop, One Form" registration system, an Internet-based application system for all

federal-government export programs that is coordinated by the Trade Promotion Coordinating Committee (TPCC).

- In addition to the need to have specially designed programs for small and medium-sized enterprises, the analysis has shown that it is necessary to establish cooperation with commercial banks that should provide a program for working capital. The insurance by export credit agencies could be used as part of the package;
- SMEs need help and training in the area of international transactions. Certain governments and export credit agencies have made advisory services, such as help desk, available to SMEs. MEHIB in Hungary, EFIC in Australia, Euler Hermes in Germany and ECGD in the United Kingdom organize seminars, issue publications and cooperate with other agencies that deal with providing help for small- and medium-sized enterprises. The idea behind the work of these agencies is to join resources and to become a partner of other governments and of private sector, in order to create a substantial local presence and ensure invaluable help for exporters. Export credit agencies have also achieved success by cooperating with national and local Chambers of Commerce, which have represented entrepreneurs in different ways;
- Products and services can be offered to SMEs directly by an export credit agency, or indirectly through other institutions or intermediaries (insurance agents). In developed countries, special programs designed in favor of small- and medium-sized entrepreneurs are distributed to banks and to special companies for trade, insurance and services, which then offer these programs to small exporters, who are already their clients. For example, small and medium-sized enterprises in Canada and Germany can get all necessary pieces of information online, or by dialing a toll-free number, which connects them to the department for small and medium-sized enterprises, in case they need further information. On the Ex-Im Bank Web site, the Bank maintains a Web portal specifically for small businesses: "If you're a Small-Business Exporter..." (www.exim.gov/smallbiz/index.html). This portal provides step-by-step assistance, including an interactive guide and Ex-Im Bank contacts. The Bank also continues to expand its Web-based subscription service to SMEs. For example, Canada's export credit agency (EDC) sends over a half a million of brochures by post every year to small- and medium-sized enterprises in the media.

# 4. Conclusion

In the process of exporting, small and medium-sized enterprises usually face additional difficulties that pose a bigger problem for them than for large enterprises. These challenges are reflected in limited financial and management resources, as well as in the difficulty of finding financial support. The objective is to define products for small and medium-sized enterprises in the most efficient way possible, instead of just trying to provide a less expensive program.

Exporters in the Republic of Serbia definitively need the state support for export revitalization. The moment should be used for further simplification of the trade regime and enhancing the export orientation of the economy in conformity with the adopted national Export Promotion Strategy from 2008 up to 2011 [10]. Export oriented enterprises should be provided with institutional support for the promotion of export (especially because of the expected membership in the EU).

Consulting services and education of exporters is a very important segment. The support for strengthening the capacities of small and medium size enterprises for export and development of separate products for this target group must not be left out. Similar to the developed countries, building of the effective institutions for export promotion cannot be achieved without the support of the government [11]. Export credit agencies must adapt their products and services precisely to the needs of this target group. They should always bear in mind that at least one of those small- and medium-sized enterprises may become a large exporter one day.

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Sites of interest: www.berneunion.org.uk, www.wto.org, www.oecd.org, www.aofi.co.yu, www.sace.it, www.eulerhermes.com, www.agaportal.de, www.exim.gov,

# European Charter and barriers for small and medium enterprises development in the selected municipalities in Autonomous province of Vojvodina

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This paper deals with the barriers for the development of small and medium enterprises in the province of Vojvodina. The paper examines limitations in financial institutions and limitations for legal and social institutions that are dealing with SMEs sector. In this research, careful attention has been devoted to the European Charter on small-sized enterprises i.e. how well it has been adapted to suit the established framework which has been precisely defined in terms of ten-point plan. The survey aims to investigate the degree to which the observed municipalities of Vojvodina adjusted to the framework the European Charter and to identify constraints for development of small-sized enterprises.

#### Keywords

European Charts, small and medium sized enterprises, barrers

## 1. Introduction

Republic of Serbia is faced with challenges of global economic trends and integration processes in both European and world markets. Its priority is to join the European Union, along with the development of competitive economy which is based on its knowledge and innovations.

Technological development and larger part of services in commercial businesses drew special attention to pre-structuring of economy, where the processes of large merging and increasing role of small and medium enterprises, which represents the most visible type of the latest entrepreneurship, are taking place simultaneously. The entrepreneurship is expected to have considerable influence on economic development [1] and social development [2], which makes it one of the most powerful elements of the development strategy of every country, whether it is developed or developing country, such as Serbia.

The process of rapid technological changes, which accompanies the contemporary economy, represents the outcome of the latest entrepreneur ideas. This conclusion implies that entrepreneurship can give Serbia a chance to advance in technology [3], since the entrepreneurs can largely contribute to the high level of resource exploitation and the highest economic growth [4], which further enables keeping up with developed countries.

Most countries expect the entrepreneurship to solve one of the biggest problems nowadays – high level of unemployment. Serbia is one of the countries with the highest unemployment rate [5] and, thus, the development of entrepreneurship improves its chance.

The EU non-financial business economy counts over 20 million enterprises, over 99% of which are SMEs. About two-third of total employment in the private sector is found in SMEs. Micro firms (who have on average 2 occupied persons) employ 30% of the total private labour force [6]. In undeveloped countries with lower GDP, on the contrary, the section of small and medium enterprises is neglected and undeveloped. Institutional networks, which undeveloped countries lack, can engage in etrepreneurship education and technology transfer of small and medium enterprises, resulting in increase in SME's efficiency [7].

# 2. The European Charter for Small Enterprises

The European Charter for small enterprises represents the framework which enables the countries, obliged by the aims of this Charter, to follow, estimate and compare the development systematically in order to fulfill the aims in annual process.

The European Charter for small enterprises offers clear framework, which allows local entrepreneurs to fill in the gaps, left by the pretreatment and reform of public sector, and to take all the opportunities provided by the reform process. Signing the Charter, Serbia is committed to act in compliance with the rules of the European Union, taking the needs of small enterprises into consideration.

The Charter indicates the open *method of coordination* that comprises four different elements of political cooperation on European level: directions, exchange of "good practice", comparative overview and application of indicators and benchmarks.

Ten principles of the European Charter for Small Enterprises are [8]:

- 1. Education and training for entrepreneurship;
- 2. Cheaper and faster start up;
- 3. Better legislation and regulation;
- 4. Availability of skills;
- 5. Improving online access;
- 6. Getting more out of the Single Market;
- 7. Taxation and financial matters;
- 8. Strengthen the technological capacity of small enterprises;
- 9. Successfull e-business models and top-class small bisiness support;
- 10. Develop stronger, more effective representation of small enterprises interests at Union and national level.

By signing the Charter at the summit of the European Union and west Balkan, on 21<sup>st</sup> of June, 2003, in Thessalonica, Serbia committed to act in accordance with the rules of the European Union, taking the needs of small enterprises into consideration.

The recommendaton of the Charter consists of three main elements:

1) State report from every country – self-estimation of countries' powers, weaknesses and aims within ten principles.

Every country is supposed to give a detailed description of the conditions in the field of small enterprises, which will enable identification of 'good practice' through cross-comparison of different reports. Every country should also identify the plans and aims in their reports. Every country is to rank the fields from the Charter, according to different criteria, i.e. which fields are most important for their countries, where are they more or less successful etc.

2) Bilateral meeting in every country – meeting with the representatives of small and medium enterprises, where the reports should be discussed and amendments should be made;

3) European report which should lead to conclusions, comparing countries and giving the lists of all aims and standards proposed by the countries.

Most of the developing countries have already accepted the European Charter for small and medium enterprises. This Charter is essential from the aspect of development of entrepreneurship and MSP sector and for complying with the EU standards. Thus, it is essential for joining the European Union.

# 3. Research and Identification of Barriers for Small and Medium Enterprises Development

#### 3.1 Sample and Research Method

In this research six municipalities, that have been identified as representative according to the observed characteristics, were surveyed during 2008. These municipalities were: Novi Sad, Vrbas, Bečej, Bačka Palanka, Zrenjanin, and Bački Petrovac.

The research used a questionnaire consisting of 16 open type questions. This questionnaire was given to every municipality to describe the situation in the field of small enterprises, that would enable the identification of "good practice", and the ranking of domains of the Charter according to different criteria. Answers were standardized, quantified and processed, after which obtained data was analyzed by means of standard statistical procedures, factor analysis and one-way anova.

# 3.2 Level of European Charter Implementation in Observed Sample and Identified Problems

Based on data obtained from the observed municipalities, individual holistic scores were derivated as follows:

- Novi Sad 3.35
- Vrbas 3.19
- Bečej 3.07
- Bačka Palanka 3.19
- Zrenjanin 3.33. i
- Bački Petrovac 1.99

Average index based on research results in municipalities of Vojvodina is 3.02.

From the given results it can be observed that regional distribution of scores between municipalities is uneven, with Novi Sad and Zrenjanin leading the way. Biggest differences in results between municipalities are in areas of more affordable and faster start up, availability of skills, improving online access, strengthen the technological capacity of small enterprises, successfull e-business models and top-class small bisiness support.

Besides undeniable advancements in creating a more simulative business environment, all the obstacles (to develop the sector of small and medium sized enterprises, increase its competitiveness and inventiveness) have not been removed yet. This applies specially to large fiscal intakes, unfair competition recruited from the grey economy, late payment of debts, inaccessibility of public acquisitions, monopolies, proceedings of tax and supervisory bodies, complicated, slow and expensive procedures of procurement of building and utility licenses and approvals to connect to the infrastructure network, municipal taxes and so on.

In terms of access to the sources of funding significant steps were made, particularly in encouraging micro loans for beginners, but funding is still one of the greatest problems and

needs of SME sector. State incentives are relatively limited, and bank loans are very expensive and inaccessible for most of the SMEs. Mechanisms for the establishment of risk capital funds are not created, there is no support for business angels, and there are few investment and development partnerships with foreign and domestic companies. Funding growth by means of auto-financing, or credits for working capital and long-term investments under disadvantageous conditions with regard to interest rates and mortgages is difficult.

Factor analysis of obtained data was conducted, followed by varimax rotation, where two interpretable factors were identified, as shown in table 1.

	Factors			
	1	2	3	
Education and training for entrepreneurship;	,207	,026	,939	
Cheaper and faster start up;	-,062	,817	,505	
Better legislation and regulation;	,411	,824	,004	
Availability of skills;	,784	,492	,067	
Improving online access;	,937	,075	,172	
Getting more out of the Single Market;	,286	,801	,020	
Taxation and financial matters;	,644	,549	-,191	
Strengthen the technological capacity of small enterprises;	,678	,322	,123	
Successfull e-business models and top-class small bisiness support;	,878	,206	,297	
Develop stronger, more effective representation of small enterprises interests at Union and national level.	,629	,469	,507	

Table 1 Factor structure of Charter principles in observed municipalities, varimax rotation applied.

The identified factors were named:

- 1. Logistics and organizational assumptions for contemporary business
- 2. Legislative and procedural assumptions

"Education and training for entrepreneurship" variable remained uncorrelated with two extracted factors, and was treated separately, as factor 3.

Factor scores were then calculated for every municipality, which was followed by comparing their means, showed in table 2, with following conclusions :

- Factor named Legislative and procedural assumptions produces significantly different scores in observed municipalities, where Novi Sad has the biggest score, while other municipalities have lower, relatively evened scores.
- Factor named Education and training for entrepreneurship produces significantly different scores in observed municipalities, where Vrbas, Bačka Palanka and Novi Sad have better scores than others.
- Factor named Logistics and organizational assumptions for contemporary busines did not produce significantly different scores in municipalities, which means this factor is common for all the municipalities and should be treated globaly.

		Sum of squares	df	Mean square	F	Sig.
Logistics and organizational assumptions for contemporary business	Between groups	8,867	5	1,773	2,258	,093
	Within groups	14,133	18	,785		
	Total	23,000	23			
Legislative and procedural assumptions	Between groups	11,856	5	2,371	3,830	,015
	Within groups	11,144	18	,619		
	Total	23,000	23			
Education and training for entrepreneurship	Between groups	10,699	5	2,140	3,131	,033
	Within groups	12,301	18	,683		
	Total	23,000	23			

#### Table 2 One-way ANOVA for factor scores of observed municipalities

#### 3.3 Discussion

Based on all obtained results, it can be stated that the business of small and medium sized enterprises is under a heavy burden of numerous problems, but they differ according to the stage of lifecycle of the enterprise. In the beginning, entrepreneurs are often inadequately prepared to start the operation and get insight in all the problems they will face. On the other hand, the unreadiness of banks to fund the "start-up" activities of future entrepreneurs is evident. In their growing and developing stage, small enterprises are faced with new and different problems.

The transition from entrepreneurial toward managerial form of enterprise generates crisis, which manifests as a lack of managerial skills, which is then reflected as a lack of business plans or in form of inadequate business plans, intuitive models of making business decisions, inadequate models of control, staff policy without criteria and plans, etc.

Even successful small enterprises are facing crisis due to the need for further growth, which requires greater technical and administrative knowledge with respect to export business, international marketing and financial operations, professional knowledge about the actual ways of manufacturing and quality systems.

With the growth of enterprises and elevation of technological level of operations, arise insufficiencies in workforce, modern manufacturing equipment, appropriate business facility/building and/or land.

Overcoming the problems of SMEs sector includes a wide range of measures and the involvement of a large number of government institutions and organizations, as well as cange in regulations and procedures of local governments. Serbia has established a solid policy framework for the development of SMEs. However, implementation is still relatively limited [9].

Slow adoption of new legislations and large number of secondary legislation and administrative procedures, which are often mutually conflicting, incomplete, and deployed at large number of public officials, often produce confusion and additional costs in time and money for most small businesses.

Small and medium-sized enterprises in the investigated municipalities in Vojvodina are faced with very complex procedures and regulations in their starting phase, daily operations and in case of failure. Compliance with these regulations and procedures is a significant burden and Proceedings of

cost for limited financial and human resources in the SME sector. Conviniant stores have problems with the work of inspection bodies, medium-sized enterprises have problems with the procedures for import and transit. Another major problem are the tax policy and tax administration. Rate allocation for social and pension contributions are still high. State assistance in collecting receivables is weak, the refund of VAT is delayed, but the penalty policies are harsh and uneven.

Development of SMEs is not realised solely through the entrepreneurial praxis and measures of economic policy, but also through the effort to realise direct, structural changes in education. Based on previous researches conducted in selected municipalities of the Autonomous Region of Vojvodina, it could be concluded that in the near future young people are going to link their professional development with the sector of SMEs [10]. Therefore, education must satisfy the needs for new knowledge and skills which are necessary for successful work in this sector, and that implies introducing new professions and profiles that will allow the achievement of greater flexibility in overcoming the changing requirements of the world of labour. Some of investigated municipalities have major problems with of migrations skilled workers to larger urban centres with faster economic development. Ethnic diversity and tensions in multinational and multiconfessional environments in Vojvodina represent a problem in some municipalities.

## 4. Conclusions

The precise definition of developmental needs, "strengths and weaknesses" of the municipalities, and their interconnection, provides the synergy of effects and propose a comparative overview of development of small enterprises within the selected municipalities. This research results may serve as a data base for launching new initiatives and create conditions to intensify the entrepreneurship.

Approaching to the European Union implies coordination of the system environment, improving the climate of entrepreneurship, strong private initiative and development of small and medium enterprises. Creating a development environment at the local level is the priority task for development of SMEs.

In this paper, based on the recommendations of the European Charter for Small Enterprises, the existing system environment and barriers to growth and development were identified.

An analysis of all factors covered by the European Charter for Small Enterprises in these municipalities was carried out. This survey showed that the greatest impact on improving the business conditions of SMEs sector in the future will have: better legislation and regulation, taxation and financial support. In addition it is necessary to undertake activities related to: strengthening education and advisory services to SMEs, strengthening institutional support to the development of SMEs, boosting export competitiveness of SMEs, support to SMEs through the creation of public-private partnerships, stimulating innovation and technological competitiveness, stimulating the development and use of infomacion and communication technology, entrepreneurship promotion, promotion of dialogue between representatives of industry and relevant stakeholders at national and local levels.

Therefore, emphasis should be given to addressing the key problems of SMEs, by establishing a permanent dialogue between representatives of industry and relevant stakeholders at national and local levels. Particular attention should be paid to issues of combating the informal economy, insurance claims and problems of relations between SMEs and large companies. Measures of monetary policy should allow lower interest rates on bank loans. Support for the introduction of quality standards should be represented in the stimulation measures for SMEs sector.

It is necessary to carry on the reform of educational system that will enable education for entrepreneurship at all levels of formal education with the aim of adjusting the educational system to the needs of market economy, and especially to the needs of SMEs.

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# Model for evaluation of business environment quality

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The submitted paper brings the most important results of a wide research study that is an output of the first stage of a three year research project whose key solvers are the authors. The study is focused on the quality of the business environment in the Czech Republic. The evaluation is carried out at microregional level which is represented by 205+1 administrative districts of municipalities with extended competence (level between LAU 1 and LAU2). The final model classifies individual regions into five established types of business environment quality. This model is created with the use of a wide range of data aggregated to form key factors of business environment quality with various degrees of significance. On the basis of the composite evaluation of the position of the individual regions their centres are typologically defined as development poles of various significance and development centres with differently favourable business environment. The whole study is connected with the idea that innovations play an important role within the transformation of traditional economics to modern knowledge economics.

#### **Keywords**

Business environment, competitiveness, development poles, regional development,

#### 1. Introduction

The research of the business environment quality is ideologically based on two groups of economic theories mainly. The first one comprises location theories, which are generally considered the oldest part of the regional development theory. Their grounding premise can be summarized as the statement that a limited spatial mobility of production resources determines the creation of territory-specific economic structures, and in correspondence with this, the main objective of location theories is to find the factors which condition the location of economic activities and use them as a basis for the explanation of the regularities in the spatial distribution of economy [1]. In this respect, we can differentiate four basic directions of location theories: the clarification of location decisions of particular companies, the research into interdependences of location decisions of companies, the analysis of behavioural aspects of location, and the synthesis of the overall spatial distribution of economy. The more up-to-date location theories still represent a significant information source useful for the

practical decision making of managements of highly mobile global companies. However, it is necessary to add that the search for comparative location advantages is highly affected by a number of hardly quantifiable subjective factors.

The second group of these economic theories is represented by models of endogenous growth; these originated as a reaction to the fact that basic neoclassical models were not able to satisfyingly interpret long-term production growth. Therefore, endogenous models endeavour to internalize the other factors affecting the economic growth which were considered exogenous in the original economic models and in correspondence with this they are characterized by certain forms of the spill-over of economic effects ensuring individual and social return of investments. We can distinguish between two main types of endogenous models, which generally emphasise the key roles of 'knowledge capital' [2]:

- R. Lucas's model which assumes that the level of human capital mainly depends on the way in which individuals divide the available time between work and training. The human capital in the above mentioned context is demonstrated by two effects: 1) earnings of each worker depend on his skills, which stimulate them to achieve higher qualifications; and 2) the average level of the human capital subsequently contributes to the increase in productivity of other production factors.
- P. Romer's model which assumes that innovation efforts of businesses enhance the general scope of technical knowledge, in other words the level of knowledge capital. The model emphasizes that the development in technology is determined by science and research to a great extent but the commercial utilization of its results requires private investments in innovations, which are then the main source of the spill-over effects improving the productivity of all production factors including the general level of technological development.

Modern endogenous models lay stress on the issue of global competitiveness, which is a result of multidimensional cooperation of social and market forces. In the general model, the processes and factors affecting competitiveness are evaluated on four basic system levels: meta (developmental orientation of a society), macro (stable framework of economy), meso (economic policies and supporting institutions), and micro (companies and their associations).

From microeconomic perspective it is necessary to state that the quality of business environment is of significant influence on the economic development of a specific territory and in correspondence with a high level of inertia it creates the basic framework for the perception of its long-term competitiveness. In the conditions of market economy the determining development influences are naturally generated by the entrepreneurial sector. Optionally, also effects of specific factors are visible (e.g. the occurrence of attractive natural resources, strong regional 'rooting' of large companies, the advantages caused by the vicinity of dynamically evolving development poles or the position on a development axis). In relation to this, it is useful to mention M. Porter's theory of competitiveness (the diamond model). Porter is of the opinion that competitive advantages are strongly affected by local conditions even in the global economy and they arise from the concentration of skills and knowledge, institutions, companies, and customers [3].

# 2. Research methodology

The evaluation of business environment quality is based on an approach the core of which is the identification of investment or development preferences of entrepreneurs. These preferences can be expressed in a concentrated way which is based on a pre-defined set of business environment quality factors. The multifactor evaluation of business environment quality (BEQ) respects the logics of modern concepts of location analyses, which put the main stress on the consideration of the corresponding entrepreneurs' demands. In this

context, the results of the conducted empirical studies lead us to the general statement that the decisions of companies concerning the location of new or expansion investment are (besides subjective factors) influenced by a wide range of objective factors; the strength of influence of the individual objective factors cannot be correctly defined using simple deterministic models. However, even in the case of multifactor evaluation this is a generalized statement, which is from the perspective of specific companies modified by their subjective requirements concerning the optimum combination of demanded BEQ factors.

We have chosen a complex approach to BEQ evaluation taking account of development preferences of selected industries and services of the market sector of economy. In agreement with the used statistical classification of economic activities EU NACE - Rev. 2,[4] these are location-sensitive fields belonging to the manufacturing industry (section C -Manufacturing, divisions 10-33) and to selected fields of market services, hereinafter referred to as progressive services (section J – Information and communication activities, divisions 58–63; section K – Financial and insurance activities, divisions 64–66; section L – Real estate activities, division 68; section M – Professional, scientific and technical activities, divisions 69–74; section N – Administrative and support service activities, divisions 77–78 and 82) with approximately 55 % of current share in the total production of the Czech economy. The created methodology respects the global character of economy and in this sense it also considerably reduces the usual faults of methodological approaches based on surveys of opinions as expressed by representatives of the Czech entrepreneurial section, which rather reflect their subjective ideas than deeper general and specific knowledge on the determining tendencies and trends present in the particular context within the global economy.

For the evaluation of BEQ to be possible it is naturally necessary to have relevant estimates of appropriate degrees of significance of the selected factors. These can be established with the demanded degree of objectivity using qualified international surveys of corresponding opinions of potential investors and subsequent statistical and other analyses. For this purpose, especially the data found out by Netherland Economic Institute in cooperation with the well-known advisory and auditing company Ernst and Young [5] were used, together with the results of other international surveys carried out by recognized European institutions (e.g. IFO Munich [6]). There is a certain disadvantage to these international surveys; it is the fact that they are primarily focused on new investments, referred to as Greenfield Investments in practice. Therefore, for the final selection and the establishment of degrees of significance of the particular factors also other data were used, especially analyses of significant foreign investors' opinions on location attractiveness of the Czech Republic, the results of our own survey of representatives of selected Czech towns, and also the results of conducted statistical analyses based on the factor analysis method and aimed at the identification of the determining dependencies occurring in foreign investments [7, 8, 9, 10, 11]. The described approach takes into account not only Greenfield Investments but other types as well (acquisitions, joint ventures, etc.). However, their allocation is more considerably affected by the economic situation and the development prospects and strategies of foreign and Czech companies. The identified main factors of the BEQ can be divided into six groups (business, labour-related, infrastructure-related, local, price-related, and environmental factors) or according to their position in significance (the most significant factors, factors of medium significance and less significant factors).

It is necessary to emphasize that the establishment of the degrees of factor significance is largely influenced by the adaptation to the conditions of the 'knowledge economy', which considers innovations as the main drive of significant development. The transition to the knowledge economy is connected especially with the weakening of the overall significance of infrastructure-related factors and also of a comparable significance of some partial factors (e.g. the factor of public administration assistance). On the other hand, there is an increase in the overall significance of labour-related factors (the factor of workforce quality) and

environmental factors and some partial factors (especially the business and knowledge base factor).

factors	typological groups	degree	
the most significant factors:		48	
business and knowledge base	local factors	11	
workforce availability	labour-related factors	10	
vicinity of markets	business factors	9	
concentration of key customers	business factors	9	
workforce quality	labour-related factors	9	
factors of medium significance:		35	
price of real estates	price-related factors	7	
quality of roads and railways	infrastructure-related factors	6	
labour costs	price-related factors	6	
information and communication technologies (ICT)	infrastructure-related factors	6	
support services	business factors	5	
urban and country attractiveness of the area	environmental factors	5	
less significant factors:		17	
presence of foreign companies	business factors	4	
environmental quality of the area	environmental factors	4	
public administration assistance	local factors	3	
vicinity of international airports	infrastructure-related factors	3	
workforce flexibility	labour-related factors	3	
Source: authors' research		-	

Table 1 BEQ factors and their degrees of significance

The total information relevance of the methodology has been verified using the hypothesis that the BEQ values at regional level (BEQ values at regional level are not presented in this paper for the space is limited) have strong connections to the level of GDP. This hypothesis was confirmed on the basis of the obtained results - the calculated value of the correlation coefficient between BEQ and GDP exceeds 0.95 (data from 2006). We obtain similar data when the values of GDP of the previous or the following years are used. From a theoretical viewpoint this fact can be considered the verification of the causal relationship between the BEQ and the quality of companies. As for the most significant differences in the degrees of significance of particular BEQ factors between the above mentioned aggregations of economic activities, i.e. the manufacturing industry and the progressive services, we can see that they are to be found in the factor of the vicinity of markets (with a considerably higher significance for the manufacturing industry), further the factor of information and communication technologies and the factor of support services (both with a considerably higher significance for progressive services). Naturally, there are also differences in the degrees of significance dependent on the size of a company. In this respect, small and medium-sized enterprises (hereinafter SME) are in comparison with larger companies much more sensitive to price-related factors mainly (the factors of labour costs and the price of real estates). As far as markets for products and services are concerned, SME are more oriented at regional, or only local markets, therefore, the significance of the factor of vicinity of markets is lower [12].

The territorial units used for the regional evaluation of BEQ were administrative districts of municipalities with extended competence (MEC). The total number of these districts in the Czech Republic is 205+1 (including the territory of the capital – Prague). These units are not included in the European system of NUTS; MEC represent a level between LAU 1 (districts) Proceedings of International Conference for Entrepreneurship, Innovation and

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and LAU 2 (municipalities). From a regionalist perspective, these units represent a microregional level of evaluation (hereinafter they will be referred to as region, or regional level).

The evaluation of the selected BEQ factors in the individual regions was then carried out in the agreement with classification which had been developed and thoroughly verified in practice before. The classification consists of five groups: 1st group – values well above average; 2nd group – values slightly above average; 3rd group – average values; 4th group – values slightly below average; and 5th group – values well below average. If the values were placed in a position similar to usual statistical distribution, the limits of individual classification groups were set on the basis of the standard order from the 1st to the 5th group (x = arithmetic mean, Sx = standard deviation): x and Sx, x + 0.33 Sx, x – 0.33 Sx, x – Sx. In the other cases, the limits of the classification groups were set by means of specific procedures adapted, besides the statistical distribution of the values of the factors, to their factual character.

## 3. Results and Conclusions

As it would be highly beyond the scope of this paper to present the results of the analyses of partial BEQ factors, we are only going to provide the complex, user-oriented, regional evaluation of the business environment. The obtained results can be used not only for the formulation of regional strategies and various conceptions of the regional development but also for the needs of the decision making processes in companies concerning options of their further development or investment priorities, especially regarding potential external savings or territorial relationships (supplier-customer relationships) of companies.

The total values of BEQ are weighted sums of the values of their partial factors conducted within the established territorial units. The used procedure can be generally expressed using the following formula:

$$S = \sum_{i=1}^{n} (P_i \cdot w_i)$$

where: S = total BEQ, P = values of partial BEQ factors, w = weights of partial BEQ factors.

The values were first calculated for all MEC regions, which were consequently classified into the established BEQ complex types (table 2): type A – regions with outstanding business environment (the values of the total BEQ range between 1 and 1.5), type B – regions with very favourable business environment (1.6 to 2.5), type C – regions with favourable business environment (2.6 to 3.5), type D – regions with less favourable business environment (3.6 to 4.5), type E – regions with unfavourable business environment (4.6 to 5). Within an economic framework, the particular complex types of business environment can be described as: type A – services or selected industrial activities with the highest added value, type B – services and industries with a high added value, type C – industries and services with a medium added value, type D – industries and services with a lower added value, type E – industries or selected agricultural activities with a low added value.

Naturally, these are highly simplifying characteristics (but corresponding with the confirmed positive dependence between BEQ and GDP), which are mainly related to the crucial bearers of the developmental dynamics from the point of view of the above defined complex types of BEQ. The real economic structure of the individual regions has a much more diversified form and in this sense it includes various and varied business activities with considerably differing levels of the added value creation.

Region:	type A	type B	type C	type D	type E	mean	total
Praha	1	0	0	0	0	1	1
Středočeský	0	7	17	2	0	2.8	26
Jihočeský	0	2	9	6	0	3.2	17
Plzeňský	0	1	6	8	0	3.5	15
Karlovarský	0	1	4	2	0	3.1	7
Ústecký	0	1	10	5	0	3.3	16
Liberecký	0	1	5	4	0	3.3	10
Královéhradecký	0	1	10	4	0	3.2	15
Pardubický	0	1	8	6	0	3.3	15
Vysočina	0	1	8	6	0	3.3	15
Jihomoravský	1	0	8	12	0	3.5	21
Olomoucký	0	1	4	7	1	3.6	13
Zlínský	0	1	6	6	0	3.4	13
Moravskoslezský	0	1	6	14	1	3.7	22
CR in total*	2 (1)	19 (9)	101 (49)	82 (40)	2 (1)	3.3	206

Table 2 Number of regions according to complex BEQ types

\* the brackets show the proportion in %

Source: authors' research

The obtained composite evaluation of the positions of the individual regions based on the values of the total BEQ can be used to classify their centres into the following main significance degrees or levels [13].

#### I. Macroregional and mesoregional hierarchic level

With respect to performing administrative functions, the natural centre at macroregional hierarchic level is the capital of the country in question and at mesoregional hierarchic level in the conditions of the Czech Republic it is a regional capital. Economically speaking, these centres can be called development poles and their basic defining criterion within the presented methodological approach is their business environment level above average.

#### *I.1 Development poles of supranational significance*

The development poles of supranational or European significance are metropolitan regions with outstanding business environment classified as type A. These development poles have the crucial importance for the economic development of the entire Czech Republic and its competitive position within the global economy. These are especially Prague and to a lesser extent Brno, which lies on the edge between types A and B according to the results of the BEQ synthesis. It means that only Prague can be considered a real European metropolis, whereas the position of Brno can be described as a 'smaller European metropolis' (development pole of secondary supranational significance in the Appendix 1) – only further development will show if the city can gain a stable position in this respect (as has been maintained by Austrian Salzburg for some time now). According to sociogeographic regionalization of the Czech Republic these are the centres of mesoregional (macroregional in case of Prague) significance.

#### I.2 Development poles of national significance

The development poles of national significance are metropolitan regions with very favourable business environment, classified as type B. The results show that this criterion is to the demanded extent met by all the remaining 11 regional capitals. The highest value is achieved by the Plzeň region and the lowest by the Zlín region (however, when the Zlín region is connected with the neighbouring region of administratively artificially disconnected

Otrokovice, which can be considered its industrial suburbs, its value increases to the level comparable with much larger Ostrava). According to the results of the sociogeographic regionalization, all the regional capitals (except Jihlava) are centres of mesoregional significance. Also Mladá Boleslav falls within this group even though it is not a regional capital (it is only a strong nodal centre; the function of the regional capital of the Středočeský region is performed by Prague); its region has a very favourable business environment. This fact reflects especially the location of the largest Czech company Škoda Auto, which crucially affects the territorial division of labour in the Středočeský and the neighbouring Liberecký regions thanks to its production interactions.

#### II. Microregional hierarchic level

From the perspective of administrative function performance this level is represented by the remaining 192 MEC regions. From an economic viewpoint these MEC play the role of development centres. Their particular significance position is determined by the overall level of their business environment in the interaction with their real economic significance and further their nodal functions. In this way we can define the nodal centres of microregional significance (the limit of 15 thousand inhabitants of the entire region and 5 thousand inhabitants within the surroundings [13]) and functionally subordinate centres.

#### II.1 Development centres with very favourable business environment

This group involves regions in the Středočeský region with the centres in Kolín, Beroun, Benešov, Brandýs n. L. - S. Boleslav, Říčany and Černošice, together with Tábor in the Jihočeský region. The fact that there are six regions from the Středočeský region in this BEQ type documents the high developmental dynamics of the economic area of the Středočeský region, with the leading role of Prague as the main development pole of the Czech Republic. Out of the above mentioned centres, Říčany and Černošice do not perform the role of nodal centres (they are functionally subordinate development centres) and in this respect their regions belong to the nodal region of Prague. In general, we can state these are highly attractive regions regarding investment and migration (their migration attractiveness is selectively strengthened by suburbanization processes), with strong economic and social links to Prague.

#### II.2 Development centres with favourable business environment

There are 101, i.e. nearly a half of regional centres in this group, spatially characterized by large territorial agglomerations around regional capitals (interconnected with similar agglomerations in the neighbouring regions) with better job opportunities. Exceptionally, there are also isolated regions (e.g. the Šumperk region). In this respect we can say that there is an obvious shift as even less urbanized regions with smaller centres (often with less than 10 thousand inhabitants) started to be economically developing with success. The economic prospects of these centres and their regions mainly depend on their economic structure and their ability to overcome weaker points of their business environment. Only a small part represented by 14 regional centres is not centres of nodal regions, i.e. they are subordinate centres with considerably weaker economic influence on their administrative districts.

#### II.3 Development centres with less favourable business environment

In total, 82 centres belong to this group. Their regions are to be found in the Moravskoslezský region (these are structurally affected regions where the decline of coal mining and the reduction of metallurgical production revealed the economic risks following from single-oriented economic base, or regions in peripheral position) and in the Jihomoravský region (here, they are especially the little urbanized regions of the wider surroundings of the regional capital Brno). The improvement of their economic prospects requires either the enhancement of their business environment or the strengthening of their links to economically stronger or more successful regions. Similarly to the previous category,

there are agglomerations of these regions, but there is a higher number of isolated regions. 42 regional centres in total, i.e. more than a half of them, do not perform the function of the centre of a nodal region; they are subordinate centres. They are especially administrative centres in the close surroundings of regional capitals (mainly Brno, Ostrava, Plzeň).

#### II.4 Development-insignificant centres with unfavourable business environment

There are only two economically insignificant regional centres with unfavourable business environment, Konice and Vítkov. In both cases, they are subordinate centres which do not create any functional nodal regions. Their development depends to a great degree on the economic development of their superior nodal regions – Prostějov and Opava.

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Appendix 1 Spatial model of the development potential of the Czech regions

Source: authors' research

# Increase of Innovative Energie Throught Implementation of e-Mentoring Sistems

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One of the important key elements of development of human resources as the driving forces of each company is education. Entering in knowledge era, companies, task of each company is to provide its employees continuous development, through various forms of training and education. This paper shall be based on a system of e-mentoring, as a special form of personal education. Mentoring as one form of guidance and education is very represented in the modern system of education. E-mentoring, provides new opportunities for companies, to arrange education and development of its employees outside the major education centers. E-mentor assumes the role of coordinator of human resources development, which is not linked only to companies but also for society in general. Authors offer a functional model of e-mentoring, which should help the company to overcome the obstacles that lead to a lack of innovation, due to lack of knowledge and motivation.

#### Keywords:

knowledge management, innovation, e-mentoring, distance learning.

#### **1. INTRODUCTION**

The most obvious link between knowledge management and human resource management is on the field of education and development of staff. Education and development is the field whit in human resource which is committed toward human knowledge and how to use it. This is well defined part of human resource management with excellent methodology, main purpose of this part is to impel people to share thoughts and ideas to collaborate and think on new innovative and creative way. Challenge for human resource management is to implement new education methodologies inside day to day company's life. It should gather managers for development of "learning environment". All that mentioned above should be strategic approach for education and personal development.

#### 2. BASIC GOALS OF EDUCATION AND DVELOPMENT

- 1. Development of mangers skills for acquisition of innovation and creative ideas Education for "hard" managerial skills like information management, decision support, statistics and so on. Education for "soft" material skills like "looking deep in oneself" and understanding of human psychology and behavior.
- 2. "Equipped" employee with sills for self development and self learning Individuals who mastered these skills has tendencies toward curiosity, creativity, and dedication. They is in constant quest for new source of information and they see others as good source of knowledge.
- 3. Direct education and efficiency in information use, generating new ideas and communication skills In modern time to have information is not enough for gaining

competitive advantage. There must be creative ways for information use, deep understanding of business and knowledge of customers desire. Understanding of behavior and ways of thinking is very important, also it is important to stimulate right hemisphere of brain. There is many techniques for that like: brainstorming, mind map, active listening, development of emotional and social intelligence.

- Education for using information system grate role of human resource is education for using information, there are some changes of literacy paradigm and this is computer literacy. This includes using computers, surfing Internet for more information, using software applications and so on.
- 5. Development of time spirit and models of collaborative work main aspects of human resource work is to developing skills for rapid team assembly, making rooms for development of leadership skills, crating common understanding of team work and making uniform language within teams.

#### 3. METORSHIP AND E – MENTORSHIP

In purpose of definition authors of this paper will mention some of the main characteristics of mentorship and e – mentorship. When one person with higher skills and knowledge helps other person to achieve same or similar knowledge then we speak about mentorship. Word "mentee" is slang meaning person who use mentor's service.

In literature there is couple of definitions for mentorship. First, mentorship is excellent system of communication among student (mentee) and mentor. This is foundation of mentorship thought that is possible to build trust. One of definition of mentorship is: A mentorship is a supportive relationship established between two individuals where knowledge, skills, and experience are shared. The mentee is someone seeking guidance in developing specific competencies, self-awareness, and skills in early intervention. The mentor is a person who has expertise in the areas of need identified by the mentee and is able to share their wisdom in a nurturing way.

E – Mentorship is representation of new kind of mentorship, through help of software and Internet e – mentorship is possible. Some of principals' e – mentorship borrow from "classic" mentorship but give new feature with information technology. During early nineties e – mentorship experience strong expansion especially in USA, early attempts is connections between students und employers. In the first year's e – mentorship use e – mail and telephone like main connection tool. One of first organizational program is developed in Canada in 1990, where teachers form British Columbia is given online support and education from experienced colleagues. This people are never meet face to face e.g. they never collaborate without electronic support.

Web design becomes main solution in e – mentorship, especially with younger population. Online software give possibilities for access safe environment suitable for exchange of ideas, thoughts and knowledge between students and mentors entire sessions are monitored by moderators or coordinators.

Unfortunately there is some favors toward face-to-face mentorship, because e-mentorship is considers as depersonalized without visual and social component of communication. There are some concerns that answers by students are not quite true because people have some reservations toward electronic communication. But this kind of communication is very intense in business world especially when some is new in business, time saving is very important to this group of people (more time on jab more results).

There must be common interest in mentorship otherwise there is no mentorship; both side must have same goals. This is main request by organizations with some sort of mentorship. By some theory mentorship is extremely important in some critical time of students like

changing professional orientation, starting with new career or making decision concerning future personal and professional development.

After finishing high school there is demand for mentorship services, many young people seek guidance for professional development. There is some research concerning young people, getting "dram job" and role of mentor, conclusion of research is that mentor could help in making the best possible decision.

Authors of this paper will give one example of Mentor Net.

Mentor Net is non-profit network for executing mentorship programs, main goals is to give young people motivation for further professional development. Beginning of this organization is year of 1997. They desire is to make new mentors for old highly motivated students, then they gone a help people from industry, government sector and so on after sometime they expect that student becomes mentors. Mentor Net give possibilities to connect with other people interested for development of science and engineering.

Community of Mentor Net expects:

- Mentor Net programs one on one based on e-mail communication, is one of the best programs for connecting students from various fields, masters and doctors from leading colleges, professionals from industry and so on.
- Mentor Net forum is web orientate discussion group for all people interested in better jab or education, balance between work and personal time.
- Resource on how to become mentor, information concerning career development in a field of science or engineering.
- Bibliography date base and how to make CV for students who seek jabs.

#### 4. DISTRIBUTION OF POWER

Every relationship between people different rang (social, intellectual ...) carry some problem regarded of power distribution. Whenever we have tendency to bring order among different group of people there is some sort of hierarchy. If we take some definition of mentorship we could identify two elements, first there is mentor and second there is student. Among these two elements there is some sort of relation.

This relation must be based on trust and authority which requires certain degree of effort on mentor and student. In mentorship there is no power of mentor over student, it is very difficulty to build trust when we have huge differences among people. Only difference must be based on knowledge, experience and so on.

Relation in mentorship is defining according to nature and purpose of mentorship, what we tray to achieve with mentorship. There is two main purpose of mentorship first there is "cloning" and second there is building new construct of thought which opens new possibilities for student, in these case mentor is only a guide in this process. Since ancient times purpose of the mentor is to guide, give council and support to its student but today's world throw as bigger challenge then any other age. The role of mentor is change significantly in a last couple of decades. Role of mentor is changed from teacher to councilor with purpose to help students in picking further professional life, although there is popular and new role of mentor which is life coaching. Some part of mentor role could be coaching.

Because of all which is said relation mentor – student must be liberated of burden of power, especially dominance of one side over other side and there must not be constant struggle over power. Key word is cooperation in purpose of achieving higher state of intellectual, moral, spiritual and other abilities.

There is very big requirement for mentor; constant education is essential for mentorship on professional level and on personal level too. Off course mentor must have authority, but formal authority from position in organization is not "healthy" for mentorship. Only "healthy"

way to build authority is from constant education and learning even from its students. So mentorship is two way street students and mentor must have mutual respect.

Scope of this paper is development of organization, if mentorship fall into trap of power distribution then student development is in question and with that organization development is in question too. The main purpose of organization is profit, but if there is no creative energy to make environment for profit organization is losing profit. A process of globalization opens isolated markets and makes them vulnerable to competition, because of that it is of great importance to research creativity.

#### 5. CONTRAVERSY ABOUT E-MENTORSHIP

Almost all techniques with some sort of electronic communications carry stigma of depersonalization. It's a same case with e-mentorship. Researchers of mentorship are deeply divided about these criteria. Some researchers are thinking that personal meeting could not be replaced with any other sort of communication. This theory in is some degree verified. Mentors used social service "Facebook" for meeting students on line, but then mentors notice that they loosing authority. Same research is conducted in our neighbour country with same results, assistants and professors from University of Sarajevo tray to use consultations on "Facebook" with little success. Although mentorship and academic consultations are not the same, in some segments they have some components.

On the other hand researchers whose advocate e-mentorship emphasizes that nature of social service "Facebook" is not suitable for mentorship. They said that "Facebook" is full of entertainment content and users of this service are expected entertainment. This could be explanation why this service is not suitable for serious work.

There are experts on the field of communication with opinion that Internet develops honest and intense communication among users. One of the reasons is anonymity of user, of course in e-mentorship there is no anonymity but distance imposed by electronic communications could help. Some people easier communicate with computes then with "real" person.

Golden rule of mentorship is trust among mentor and student; all which is said in the meeting must be confidential. For organization mentor could play mayor role in professional development of employee. In further text we shall give model of mentorship.

#### 6. MODEL OF ENHACING ORGANIZATIONAL ENERGY THROUGHT E-MENTORSHIP

Creativity becomes one of the main requirement for surviving in todays business reality. It is important to have new products and services, unfortunately only small number of enterprises are in such condition for that requirement. There is too many factors related to organizational inertness like inadequate system of rewords, out of date procedures and so on, all of that make organization slow for market change.

In a further text we shall present a model which could help companies to exceed certain limitations imposed by inadequate knowledge of employees. Model is suitable for small and for big companies. By some principle big companies have certain degree of immunity for rapid market changes, but today business is very unpredictable. In the process of knowledge management human component is very important, even in future: making, warehousing and distribution of knowledge will be in function of enhancement human component.

Without skill for using a corporate knowledge, knowledge is useless. Skill in this term is actually a education formal and informal. Educational staff is relatively easy to find on labour market but majority of schools will not give knowledge required by companies. This knowledge is actually more converse toward personal development like creative thinking, analytic way of looking on new phenomenon and so on. Workshops are excellent way for personal development but constant education is irreplaceable and mentor becomes very important guide who could give certain guidelines toward competency.



Figure 1 Model of e – mentorship

On the figure above we can see a model which could help companies to overcome certain problems imposed by inadequate knowledge and skills. On the model we took important elements such is student; student is left on the purpose outside borders of the organization. Every employee beside professional life have personal life independent of organizational politic and this is one of the major victory of class struggle. On the beginning of twenty century through strikes and syndicate working time is establish on eight hours. Idea behind eight working hours was that employee beside work and rest have right to have free time for spiritual hoist. Employees now have free time for personal development this development is be very good for companies.

Next important element of model is the mentor itself; it is not necessary for mentor to be part of organization (like employee) but must have excellent interaction with organization. From nature and intensity of interaction between mentor and organization depends what kind benefit organization will have from mentorship. If organization is unconcerned for mentorship then student could develop some skills and knowledge which isn't necessary for organization and this could lead to departure of employee. This scenario isn't good for organization. But for mentor and student there isn't much damage, one organization loosing while other organization gaining highly skilled worker.

By some logic department of human resource management must be centre where is all information related to organization needs for human resources. Human resource function is very important for model because it is necessary to have filtered information on needs for desired skills. And easiest way to make strong connection with organization is through department of human resource.

Industrial environment and society are two outside elements; those elements have very powerful impact on model. One of mentors job is to constant monitoring of outside elements and give direction for student development. Sometimes organization is unable to give right assessment of environment.

Figure 1 is showing us ten relations which connect elements of the model. Connection 1 and 2 are negative feedback loop. Mentor give student global strategies for development and after some time, he makes evaluation. There are many assessment tools which could be used. One of those tools is "targeting". The main purpose of this tool is to set few goals and after some time to make assessment and monitoring the implementation of those goals. Targeting is long term tool some authors have opinion that period between creating goals and evaluation is three year minimum.

Connection 3 and 4 are design for fixing operational problems, it is very important to have good communication between mentor and student. Mentor could help student to overcome some difficulties on professional and personal level by giving some guidelines for making best possible solutions.

Connection 5 and 6 is design for strong and open collaboration between mentor and organization, department of human resource is place where all information is regarding of student performance. Constant collaboration of mentor and organization could lead to synergetic effect concerning student development. For achieving organization's goals we must have competent employee. Mentor is not a person who make performance managing for third party, he do not make performance evaluation.

Connection 7 and 8 are internal connections between organization and human resource department if those connections are not adequate, then mentor is not capable to lead proper development program this could have negative impact on organization. Those relations have grater important for organization then for mentor and student.

Connection 9 and 10 are representing interrelation between organization, mentor and student. Environment have strong impact on all elements in model, if there is no positive communication between mentor and organization then mentor could be "filter" of information from environment for student. In this case mentor collaborates with student in crating new ways of development and this could be something undesirable for organization. On the other hand impact of mentor and student on environment is less significant then organisational impact on environment.

#### 7. CONCLUSION

Knowledge becomes one of the main resources of each company, and whit proper "guiding" employees education, this will become an imperative for market survive. In highly developed economies mentorship proves itself as best alternative education choice for professional and personal development. Behind success of mentorship is today's complex world, there is no problem in today's world to get information, but to process all information or to filter information becomes impossible task without some kind of help. Business world becomes mobile and mentors work endures change, emerging e-mentorship is logical response on changing world. The model of e-mentorship give organizations abilities to active participate in mentorship, this give organizations options for making more accurate business deployment plans.

Goals of human resource and mentor are to help employees to overcome future challenges and to give guidelines for managing their work tasks. Authors of this paper give some preposition for overcoming difficulties related to professional and personal development:

- Overcoming "conditional" majority of employee have conditional to enter in some form of education system, because of that there feeling toward learning process is partially negative.
- "Equipping" students whit skills for learning is very important in modern constantly changing world. Old system of education didn't equipped people without skills for self developing.
- Overcoming inertia requires employees to overcome the "mental inertia resistance effort to increase the effort required to invest in development. There is also a "comfort zone", where employees thought to have sufficient knowledge for the job and should continue to learn. One must think of a positive incentive for getting out of this zone, for example, job rotation, enlargement range of jobs, etc. or a financial incentive.
- Overcoming short term orientation. Education must become strategic activities. If that is achieved, engagement is on much higher level and return of investment on long turn is much easier.
- Make available necessary "tools" for work common mistake that usually result with strategies failure. That is empowering people who do not have proper knowledge. This is failure of education; they do not develop necessary skills and knowledge.

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# Specific Approaches of Modern Technology Marketing Within SMEs on B2B Market

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Innovation is a key factor which improves competitiveness of enterprises that operate either in fast-growing high-technology industries or in traditional ones. SMEs' ability to stay on the market and generate more jobs is related more and more to their capacity to place innovation at the core of their business strategy.Small innovative enterprises play a key role in achieving economic growth potential through ensuring vitality of the innovation systems at regional and national level. A survey conducted on US market [1], (1991, Pride et al.) emphasizes that SMES innovate more, faster and more efficient (at lesser costs) versus larger companies. The major objective of all technology marketing activities resides in increasing innovation rate through successful launching on the market of new products, services and/or technologies and demand satisfaction from a quantitative and qualitative standpoint. Key concerns in modern technology marketing are: selection of the used technology level/stage; competition; property protection strategies (patents, licenses); business planning; diminishing of innovations risks and time and cost management. Successful companies view technology marketing as an integrated process for the entire value chain starting with idea generation, conception phase, design, development, production and finally with sales and distribution. General tendency of these organizations is to correlate investments in technology with strategic added value for their customers. Present paper aims to identify and exemplify practical specific aspects for the nowadays technology marketing within SMES that operate on business to business market, and to underline specific methods for innovation risk diminishing and accurate evaluation and implementation of technology in every phase of the value chain.

#### Keywords

B2B market, competitiveness, innovation, SME, technology marketing

#### 1. The importance and characteristics of SMES in modern economies

SMES segment is one of strategic interest for modern economies representing the most dynamic sector of modern economy and a very innovative one. SMES sector is viewed as "main catalyst for economic growth" [2], (Drucker, 1999), one which generates new ideas and processes reinvigorating the market. SMES aim mainly to market niches and to those locations uncovered by the large enterprises, intensely valuing them very efficient as real opportunities.

There is a complex conditioning, interdependence, cooperation and complementary relationship among large enterprises and SMES. In every distinct current economy can and must coexist SMES, as well as large and very large economic entities all of them posing their Proceedings of

own specifics advantages and disadvantages. Their co-existence comes in the form of a "rationale balance of proportions" and is governed through economical mechanisms set by the free market, strategies and national development programs [3], (Sandu, 2005).

At EU level a SMES are considered those companies with staff of an average of less than 250 employees and have a net yearly turnover of maximum 50 millions Euro and/or own total assets of maximum 43 million Euros.

Nowadays technical, economical and social trends nourish particularly SMES creation process. Such phenomena as: equipments' miniaturization; robotics; digitalization; IT and transportation expansion; increase of population literacy rate; accelerated decrease of living standards discrepancies between certain regions and cities; administrative decentralization constantly generates superior economic performances first of all through SMES. Within economic system we can identify two main types of SMES: first is the small traditional enterprise (which typically has no long term strategy, and addresses to a small market), consequently goods realization processes are transmitted from generation to generation and secondly there are modern SMES (that utilize last hour technologies, are constantly exploring for new market and valuing core competencies seek to maximize overall efficiency).

Major challenge that most of the SMES have to face resides in insufficient capital available, which shrinks their development and makes it more difficult for them to innovate and integrate new technologies. However despite lacking enough financial resources SMES can pose a threat to entry market barriers through offering new products and services or differentiated ones. Creativity for SMES is available either through own research and development or through agreements with entities of technological research and development.Small and medium sized enterprises represent a very diverse, heterogeneous reality characterized by flexibility, dynamism and high adaptability. Overall health degree of an economy is closely related to the number, dynamic and market success of its SMES.

#### 2. Practical modern technology marketing considerations within SMES on b2b market

Increased number of mergers and strategic alliances among multinational giants are merely the outcome of continual expansion of globalization and interdependencies of global economy. Increased competitive pressure can be detected in its effects such as: innovative products, innovative production means and adjacent processes, which permit cost reductions, improved quality, shortened cycles, increased flexibility, etc. Under these circumstances developing and valuing new technologies doesn't represent a guiding purpose only for certain enterprises, but rather for entire industry. New technologies development propensity is determined at the level of every SME and is also manifesting due to overall competitive pressure.

Whilst some of companies manage to succeed in launching on the market profitable innovations via new technologies, for other ones technology development stagnates or they pursue an unprofitable pattern due to the fact that new product and technologies development and new intensive technological processes are not generating automatically market success. A significant number of companies are confronted with deception in striving to achieve their success potential corresponding to their market using new and enhanced technologies.

IT&C provide a new configuration for managerial activities and for daily routines and opens new areas for business on the market, in production and also in administration and management. Technology marketing as intensive-technology products marketing encloses on one hand all the measures associated with activities of the enterprise orientated towards goals and competition. These activities are relevant at level of the market for technological development. On the other hand it comprises all the measures focused towards specific issues of current and potential customers which require usage of planning, management,

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coordination and control (formal nature) tools, and also of the tools specific to marketing policy, namely service, contractual, communication and distribution (material nature) policies. Incorporating innovation into their products and services represents the main progress factor for SMES which are constrained to revise their way of action constantly adapting themselves to the economical and social environments. Moreover modern marketing perspective pinpointing often implementation ways specific to relationship and lateral marketing underline this tendency in which innovation holds a central role and characterizes new economy based on knowledge. It is worth mentioning that innovation is the result of a complex process in which creativity manifested through generating new ideas cannot be fulfilled outside of accumulating knowledge context, whose final aim is to develop new technologies especially related to B2B market. Innovation constitutes a competitive advantage that is reflected oftentimes in raising market share and moreover in raising relative market share considering relationship to the competition. The very concept of innovation viewed from perspective of marketing adopted by the SMES that operate on B2B market finds full support in strategies implemented by the organization. Innovative spirit and creativity are reflected in all marketing mix components and characterize marketer's profile of the nowadays economy.

#### 3. Technology marketing-mix

At the foundation of strategic decisions (choosing competitive alternatives, selecting business areas) lie decisions concerning introduction of marketing-mix instruments. Fundamental decisions of organization policy are those with regard to selecting business areas and competitive directions that influence investment policies in the sphere of production, market (know-how) research (sales organization, organization image and brand, etc). However choosing business areas and competitive strategies don't determine introduction and implementation of marketing tools. These later ones cover activity areas and instrumental domains, within certain instrumental decisions both strategic and operational are being made.

#### 3.1. Product policy

Organization has to deal with a wide variety of decision aspects when it comes to product policy. Thus, it has to determine which are the physical products and what are the functions provided to different customer groups, what are the associated services that company is going to promote (secondary services) or the customization degree of services and performance. Whether these meet and exceed preferences of certain customer types or are rather standardized, or are delivered in same conditions to a segment or customer group. Physical features are especially met at intensive technology products correlated with services provided. Even in the instance of selling a simple product, market success is achievable if this is accompanied by services as: consultative services, offer presentation, logistics, etc.

Differentiating possibility for products on the B2B is a vital function as customers' demands are very important. These demands are in a continual change and enhancement as Anghel L. states [4], (2002, p.114) that replacement of old products represents an important and also risk associated measure. The scope of launching new products process provides the support to assert that we have an explosion of new products introduction. This explosion is determined by a series of factors such as: forthcoming running short of some natural resources, advancements in science, fierce competition, and consumption expansion. Thus, products become more complex and issues regarding environmental protection are more important in developing new or enhanced products.

Woodside and Biemans [5], (2005, pp.380) state that introduction of new superior products produced on new technological platforms constitutes the cause of dramatic changes in market share within certain industries and may cause as well diminishing market share of

some leaders due to lack of investment in new developments and to a lack of practical sense. Significant profits attained from major customers may create a false assurance impression. Moreover highly perceived risk and small returns for adopting new technologies may constitute as well important problems, as well as lack of a unique organizational structure which is necessary for developing enhanced products that require new technological platforms.

Radical technology is constantly perfecting for eliminating diverse problems and delays which may arise in the development phase of innovative models, prototypes and have to be overcome valuing technological gains for achieving customer recognition. It is important to ignite desire of the prospects for testing the new product.

Innovation processes for creation, market launch and adopting/rejecting cluster within an integrated system, as they are in a close and direct relationship. B2B market acceptance of new products resulting from new technological platforms is a twofold process: diffusion and adopting (which may include potential rejecting). Diffusion describes how potential consumers are aware of the innovation and its utility and also it refers to how much knowledge is spread on the market or one of its segments. Adopting refers to organization, department or individual decision making process. A key factor is attitude of everyone towards new product and new technologies.

On an every day more complex market for production goods, the product has to address to customers demands and to be differentiated versus others in order to provide added value, here the packaging has protection relevance not necessary promotional one. Products are more complex and often are accompanied by instructions guides, technical details, while post-acquisition services being also very important. Lately the issue of recycling possibility is rising thus consumers are searching for bio products that are environmental friendly.

The degree of newness for a product at its launching has an increased role, because it directly determines projections for life cycle and profit estimations. According to Anghel, (2002, p.116) major stages of the launching process are: documenting surveys, market research, analysis, idea selection regarding new product, prototype, technical and acceptance tests, finalizing the product, determining identification elements for the product, budgeting resources for production start, planning terms for product launch and preparation of the market for accepting the new product.

In the instance of innovative technological platforms launching process requires more time. Market acceptance for production goods is a complex matter, innovators and visionaries being more open towards new technologies, but the majority of potential customers seek products that have added value and offer instant advantages, higher performances, the novelty degree not necessarily being among purchasing criteria. It is worth mentioning that at development of technological complex products suppliers are involved as well as they are oftentimes connected with the end user via electronic network and thus can integrate into production plan of their customers.

#### 3.2. Distribution policy

Technology intensive products and products incorporating top technology are distributed as a rule not only on domestic market but on international arena as well. This factor is caused by the fact that R&D for these products generate high costs and most of them cannot be sold in large quantities and at high prices internally where market segments are narrow. Also products life cycle has a shortening tendency thus companies are required to penetrate foreign markets in order to recuperate investments with this products.

Expansion of commercial actions, importance shift towards product markets and international markets, changes in buying patterns in many countries, intensification of global competition and higher entry barriers determine an increased importance of strategic planning especially Proceedings of

for actions beyond company national borders. Also it is effective that some decision making areas will not be considered and planned successively rather only in interdependence with each other, matters such as selecting the country, production policy configuration, marketentry and distribution strategies

Within investment goods industry "Just-in-time" delivery holds a more important role. Valuing experience of companies specialized in logistics is in most cases a mere necessity. These logistic companies serve a wide range of customers, own adequate infrastructure and can benefit from learning curve and scale economies.

IT has to consider development trends vis-à-vis shipping orders via electronic devices, through EAN codes of products, centralized orders, computer assisted planning of routes, etc and to provide adequate conditions for these.

#### 3.3. Contractual policy

Contractual policy tools exert a decisive influence both on supplier's profitability and also on offering attractiveness for potential customers. From a provider point of view profitability of closing the deals renders not only on prices but also on discounts granted, delivery terms, payment terms and financing options, on alternative offers and contractual clauses as for instance warranty terms, regulations regarding selling, laws in vigor and judicial situation, etc. All these factors are to be taken into account as they all influence costs and associated risks for the customers' businesses.

When it comes to dealings with foreign partners one has to take into consideration certain risk types: economical, political, monetary and funds transfer, laws, transportation and warehousing, financial risks, technical, and also lacking sufficient reliable information.

Differentiating on price can be practiced considering space, time, target customers or considering law and regulations criteria. Price differentiating strategies play a major role when it comes to launching a product on different market segments. Depending upon products positioning on these segments and upon market traits it can prove efficient for prices to be differentiated tailored to each segment.

#### **3.4. Communication policy**

Currently organizations aim to target communication for external audiences (stakeholders, suppliers, external customers) and interior ones towards employees ("internal customers for the organization"). Consequently communication becomes key factor for building core competencies, which are a systemic combination of technologies and individual production capacities that are at the foundation of enterprises' product. Individual technology concept includes product and production technologies and also leadership and commercial knowhow. "Fundamental competence means communication, dedication and activity expansion across the organizational borders, involving employees from all departments and hierarchical levels" [6], Prahald & Hamel, 1996). Motivating and informing staff is also a prerequisite of business effectiveness. E-commerce provides numerous options for companies to initiate and develop digital business through communicating via internet and close related technologies (Intranet, Extranet). Personal selling is playing a major role for industrial goods on B2B market, permitting not only providing information to customers but also influencing their attitude and purchasing behavior and gathering data about this customer type, their challenges, regarding competition and their practices.

Investment goods and technology marketing is different from consumer goods marketing especially due to complexity, consulting support required and service for vast majority of these type of goods. Also it is different because of considerably different organizational purchasing behavior. All these differences are reflected in communication policy.

#### 4. Risks in technology marketing

New technologies seek to consolidate competitive position, although financial solidity and innovation activity require a significant resource pool which is often times an issue for small enterprises. Organizations' decisions regarding new technologies are primarily focused towards future and are made based on imperfect, incomplete and uncertain information. This uncertainty in innovation activity has a set of risks associated, however not all technologies show same high level of risk. Novelty degree and complexity of technology impacts considerably risk level. Technological risks are exhibited in following uncertainties, dependent upon technological development of enterprise, as follows:

- Rise of technological challenge;
- Technology usage;
- Selection of market entry moment;
- Keeping pace with competitive innovation;
- Building an innovational leap enough to attract buyer's attention, and
- Persuading buyers that technological innovations can lead if are used to maximization of utility.

Within this network of interdependences there are differences between technique and economical risks. This distinction cannot be made with accuracy in all the cases; however it facilitates attention focus to certain relevant factors. Technical risk is associated to own technologies already implemented or competition technology, while economical risk arises due to uncertainty of achieving sales projections. Achieving these results is determined not only by own efforts but also by the acceptance degree for the new technologies from the potential customers and as well by competition's actions.

Relationship between company's market and its environment generates risks that pose a direct influence or indirect influence upon buyers, quantities traded, or price levels. Among market and environment factors that actively play a role in risk management we mention here social and cultural ones, economical ones, laws and regulation factors and political and administrative ones as well.

Green, (1995), as quoted by Woodside and Biemans (2005, pp.380), describe four dimensions associated to the concept of innovation: technological uncertainty, lack of technical experience, lack of business experience and technological costs. For completely new goods and services all four risks are very high. Relevant examples here could be replacement of type writer machines and electrical calculators with personal computers, and replacing of mechanic surgical procedures with those assisted by endoscope.

Important empirical findings regarding completely new products include: long term agreements (more than 10 years, starting with first functional model to new product adopted by the whole market), successive start-ups and stops in activity, fluctuations until successful selling of final products and almost certain failure of companies that want to conceive new products using obsolete existing technologies rather than investing in new technologies.

#### 5. Planning and control in technology marketing

Innovative companies that aim to improve success rate of new launched products and reduce period of design and innovation for market launch moment are more and more preoccupied to perfect their own way to face innovation process. Literature [7], (Urban & Hauser, 1993) identifies five stages of innovation process: 1. market opportunity identification; 2. product conception; 3. testing; 4. market launch; 5. product life cycle management.

In modern organization innovation is not a spontaneous activity but rather a planned process, although through its very nature innovation seem more resistant to formal planning, decisions

regarding markets to be served and products that have development potential are crucial. Once innovation is amplified within the organization the need for a scientifically management approach and new product strategy formulation is intensified.

Lack of focus and direction towards generating new product ideas and concepts can result in wasting time by selecting from various projects and also a misallocation for resources. Complex nature of all aspects involved in innovation process shows explicitly need for a strategy that should integrate specific activities of research and development, marketing, engineering, production, financial, and human resources.

The chart that shows how distinct competences of organization are flowing aiming to monitor and surpass competition valuing opportunities, the marketing strategy for innovation results in a directory plan which is to guide all new product development actions, permanently correlating with the market [8], (Boier, 2003). Innovation strategy is the core of marketing plan for the new product, on one hand situation analysis is finalized with strategic purpose and on the other hand strategy once articulated further guides tactical planning and financial situation.

Market opportunities identification for innovation represents first stage of innovation process in which are examined realities of marketing environment- internal and external at micro and macro levels so as to select the target market where company can successfully compete. Out of external environment are resulting opportunities and threats for projected business while internal environment will give an indication about organization's strengths and weaknesses in pursuing the business. Selection criteria will be the optimal compatibility between attractiveness of the selected market segment and company's capacity to serve it and posses long term competitive advantage. Combined portfolios market-technology provide emphasis from a strategic standpoint of development caused by technology and also of outcomes of using technologies for new products and procedures. Development of new fields of action and new products is the central component of strategic planning and marketing perspective becomes component part of this approach. It is definitely required to have a planning foundation common for research and development management that allows best configuration of portfolios. Common perspective will permit effective planning of business areas and will help avoid misunderstandings caused by different planning premises and perspectives. Collaboration should lead to improved communication and understanding which is a solid trustworthiness and interaction foundation.

#### 6. Conclusions

Confronted with marketing environment in which it operates, the enterprise is facing a dilemma, on one hand aiming for high returns it is biased to innovate and constrained in same time to do so in order to diminish its vulnerability versus competition. On the other hand uncertainty that governs business climate and significant investment efforts undertaken determine it to anticipate risks associated to any innovation effort. Intelligent solution for such contradiction is possible especially through practicing technology marketing (Boier, 2003).

Innovation system holds a central role within modern enterprise consisting of all material, information, financial and human coherent resources, viewed in their quantitative and qualitative dimensions that finally contribute to design, production and selling phase of new products. Within this complex mechanism marketing component plays a decisive role because its specific activities facilitate: monitoring changes through continual screening of business environment; evaluation and interpretation of changes occurred; useful idea generation for innovation; synergetic fine tuning of relationship between consumers, technology, enterprise and overall society; generating new changes within the environment through feedback provided.
Task of marketing is to implement within the company of a customer and competition focus and to coordinate all processes depending of market structure. As opposed to traditional thinking of programs oriented towards product, technology marketing deals with real customer problems and potential ones. Commencing from possibilities provided by the usage of technologies and their dynamics for developing successful market solutions enterprises seek to provide competitive products to the market according to their resources and capacity potential.

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# Market Driven Inventions in SMEs - A Model for Growing Economies by Connecting Entrepreneurial Inventors with Local Companies

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Innovation as the driver of regional and global economy requires a constant striving for new inventions. The following article presents a model and communication process for growing local and national economies by connecting market, entrepreneurial inventors and medium size enterprises (SME). The goal of this model is to create incremental or disruptive product and service concepts for small and medium size enterprises that often cannot setup, dedicate resources to, or afford their own R&D processes. Our model, titled the Joint Invention Market Model (JIM Model), is detailed herein along with its potential limitations. This model is believed to help SMEs of developing nations, and in particular provide SMEs with new product concepts at a lower cost, more quickly, and of higher quality than if SMEs created those concepts themselves.

#### Keywords

Entrepreneurship, Inventing, Idea Generation, Fuzzy front end, Communication

#### 1. Introduction

Developing countries around the world are diligently examining the means of growing their local and national economies. From their efforts topics like macro economics, regional entrepreneurship, regional venture capitalism, small business incubation, and innovation have emerged as areas which can be tapped to provide the desired growth [1]. Of these, innovation stands to be the least explored, which is partially due to the newest of this field [2]. National innovation initiatives hold many opportunities to advance and grow a nation: China achieved this via their local innovation ecosystem built for advanced products (AKA an innovation hub) in cities like Zhangjiang [3], Korea established innovation hubs for research and development of semi-conductors, microchips, and advanced electronics [4], Israel built innovation hub focused around the telecommunication industry [5], and the USA's Silicon

Valley is an example of a software innovation hub [6]. These efforts towards advancing innovation at a national scale have proven to be very fruitful, and were performed with a combination of macro-economic policy, venture capitalism, innovation management, and regional entrepreneurship initiatives.

One major insight we gleaned from the innovation hubs is the existence of a support network of independent inventors and product consultants [3,4,5,6]. We hypothesize that independent inventors can help grow local and national economies. In particular, by applying this concept to small to medium size businesses we believe we can have the largest impact on local and national growth. Small and medium enterprises (with fewer than 200 employees) are targeted because they make up 99 percent of industry and account for more than 70 percent of employment in European Union [7].

Small to medium size enterprises (SME) are very different from large business in that most of them lack a formal process for developing new products and services [7]. This is partially due to having limited resources (i.e. capital and people) to dedicate to such a process, which creates a vicious circle blocking most of small businesses from growing.

We hypothesize that small to medium size enterprises require several factors to make the transition into a large business; improvement in marketing, sales, operations, decision making, and so on... Of these we are concentrating on the strong need for a formal product development process. Creating this process requires, among the rest, individuals to aid in product development (i.e. the support network mentioned previously). One of the largest problems in product development relates to the fuzzy front-end of innovation [8,9,10,11] in particular, how to generate new product ideas [12]. Interestingly, both large and small businesses struggle with this problem [13], however large businesses have more money and people to aid in generating ideas, but yet it is still a highly inefficient process [13]. We hypothesize that if we can enable small to medium size business to be more effective at generating ideas, they will be increasingly motivated to develop such ideas into products and services. As a consequence we believe this will help grow SMEs, and allow them to better service their customers. Hence, this paper focuses on creating a model that can help small to medium size businesses gather, find, and create great new product and service ideas efficiently.

# 2. Literature Review and Initial Problems

Unfortunately, very little research has been conducted on the idea needs of SMEs. Barclay, Porter, discussed creating SME clusters to promote innovation approaches to business growth, and found many downside of setting up such a cluster [14]. Del Castillo & Barroeta discussed promoting innovation in SME via policy, economics, and local initiatives [15]. We believe there are many challenges facing small to medium size businesses when it comes to inventing or generating new product and service ideas and they revolve around: 1) limited resources, 2) lack of inventive people, and the 3) lack of understanding about the idea generation process [16].

Firstly, because of SMEs' limited cash and resources, in most cases they cannot afford to create product development departments, or fully dedicate people to the creation of new products and services [17,18]. Further, because of their limited resources, SMEs have limited ability to conduct the customer research that is so vital to the generation of ideas [17,18]. Hence, SMEs need a lower-cost way to generate ideas.

Secondly, not everyone is creative, and we assert that very few people a truly creative genius [19]. Some researchers may argue that creativity can be taught [20], but retrospectively analyzing highly cited patents submitted in the USA will show a high percentage of inventors submitting multiple patents [20]. Lastly, training people to use idea

generation methods and processes is time consuming and laborious [13], and hence doing so is not very feasible for the large number of SME in each country.

Independent inventors have many problems inventing on their own. Limited ability to promote their invention services implies that inventors are usually not good at promotions and often have limited reach with their promotional efforts. Next, inventors often wary when inventing for organizations because they are not sure if the company will steal their ideas without paying for them, and because of their limited resources they will have no ability to sue the infringer, so the legal concerns and lack of incentives to invent for others is also a major issue. Limited resources for the research and prototype development is another problem that proposed model addresses.

# 3. Explanation of Model

#### 3.1 Grounding for the Model

Before explaining the model, one must understand that we have selected an "invention pull model", not an "invention push model", because of a fundamental belief that well informed inventing creates products/inventions that are much more in-line with customer's needs, and are thus ones that will be more successful in the marketplace. To this end, some companies often hire employees outside of their industry because they are not tainted by accepted industry practices [21]. However, because these inventors lack a detailed understanding of their customers' needs, they 'too often' go off inventing products for small needs, or non-existence needs, or create products that are not compatible with the realities of their customer's situation/environment. The "invention pull" model on the other hand uses a detailed understanding of the customers' needs, wants, problems, and situations, then deduces the largest value needs/problem for which product solutions should be invented. This greatly increases the chances of product success because, in essence, the opportunity area has been predefined.

#### 3.2 Limitations

There are some limitations that should be addressed by those who would implement this model. First, our model depends highly on the organization's ability to communicate with its' customers. If the company does not have a clear channel for communication, the product concepts will not be able to be verified. Second, the outcomes of our model are only as good as the initial "problem requirements" provided to the inventors. This means, if the customers are not being honest, or are not providing enough details on their problems/needs/situation the produced product/inventions will be a poor match to their needs. Third, customers should be able to articulate characteristics of their desired products or services, rather than solutions. Ulwick [22] states that the traditional approach of asking customers for ideas tends to undermine the innovation process, because most customers have a very limited frame of reference and cannot imagine beyond the already used product. Furthermore, their functional fixedness (tendency to fixate on the way something is already used) makes them offer incremental ideas rather than radical ones [23]. Fourth, this model requires market research and customer research to be conducted properly. Not having access to this vital information means that a fully informed understanding cannot be created for the inventors. Furthermore, this model requires the party employing it to be familiar with marketing research and customer research. Poorly conducting these activities could create faulty customer needs and problems, and thus poorly created inventions.

#### 3.3 The Relevancy and Limitations of Market Data and Customer Input

Marketing information and customer data (i.e, customer needs/problems/situations) are vital in these new product development projects. Much research exists suggesting that inventing/developing products based on customer needs has higher product success rates, and is less risky than inventing based on technology advancement [24,25]. Because SMEs have limited resources and time, using less risky invention methods is preferable; again, this is a reason why we selected the "invention pull" model.

One of the main limitations of the "invention pull" model is highlighted by Clayton Christenson's book Innovator's Dilemma [26]. Here he states that companies that intently listen to their customers produce incremental products, while those companies that are less attuned to customer demands have higher chances of producing disruptive products.

Additionally, most customers, except "lead users", are looking for pragmatic and incremental solutions to their everyday needs, and it is very difficult for them to see or even imagine a disruptive product solution. For example, many tollbooths around the world now have electronic toll devices that allow you to drive through at full speed. If you asked customer how to make tolls better before this technology was released, 99% of them would have said to build more cash toll booths [27,28,29,30]. Hence, customers on average suggest incremental solution, thus they should not be trusted with creating solutions [22]. They should only be used as sources of problems/needs. Consequently, the act of creating solutions should be entrusted to highly creative individuals, like inventors, who are aware of a multitude of solutions, like electronic transponders for toll collections.

# 4. Proposed "JIM" Model

Our model, titled the Joint Invention Market Model (JIM Model) integrates small to medium size enterprises, their customers, inventors, and market research firms together. The goal of the JIM Model's is to create new products/service concepts that have a high chance of market success, and to create them at a low cost to the SMEs.



Figure 1 General outline of the parties involved in the JIM Model

The model is best understood by reviewing the detailed process model shown in figure 2. The process starts by a SME submitting a request to the JIM model operators, who are probably delegated by a government body or an independent agency asigned to this action. These operators should rather be placed by the government than from a private company, because government presence should be strong when stimulating innovation in developing countries, having only global interest in development processes.



Figure 2 The JIM Model and its Process Steps

This request details the following: A) the type of product desired (specific product/service category); B) the customers groups for whom it will be created; C) the expected result (incremental or radical); and D) the time frame and resources available. Note the JIM operators may be a government run agency or a privately held company.

Step two requires the marketing research firm to structure the market/customer research studies. Here the sampling methods are selected, and the customer groups to be interviewed or survey are carefully selected.

The third step is crucial, in that the customers' situation and their needs, wants, and problems are captured via interviewers and survey instruments. Again, customers must be asked for needs and problems, not solutions. A question should sound like "what problems are you having with your product," not "how could your product solve your problems?". Trained interviewers are needed for this step; which also includes codification of the data. Significant loss of information should be avoided.

The fourth step involves the pool of inventors. Here the inventors receive a summary document of the product-opportunity for which a new invention could be created, and the

general information on the customer's situation, problems, and needs. Inventors can be located anywhere geographically because the summary document can be emailed to them. Again, many SMEs do not have R&D departments or teams, hence having access to a large pool of inventors at a low cost is of great benefit to them. Interestingly, several websites currently post invention challenges for their large inventor pools, (http://www.Innoget.com, http://www.ideaconnection.com, http://www.refresheverything.com), but these websites fail to deliver the detailed market and customer information generated in steps one, two, and three.

The fifth step is the conception of the product or the service. Again, the benefit of having a pool of inventors is that a diversity of product concepts will be generated quickly. The inventors then create a concept summary that describes or shows the core benefits of the product, but not in too much detail. The goal of the "concept summary" is to quickly communicate the product concept to the recipient SME. Illustrations, 3D models, and prototypes should only be used if the concept is too difficult to describe in words, or does not capture the benefits of the product concept. Producing the "concept summary" is tricky, so the assistance of the JIM Model operators may be needed to ensure concept-summaries are correct and communicated adequately.

For the sixth step, the current and potential customers of the SME are used to test the concepts. These customers review the concept, and provide their feedback. This should include: A) the extent to which the product solves their problems, and B) how it compares to other products on the market. Even the inventors can perform this step because their interactions with the customer can spawn better ideas.

For the seventh step, the inventors consider feedback from the customers and new and improved concepts are built, along with the accompanying "concept summaries." This is iterative, so this back and forth with the customers may take place two or three times; however, if the first-round concepts are very well received by the customers the SME may move on to the next step.

Step eight is optional, and choosing to perform it depends on the product concepts being proposed. If the concepts require a large development effort (i.e. considerable development time, money, and dedicated employees) then the SME should spend the extra effort needed to build a business case. By building a business case, the SME is forced to think through the different aspects of the concept to ensure it will create a fair return in revenues and profit. This requires understanding the feasibility and risks associated with manufacturing, marketing, sales and service [27]. As well, the costs, expected sales, returns, and profit should be determined. With the risks and rewards understood, a SME may choose to embark on a costly product development project. Further, by creating a business case SME are also problem solving and removing risks from the product and its development. This is a vital activity in the front end of innovation.

The ninth and final step is delivering the product concept(s) to the SME for which they were created. This can be done via a formal presentation, where one or more concepts are presented to the recipient SME.

#### 4.1 Example of the JIM Process in Use

The following fictitious examples showed Alpha Corporation a medium sized business with 200 employees in Serbia who requested a new disruptive product for their mining equipment product line. In particular, they wanted a new type of drill unit, and initially said they wanted it to drill faster. The newly created government agency in Serbia called 'SME Inventors Help Service' received this request along with a 900,000 Serbian Dinar (\$6,700 US).

The SME Inventors Help Service contracted a market research firm which interviewed several miners and mine directors. From this SME help service learnt that ability to keep the

drill stable while drilling is vital, and noise reduction a major second factor. With the problems and needs identified, SME Inventors Help Service presented these problems to a group of 40 inventors. The inventors then independently generated concepts for new drills and produce invention summaries. Out of this the top 10 inventions were selected by the government agency, and those selected inventors are monetarily compensated for their efforts. Next, the inventors group brainstormed to refine the concepts, and presented the top 5 concepts to the government agency. Because drills are expensive to make, the government agency contracted an independent firm to create a business case for each of the five concepts. Finally, the government agency presented the concepts to the Alpha Corporation who was delighted. The whole process took 2 months, at a fraction of the cost of having one full time R&D employee, and created 4 disruptive products. The firm then developed one of these products, and sold it to the Serbian and Russian mines and generated a significant profit from the new product line. Further, this increases the GDP of Serbia and thus benefited the Serbian government. Therefore, even the Serbian Government's ROI was positive for having invested in SME innovation.

#### 4.2 Weakness of the Model and a Solution

Trust is a constant concern for any inventors. If the inventors trust an organization not to steal their inventions, then great products can be created. However, because trust is often not fully established, failed relationships often result. By having a unbiased intermediary, (like a government agency, whose only gain will come from the growth of the economy) inbetween the inventors and the SME, issues of trust are resolved faster. Further, this government agency will work with inventors to insure trust is developed. Paying quickly for valuable ideas, praising efforts, and communicating clearly on all tasks will help develop this trust with inventors. Further, this government agency needs to develop a reputation as a trusted and useful source of ideas for SMEs. Part of soliciting an idea requires the SME to pay for the ideas they are requesting. This is a business decision, and to justify their usefulness SMEs must see proof of government agencies effectiveness, via the past ideas and the profits that were generated for other SMEs.

# 5. Conclusion

The presented model is applicable for small and medium enterprises, and should be interesting to them because it simplifies many actions necessary for good organizational R&D strategies. It should also attract attention of a developing contry's government as it helps local economy growth in very efficient way, combinating skills from different subjects. To success, government must inniciate the process and constantly monitor it, bridging the gap between SMEs and independent inventors, focusing them both on market needs.

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# Discovering Business Opportunities via Search Trends

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Entrepreneurship is gaining a vital role in the current era of crumbling economy to innovate, disrupt and discover new paradigms of business. People from business and government sector, academics and communities are keen to see the positive outcomes of this increasingly favourite topic. In this regard, web search engines and social media networks are serving as a tool to analyze the market and boost the entrepreneurial process. But the dilemma is that all currently available web search engines and social media websites stick to their specific web traffic trends and do not provide the generic overview of the whole web. There is no single platform which provides the facility to combine the queries from all over the web. In this disintegrated environment, we propose a possible solution, namely, 'ST Tool'. This tool shall collect the most popular queries and information from major search engines and social media websites to represent the results at a single platform. It can facilitate the process of idea generation through assisting the entrepreneurs in the visualization/analysis of the market and gap/opportunity identification. Most commonly posed queries can reveal the customer interests. The goal of the paper is to critically review the currently available tools and their inefficiencies in presenting the overview of the whole web and describe the new proposed solution effectiveness in resolving the problems identified in previously available tools for search trends.

#### **Keywords**

Entrepreneurship, opportunity recognition, search trends and tools

#### 1. Introduction

In the digital era everything is moving towards commercialization and everyone want fast access to the desired information. The technology-oriented culture of today has opened doors to the entrepreneurs to identify business opportunities. Searching over the internet is growing exponentially with the passage of time. There are many search engines [21] and over these search engines billions of search queries are run each day. The use of web search engines is the most popular tool used these days to locate the required product and services by a large number of people all over the globe; therefore, making it an essential place for the entrepreneurs to locate customers and their demands to explore new opportunities or disruption possibilities. The search engine market share of the web search engines according to the year 2009 statistics is shown in figure 1:





Entrepreneurial opportunity recognition has been viewed in different aspects from more than a decade [4]. The use of cognitive frameworks, to discover the capabilities of the entrepreneurs to identify the hidden opportunity, has revealed that among other factors- the prior knowledge of customer needs plays vital role in the entrepreneurial opportunity recognition process [5, 6]. With widespread focus on user-centric approaches [8], it is extremely important to see the demands of the target customers in order to succeed in the new venture creation.

The web today is a major source of information for most people but the interesting thing is that how the web can be used as a useful tool for economics [1]. Web search trends are also changing, now there is more search for travel, health, shopping as opposed previously which was more toward entertainment and fun. The internet is also being widely used to connect people socially through many social media website for example; Facebook, LinkedIn, Twitter, etc. Consumers today are exposed to a wide range of influences that include word-of-mouth communications and social networks. The major social websites data can also help in predicting what people need. The popularity of these social media websites can be envisaged by a simple example, Facebook alone has more than 400 million active visitors [11]. The lack of single platform to give the whole picture of all the queries and discussion topics of people from around the globe is the major obstacle in giving entrepreneurs the whole picture of the global market. Therefore, it is the need of the time to combine queries from all over the web and target the discussion topics in the social media websites that could reveal customer interests.

It is inconvenient for an entrepreneur to invoke multiple search queries on several engines and indentify business opportunities from the search. A meta-search engine solution is vital in this regard [2]. This paper compare, analyze and discuss the existing search engines along with social media sites and proposes tool to help entrepreneurs to see the trends and business opportunities for new venture.

# 2. Related Work

Many researchers are working towards extracting the trends in various search engines and social media websites to facilitate the people with search trends. Mika Kaki and Anne Aula discussed their experiences related to complexity in search engines [23]. Yair Shimshoni, Erin Efron and Yossi Matias introduced many interesting tools which explore what users are searching for; for example, Google Trends and Google Insight [9]. Ioannis Anagnostopoulos proved that when users search behaviour is examined along with the ability of the Internet search services. It results in an effective meta-search [22]. It is observed that the social connections and mechanisms are the motives behind entrepreneurial activities [10]. A travel related searches study reveals that the social media appear in search engine results [24].

From development point of view, the search engines such as Google (www.Google.com), Yahoo (www.yahoo.com) and AOL (www.AOL.com), have commercialize many specific search trends tools; for example Google Trends, Google Insight and Yahoo Trending. These tools are providing users with information about particular market, region, product and

services. Also, Yahoo provides its users with the "Trending Now"- displaying the top 10 topics in the search trends. Social media websites like Twitter (http://www.twitscoop.com/), delicious (www.delicious.com), Blogpulse (http://www.blogpulse.com) and others also provide the popular keywords of the users. The existing research work on the search trends of search engines and social media website are indicative of the need of an integrated search trends (ST) tool.

# 3. Research Work

# 3.1 Review

We continue to study major search engines like Google and Yahoo along with major social networking sites like Facebook and Twitter. After a deep analysis of these search engines and social networking sites we reach on a consensus that each one has different interpretation and visualization of search trends. In order to have a common platform we need to understand how these search engines work and generate the search trends.

# 3.2 How different search engines query searches

Search engines process millions of queries in seconds. Different search engine have different mechanism for processing user queries and displaying records. Google uses the pagerank algorithm to order pages after each user query. Yahoo, AOL, Ask and other on the other hand use different techniques.

In another research by [12] about Alta Vista search engine which states that Alta vista keeps a query log about queries which is consists of a timestamp, cookie, query term, submission information and the submitter information. So we see that both Google and Alta Vista use different mechanisms for querying searches.

There is another type of queries that can be referred as crawling technique and it is used to pull pages from millions of web servers [3]

# 3.3 Comparison of search trends

We use SWOT analysis techniques to compare search engine and social network search trends. SWOT analysis is the study of strengths, weaknesses, opportunities and threats about a product or tool.

# Comparison of search engine trends

Based upon SWOT analysis of Google [17] and Yahoo [18] SWOT analysis of Google insight and trends was constructed in table 1 and SWOT analysis of yahoo tending was constructed in table 2.

 Table 1 Google Insight and Trend SWOT Analysis

Strengths	Weaknesses
Reliable and fast More word of mouth publicity Qualified staff	Link based ranking did not employ actual traffic analysis. Less known
Simple interface Localized/categorized search	Google localized search sometimes gives errors Contextual search algorithms are not 100% perfect and many a times make mistakes Limited to Google search engine
Opportunities	Threats
Google can start giving fully fledged services on hand held mobile devices to capture market beyond conventional internet State-of-the-art technology	Google partially depends upon some portals like AOL. Getting those contracts terminated, Google would lose considerable share of its revenue Google's confusing Cost Per Click ranking and charging policy could disappoint its advertisers and company would start losing many of them.

Table 2         Yahoo Trending SWOT Analysis		
Strengths	Weaknesses	
Yahoo! has over 350 million users of its services and solutions. A very powerful marketing company, with a very well known brand.	Differentiation is difficult for Yahoo Almost all of its packaged services are available from other sources like email, NEWS, Search No visualization tool provided for search trends	
Opportunities	Threats	
The international market is a huge opportunity for Yahoo especially china The Development of the Yahoo! Directory has potential for new business and income streams. Two thirds of organizations in Ohmae's Triad (Europe, Japan and the USA) are Small Medium Enterprises (SME'). SME's are potential directory advertisers Mobile technologies offer another opportunity for Yahoo	The biggest threat for all web-based organization is competition. Huge profits attract investors, innovators and entrepreneurs. Dotcom fever has not gone away; it is now more focused on profit delivery. All of Yahoo's key services have competitors such as AOL, Google and many others. International, culture specific competitors could affect Yahoo in the future, unless strategic alliances are forged. China and India have developed their own search engines.	

#### Comparison of search trends in social media

SWOT analysis Facebook[19] and Twitter [19] are shown in tables 3 and 4 respectively. The top trends of Facebook of 2009 [14] and the top trends of Twitter [20] are healthcare, family, economics, celebrities, fun and sports.

Table 3         Facebook         SWOT analysis			
Strengths	Weaknesses		
400 million active visitors	Infrequent Updates on Fan Pages		
Fan based	Every user is not visible in Facebook Search		
Photos	Results		
Videos	Privacy settings make it hard to extract data		
Wall posts			
Discussion topics			
Profile information			
Opportunities	Threats		
Expose Blogs and Campaigns to Community Users	Privacy concerns		
Engage with Facebook Group Users	Exposure to abusive material		
Work with Others to Build Applications			
Table 4 Twitter SWOT Analysis			
Strengths	Weaknesses		
Frequently Updated	Generic (Skin)		
Tweets Show Link Attachments	Reply to Others' Tweets		
Opportunities	Threats		
Increase "Twitter Ratio" of Followers to Following			
Allow Tweets to be "Crawled by Spiders"			

#### 3.4 No existing tool

There is no such tool available today which provide search trends in a disciplined and organized way. So this new search trends (ST) tool will help Entrepreneurs and advertisers to look at new opportunities for creating new ventures and new businesses in the digital era.

# 4. ST Tool Design

We are going to provide a common platform for web search trends in the form of a metasearch engine. The main purpose of our product is to combine the search trends of available major search engines like Google, Yahoo, MSN and some major social networking sites like Facebook, Twitter, and MySpace. These combined search trends will have a good value for bloggers, business personal, and marketers [9] and also for government organizations for collecting statistics about some area of interest. Through this search engine marketers will be able to see specific search trends for a particular product in a particular area and make recommendations to their company about those particular attributes of the product. It will also provide researchers the facility to use the statistics of this search engine for his research.

Our product focus will be to get web trends from other search engines according to emerging needs of the society. We provide common platform to user where they can analyze the search trends from all over the web. Currently the search trends are from major search engines which are Google, yahoo, AOL and Ask.com. Apart from search engine we also include trends of social networks like Facebook and twitter. We have adapted the simple and flexible design which is capable to add more search engine or social media sites.

#### 4.1 ST Tool Architecture

The system is composed of User Interface, ST Agent, Social Media Parser, Search Engine Parser and the data sources from which we will gather the search trends of the people. Figure 2 shows the component of the system. UI facilitates the user to interact with the system, send queries and see the overall search trends of the web. User can also search for specific product or keyword and can see the trends of that particular keyword.



Figure 2 ST Tool Architecture

Comparative trend analysis is also supported which means user can provide two or more keywords and see the comparative trends. This feature can help entrepreneurs to compare the trends of their competitor's product with their own product.

ST agent is the heart of the system. It handles the requests from the user, generates the quarries for different sources, combines the results and sends it to UI. UI is then presents the result to the user.

The search engine parser and social media parser parse the data from various sources into a XML format so that ST agent can combine and process the data easily. Any web source which provides their search trends in xml format can be easily merged to the system, otherwise we would need a parser for them.

New opportunities can be found by looking at the trends from different angles. The regional statistics of trends can help in exploiting regional markets. Relevant keywords and their trends would suggest some new opportunities. Trends would be filtered feature wise which can be helpful to identify customer interest in product features. Also analyzing two or more products trends at same time, would definitely provide the competitive edge.

#### 4.2 Features of ST Tool

# • Displaying Search trends from various sources which include social media and search trends.

The results are displayed in the form of charts and graphics. It would give a better understanding and visualization of the trend. The search trends provided by Google, yahoo or any other search engines are limited because they do not include the trends from other sources. That's why the complete picture of search trends can't be seen properly. This feature would use the data from major search engines and the results would be covering all the search trends of the web.

• Comparative search trends by providing the two or more keywords.

The purpose of this feature is to facilitate users to compare and see the trends of two or more keywords. The entrepreneurs can use it to compare the trends of their product with their competitors. This will help them in understanding where they stand now.

• Future trends and prediction

The more data you have the more accurate your prediction can be. Google forecasting is based on searches in Google only [9]. We would take the predicted data from Google and by examining the data from other sources we can refine the prediction.

• Relevant keyword suggestion and trends

It provides the list of relevant searches and their trend. I can be helpful to understand if the people are searching for some specific feature of the product.

• Advance search options which include filtering on the basis of time, region, product, features etc

The advance search option facilitates user to see the trends from various perspective. It helps in understanding and analyzing the trend from various dimensions. User can see the trends of specified time spans. Search trends are shown according to regions in form of charts and graphics to have a better understanding of the data. By knowing the regional trends entrepreneurs can discover new opportunities. The better you know about customer behavior the more chances you have to discover new opportunities

• Business Specific trends

This feature includes the trends in various business example search trends of IT, furniture, telecom, construction, real-estate etc.

### 4.3 Sample views of ST tool

Sample of how ST tool will represent the laptop trends are shown in figure 3,4,5 and 6. The figure 3 shows simple trend of laptop from 2004 to 2010. This shows the how many searches have been done for the keyword "laptop" in a given time frame. The figure 4 shows the laptop trends according to various regions. The dark region means that the number of user at that region searched more as compared to lighter region. The detail textual information can also be seen for the detail analysis of regional market. Figure 5 is the representation of the search prediction which means the expected searches of the users. Figure 6 shows the comparison chart of hp laptop and dell laptop. We can see that people were searching more about dell laptops in past few years but now hp laptops are becoming more popular in people. There was a time between 2006 and 2007 when people searches about the dell laptop was on the peak. New features in the product or market campaign can increase the interest level of the customers in a product.



Figure 3 Overall trend of laptop



Figure 4 Graphical representation of the trend of laptop according to region









# 5. Future work

We intend to create a new venture with ST tool as our product. The ST tool is considered as an entrepreneurial idea for which we intend to formalize a business plan in order to attract customers, investors and human capital. There are still some open issues in front of us for the proposed tool, which are, as follows:

- Semantic aspect of the search trends need to be addressed in near future in order to help entrepreneurs analyzing the opportunities in a more meaningful manner.
- Normalization and Scaling of data from different sources
- Visualization of the results improvements for better presentation of the data.
- Decision support system to discover search trends patterns.
- Value co-creation facilities can be added.

# 6. Conclusions

The role of search engines and social media is becoming vital in knowing the needs and demand of the customers. Opportunity recognition is recognized as an integral part of the entrepreneurial process. The widely spread queries by users on several search engines, discussions on public forums and social media websites can facilitate the entrepreneurs to identify the hidden opportunities or disruption possibilities that lie in the search trends.

The existing tools for the web search trends are mainly based on the particular search engine or social media website. They mainly provide search trend information pertaining to their own queries or discussions specific to their own platform. There is no existing tool that combines data from several search engines and social websites and present it on a single platform. Therefore, our proposed ST tool shall facilitate the entrepreneurial activity of opportunity recognition through combination of web search trends from major social media websites and search engines. ST tool is provided to the entrepreneurs for identification of business opportunities and disruption possibilities.

There are several advantages of ST tool as an integrated and independent platform. It shall provide the entrepreneurs with a broader spectrum of information over the web. The visualization of web search trends can also facilitate in better decision making. As the architecture of the tool is flexible, we can add more search engines and social media search trends according to their popularity and need. ST tool can be improved by introducing semantics, decision support system and better visualization techniques.

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# Changes in the Functioning of the Chamber System as a Stimulus for Promotion of Economic Development

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The first part refers to the current situation in the Chamber system of Serbia, as well as all the challenges that chambers face in the transformation process with the aim of the successful market positioning. Changes and innovations that are necessary to introduce into the existing profile thru function of improving business and gaining advantage, as well as increasing customer satisfaction of Chamber members. The second part of the paper refers to the way that Chambers are organized and how they function in Europe, with special emphasis on Regional Economic Chambers .Third part of the paper is reserved for the comparative analysis: what is necessary to incorporate and how to enhance the Chamber system of Serbia, with special emphasis on the regional level, so it would be involved in the development and promotion of business, for the Chamber members as well as the entire national economy, especially of the region. On basis of all the above the concluding remarks follow.

#### Keywords:

Chambers, innovation, business improvement, customer satisfaction, economy, region

# 1. System of chambers in Serbia

#### 1.1 Definition of chamber

One of the wider forms of connecting companies and other forms of economic entities are associations, whose appearance is linked to the epoch of developed capitalist modes of production. However, it is considered to be a time when the chamber can mark the middle of the 17th century, when the term was first used Chamber of Commerce. On the territory of Serbia, the first form of business association was founded mid-19th century (1857th year establishing of Trade Committee in Belgrade), but the first chamber as a public-legal institution established by the Law in 1910th year.

In modern countries, under the name "chamber", there are different organizational entities, whose socio-economic nature, content and method of their work is also very different. As the broadest form of organization and association of economic subjects, chambers can cover the entire territory of the state, or narrower territorial units, or certain economic territory of the region. The economic experience of developed countries shows that the Chamber of Commerce is very important, even indispensable element of the economic system, market environment and overall developed environment each national economy. This is because, a number of economic entities only if they are organized into chambers, can actively participate in creating and setting macroeconomic and development policies, but also significantly contribute to the successful implementation of such policies.

On the other hand, the Chamber can be a valuable service for the exchange of current market and modern technological information among firms, thus becoming one of the decisive factors of their successful operation and development. In addition, although the chambers, by its nature, are economic (business) associations, they have a certain public permission allowed by the competent authorities, which in this way can be more rational and more efficient to perform.

#### 1.2 Characteristics of Chambers in Serbia

The transition of economic and political systems in our country, which started twenty years ago, has not yet resulted in a completely rounded system of new facilities and institutions. This also applies to the Chambers system, which in the past ten years, significantly reformed, but not yet fully compatible with the standards of developed market economies in this area. As experience shows in the world, some forms of economy association, directly resulting from the given socio-economic relations, or as a complementary part new system, or as an expression of socio-economic structure that is left. At the same time the Chambers system is also an expression of certain contradictions of politics and economics. In our conditions, it is further highlighted in two ways: on the one hand, issues of territorial organization of state and economy, and on the other hand, the different conceptions of reform of the chamber, in accordance with the new Constitution of Serbia. Broadest form of linking the economy can go, in the direction of establishment of regional chambers (horizontal connections), and of the branch associations (vertical connections), which would be integrated in the national Chamber of Commerce.



Figure 1 The current way of functioning of Chambers in Serbia

The transition of economic and political system in Serbia has not yet resulted in a fully rounded structure of the new institutions, and that the chamber system operation is not fully compatible with the standards of developed market economies in this area, which is reflected in the following:

- the scope of public powers which now are Chamber of Commerce in Serbia less than in most of the market economy;
- in the last 15 years there was the removal of previous authority, so that some public services and jobs, which traditionally belong to the Chamber of Commerce, transferred entirely to the state authorities;
- Law of Commerce in 2001. provide great space for political parties and their dominant influence on the selection chamber staff;
- inefficiency of work outstanding issues regarding the criteria for staff selection in the Chambers system;
- irrationality it is still too cumbersome unnecessary managerial-administrative apparatus in the chamber, which is a new burden on the already overburdened economy and otherwise;

- dysfunction poor internal organization chamber system, inefficient organization of tasks and responsibilities, which leads to unnecessary overlapping and duplication of the same;
- lack of subordination and coordination between different levels of chambers;
- poor coverage of the territory offices of the Chambers and bad direct communication with members;
- lack of clearly defined legal role of the chamber, which occasionally causes the dysfunctional co-operation of state administration and chambers.
- The new Law on Amendments to Law on chambers of commerce from the 2009th (With implementation delayed until 01.januara 2013th)

Changes in business and social environment in national and international players are challenging the traditional model of action and communication Chambers system in Serbia. Chambers in developed countries, by definition, are the economy service, which represents and promotes the interests of its members and as such is a democratic body, established by its members and operates on the principle of self-management (by its founding members). The leading principle in the work of the Chamber is the best possible representation, coordination and harmonization of interests of members. Independence from political factors (the world) gives her self-financing by the membership, the realized market income, self-management and organizational management. Main assumptions that significantly affect the restructuring and organization chamber system of Serbia, are as follows:

- Globalized world economy
- The European Integration (European think-do global)
- Preservation and improvement of national economy and its interests
- Regionalization of Serbia and in accordance with these and territorial organization
- Accept social responsibility (equity)

Designed on the above basis, Chambers system in Serbia should be positioned in the market, which additionally requires certain adjustments in the functioning of Chambers system, first of all transfer of permissions on all the Serbian Chamber of Commerce in the system, and redefining the ways of financing, which would result in a relatively equal position of all Chamber of the market, and therefore fair game for market position. Market positioning of Commerce calls for innovation in the way of work, given that fees can no longer be the only one, nor have sufficient funding. Turning the market means the market and use of modern tools, which include:

- Market research (competitors, customers and the needs of clients)
- Comprehensive use of IT
- Continuing work to increase the quality of services (a comprehensive effort to increase customer satisfaction)

# 2. Models of organization and functioning of Chambers Systems

#### 2.1 The American system of association

- The system has about 14000 of the association.
- Dominate the Chamber organized on the territorial principle (city, county, state, region)
- The principle of membership: optional
- Establishment: private-law model, the establishment made by private individuals to achieve their interests

- The association method: decentralized (voluntarily regulate the relations between the chambers, respectively)
- Number of members: small (several hundred)
- Sources of funding: membership fees, services, sponsorship
- Representing the interests of member states: partial
- Membership Services: a large and diverse range of services specifically priced (representing, organizing events, networking, marketing, consulting and information organization health plans, with each member discounts, database, issuing room for the Chamber membership, education through workshops, participation in working groups to address issues in the local community, participate in the formation of local strategies of growth and development, finding the labour force, statistical reports, stock of office space, business plans)

### 2.2 The European system of association

#### 2.2.1 German system

- The system has 80 chambers
- The principle of membership: mandatory
- Establishment: public-law model under the law of 1956. / 1992nd
- The principle methods: decentralized (membership is a regional chamber, membership goes to regional chambers, and they set aside part of the national chamber) regulated by law
- Number of members: a large (several thousand)
- Sources of funding: membership fees, public services, services, projects
- Representation of members interests: a comprehensive
- Membership Services: a range of services some of which are specifically charged: representing the interests of economy, advising the State, public authorities through the 50 laws passed in the economy (implementation of vocational education, professional examination for starting business, issuing certificates of origin, ...), consulting and business information, organizing participation in trade fairs, organizing delegations, networking, education (business education, have their high school), databases, statistical analysis, participation in the formation of local strategies of growth and development

#### 2.2.2 Italian system

- The system has 123 chambers
- The principle of membership: mandatory
- Established: public-law model under the law 1993rd
- The principle methods: decentralized (membership is a regional chamber, membership goes regional chambers, and they set aside part of the national) regulated
- Number of members: a large (several thousand)
- Sources of funding: membership fees, public services, services, projects
- · Representation of members interests: a comprehensive
- Membership Services a variety of services some of which are specifically charged: representing the interests of economy, public authority (to keep the register of companies, issuing certificates of origin, issuing certificates for the commencement of work ...), consultation and information on business organizations to participate in the

fairs, organizing delegations, networking, education (business education), databases, statistical analysis, forming part of local development strategies

#### 2.2.3 French system

- The system has 263 chambers
- The principle of membership: mandatory
- Established: public-law model under the law
- The principle methods: decentralized
- Number of members: a large (several thousand)
- Sources of funding: public permission, services, membership, projects (percentage)
- · Representing the interests of member states: a comprehensive
- Membership Services: a range of services from which a number of charges: Representing the interests of economy, public permission (airports, ports, trade shows, certificates of origin, ATA carnet ....), consultation and business information, organization participation fairs, organizing delegations, networking, education (business education, have their high school), databases, statistical analysis, participation in the formation of local development strategies

Chambers systems comparison of the most developed countries; we see that the Anglo-American model designed to optional membership, and thus a fee, while the Europeancontinental type based on mandatory membership. Criteria for selecting a particular model should primarily be sought in the accepted strategies of economic development of certain countries. American neoliberal development strategy resulted in the acceptance of optional membership, therefore, membership fees, and regulate relations between members of a strictly market basis. European mandatory membership model works successfully in the most developed EU countries (except GB), except for promoting the interests of its members and the social responsibilities of capital. Also, the Chamber has a great impact on regional development, through active participation in creating and implementing development strategies in the region.

#### 2.3 Chambers Systems in the region

#### 2.3.1 Slovenia

- Membership: optional (representative dropped)
- Representation of interests: partial
- Number of members: small
- Source of financing: services, memberships, projects
- Membership Services: small, all are charged

#### 2.3.2 Macedonia

- Membership: optional (small representative)
- Representation of interests: partial
- Number of members: small (few hundred)
- Source of financing: services, membership

#### 2.3.3 Croatia

- Membership: mandatory
- Representation of interests: comprehensive
- The number of members: a large
- Source of financing: membership services, projects
- Service members: a large variety, some of which are charged

#### 2.3.4 Bosnia and Herzegovina

- Membership: mandatory
- Representation of interests: partial
- The number of members: a large
- Source of financing: membership services, projects
- Service members: small, all are charged

### 2.3.5 Republic of Srpska

- Membership: mandatory from 2009. year
- Representation of interests: comprehensive (partners of the Government in making commercial law)
- The number of members: a large
- Source of financing: membership services, projects
- Service members: a large variety, some of which are charged

After the disintegration of Yugoslavia, all emerging countries in the region have introduced optional membership, except for Croatia. This model did not give positive results even for the economies of these countries, nor for Chambers systems, considering that a large number chamber, which certainly are not up to the task, and it is to successfully represent, promoting and representing the interest of the economies of these countries. Negative experiences of countries in the region, with the introduction of optional membership, saying that it is not possible to automatically apply the model to organize chamber system, as developed countries, and that does not take into account the specific characteristics and level of development of certain economies.

# 3. Suggestions for the improvement of the Chambers system in Serbia

Comparative analysis of developments in the near environment, Europe and the broader international level, especially knowledge of the comparative experiences of chamber organization and reforms in other countries, as those in transition and in developed market economies, with particularly significant results of analysis of the continental model chamber system (continental public law) and Anglo-Saxon model chamber system (private Anglo-Saxon law), it can be concluded that chambers of commerce established by law, with compulsory membership of a company, can best represent the interests of economic entities in Serbia. Chamber of Commerce are the only institutions that deal with issues of common interest for all the businessmen from the territory of Serbia. That is why, the main directions

of the function of achieving a complete chamber system of a European Serbia, should result in the following:

- Efficient and effective system of Chambers;
- A system of compulsory membership as the most acceptable form chamber of organizing, given the characteristics and level of socio-economic development of Serbia
- An expanded and clearly defined public authority;
- Decentralized authority within the system;
- Development and strengthening of their specific regional chambers of commerce;
- Improved Chambers system and compliance with best European practices, including work on improving education management and motivation and professionalism of employees.

This includes a good partnership between the Chamber - policy makers (Government, Ministries, Parliament), the statutory role of Commerce in creating economic environment, and development of new tasks, new ways of positioning and organization of the Chambers system as a whole, new way of, amendments to laws and regulations which are made in chambers, rationalize operations and cut costs, introduce new duties and powers and effective cooperation between the chambers in the country and abroad.

Particular attention should be paid to the improvement and development of regional chambers of commerce, in the light of current regionalization of Serbia. The market developed countries, the regional chamber of commerce are the pillars of the holders of not only economic development regions, but are responsible for development and social progress of the same, taking particular account of quality of life of all members of their community. This is achieved through the active involvement of regional chambers in all activities of government at the regional level and representing the interests of the region at the national level.

# 4. Conclusion

Starting from the basic role of the Chamber that his business provides a concrete contribution to creating a development environment, functioning and development of the economic system, the future of this institution can be seen in three main directions of activities:

- promotion of international cooperation with other chambers from the environment, which would have resulted in increased trade, and all other forms of economic cooperation;
- promotion of cooperation with local governments, especially with the authorities in the regions, and of course the Republic, in order to create the favourable business environment and development to its members;
- functional organization and continuing education in order to enhance innovation and knowledge management and professional persons in the economy. This means that, in addition to university education is the first pillar of education in each state, through the Chambers system to build a second pillar of education, which includes updating of knowledge in all professions and at all levels of management of economic affairs.

Considering that the scope of public powers, which now have Chamber of Commerce in Serbia less than in most of the market economy, and in recent years, some powers traditionally belonging to the chamber transferred to state authorities, Serbian Chamber of Commerce to obtain a series of new public authority, such as the Business Register, an electronic signature certification, issuing licenses for the training of entrepreneurs and master of letters, and more. That means making new laws, or amending existing ones, which would strengthen Chambers system and significantly contributed to the rapid development of economy as a whole.

Operational work in the Chambers system is outmoded and unsuitable for the monitoring of technological innovation and global economic trends. Chamber must be transformed into a multifunctional service overall economy, composed of educated and motivated professional staff, willing to do to create change in the environment and to change ourselves in accordance with them. It is therefore crucial initiative and creativity, primarily management and professional team, at all levels of chamber organization.

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# The Impact Evaluation of Environmental Factors on International Competitiveness of the Western Balkans Small and Medium Sized Enterprises

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Small and medium sized enterprises (SMEs) with an export potential face significant obstacles in gaining international competitiveness, due to the highly dynamic environment in which they operate, and lack of business competency. This study evaluates the impact of environmental factors on international competitiveness of the Western Balkans SMEs by identifying the key pairs of environmental factors and factors of international competitiveness, which facilitate an increase in international competitiveness of these firms. The paper examines, analyzes and studies the significance of the relationship between environmental factors and factors of international competitiveness of the Western Balkans SMEs. Research on impact and quantification of the environmental factors on international competitiveness of the Western Balkans SMEs greatly contributes to the increase in level of international competitiveness of the whole Western Balkan region. The paper also studies the importance of strategic planning and decision making process in the Western Balkans SMEs in order to facilitate higher levels of their international competitiveness. The main purpose of this research is to create real, scientifically verified and pragmatically tested assumptions, which enable adequate overview of the significance and correlation between identified environmental factors and factors of international competitiveness of the Western Balkans SMEs. Research is based on a questionnaire conducted on the representative sample of SMEs in Serbia, Montenegro and Bosnia and Herzegovina in the period September 2008 – March 2009. Methodology applied in the paper includes scientific methods of analysis and synthesis, induction and deduction, as well as statistical-mathematical methods. The findings of the research indicate which significant environmental factors have a positive and/or negative impact on gaining the international competitiveness of the Western Balkans SMEs, therefore offering sound basis for strategic positioning and further gaining of competitive advantage.

#### Keywords

Environmental factors, International competitiveness, SMEs

# 1. Introduction

Small and medium sized enterprises (SMEs) are the focus of this study because they have a significant role in many economies [1]. SMEs are instrumental to the economic development of Serbia, Montenegro and Bosnia and Herzegovina. In Serbia, these firms represent 99% of all firms. They employ over 2/3 of national workforce; participate with 70% in the overall trade of goods and services and with 50% in total exports. (Source: Ministry of Economy and Regional Development of the Republic of Serbia, 2009.). With its foreign-trade deficit in constant increase, gaining international competitiveness of SMEs is crucial to the further economic development in Serbia. In fact, Serbia still hasn't reached its GDP per capita level which it had in 1989. For example, in 2008 it measured 80% of GDP and 50% of industrial production registered in 1990. Although GDP primarily depends on market demand, due to privatization and implementation of structural reforms it has increasingly been reliant on factors of supply such as investments, competitiveness and productivity. Direct foreign investments in Serbia for the period from 2002 to 2008 added up to 12.42 billion dollars (Source: Serbian Chamber of Commerce, 2008). Low export rates and significant increase in importation deteriorated both the trade deficit and the balance of payment [2]. High foreigntrade deficit is primarily generated by insufficient scope and low share of exports in GDP. The coverage of imports by exports of goods was less than 50%, except in 2006 and 2007, when it was 51.0% and 50.1%, respectively (Source: National Bank of Serbia). In Montenegro SMEs represent 80.22% of all firms, and they employ 60% of national workforce, with participation of 60% in GDP, and 22.23% in overall exports (Source: Directorate for Development of SMEs of Montenegro, Podgorica, 2008). SMEs in Bosnia and Herzegovina represent 99% of all firms, employing 53% of all workforce, and participating with 36% in GDP [3].

Considering the above, it can be concluded that SMEs play a significant role in transitional economies in the Western Balkans. In fact, transitional processes in the Western Balkan countries stipulated restructuring of the entire economic scene, invoking the creation of adequate business environment and legislative and institutional system preconditions necessary for fast and dynamic development of SMEs. In the Western Balkan countries, SME sector is expected to have a great contribution to the successful closure of transitional processes, integration into the European Union and improvement of their economic performance. Therefore, the essentiality of SMEs in the Western Balkans is evident in their high levels of flexibility and adaptability to highly dynamic environment. As a result, it is expected that the active participation of SMEs on the international market will make a great contribution to further economic development in the Western Balkan countries. The focus of this study is the validation and analysis of environmental factors which have a determining impact on international competitiveness the Western Balkans SMEs through employment of qualitative and quantitative methods. Therefore, a specific research was executed with an objective to quantitatively test the significance of correlation between the environmental factors and those of international competitiveness of the Western Balkans SMEs. The obtained results allow for creation of healthy and pragmatic assumptions aiming to help the Western Balkans SMEs adapt to the environment in which they operate and maximize their international competitiveness. SMEs are the expected generators of development and change in the Western Balkan countries on their way to European integrations.

# 2. Methodology remarks

Within applied methodology in the research, the following scientific methods have been used: induction, deduction, analysis, synthesis, statistical-mathematical methods and qualitative-

quantitative methods of data processing. The statistical-mathematical part of the research was carried out by using software programs Microsoft Excel and Edu Stat.

The data on environmental factors which have a determining impact on international competitiveness of the Western Balkans SMEs is collected using a specially designed questionnaire. This method is selected in order to gather relevant information required for testing previously stated hypotheses. The suitability of the finalized version of the questionnaire was pre-tested by eight graduate students working in SMEs. The questionnaire was refined based on interviews with the pre-test subjects, following which it was distributed to the Western Balkans SMEs (ones with an exporting experience and/or potential) in the period from September 2008 to March 2009. The guestionnaire was distributed along with a cover letter explaining the purpose and goals of the research. Westhead et al. [4] detected recently that firms with prior experience were more likely to be exporting firms. According to the European Union (EU) regulations SMEs have less than 250 employees, annual turnover of less than 40 million euros, and are controlled independently. The initial sample consisted of 300 SMEs from the Western Balkan countries. Due to data availability and possibility of their dynamic processing, the representative sample consists of 138 Western Balkans SMEs (a 46 % response rate). The response rate of 46% is satisfactory since people in managerial positions tend to respond less often to such research projects than people in general population [5]. The representative sample consists of 58 SMEs from Serbia (42.03% of the sample), 34 SMEs from Montenegro (24.64% of the sample), and 46 SMEs from Bosnia and Herzegovina (33.33% of the sample). The questionnaires were completed by firm's managers, which was proven by their stamp and signature.

For the purposes of adequate data processing, universal scale from 1 to 5 has been used in the questionnaire in order to assess given parameters (1 - the least important, 5 - extremely important). Six parts can be recognized in the questionnaire.

The first part of the questionnaire features general information on the firm, which determines the place, size and basic activity scope of the business. In the second part of the questionnaire the importance and position of the firm on the domestic and international market are taken into consideration. The third part is related to the main barriers in the environment which firms most commonly face. Given are 24 factors which could have a significant impact on the Western Balkans SMEs today. The fourth part of the questionnaire assesses the importance of the international competitiveness factors for the overall success of the Western Balkans SMEs. This part offers 50 factors which include all functions of the firm and all aspects of doing business in the contemporary market environment. The fifth part of the questionnaire gives the SMEs an opportunity to inscribe their suggestions for improvement, which they believe would make their firm more competitive on the foreign market. The last, sixth part of the questionnaire considers effects of the global recession on the Western Balkans SMEs.

Statistical analysis in the paper includes the following statistical-mathematical methods: descriptive statistics and method of correlation. The descriptive statistics is implemented first and its result is the average value of the importance of individual environmental factors and factors of international competitiveness of the Western Balkans SMEs. A ranking list of the most important factors is obtained using the average value of the importance of individual environmental factors and factors of international competitiveness of international competitiveness of the Western Balkans SMEs. Following that step, the method of correlations was applied (Spearman's rank of correlation), in order to determine the impact of particular environmental factors on the factors of international competitiveness which are important for the success of the Western Balkans SMEs. For the purposes of the research, environmental factors and factors of international competitiveness of SMEs were paired in order to test the presence of correlation between them.

The goal of Spearman's rank of correlation is to test whether there is a quantitative congruency (correlation) between the ranks of two observed variables, and if so, to which degree.

$$r_{s} = 1 - \frac{6\sum d_{i}^{2}}{n \cdot (n^{2} - 1)}$$
(1)

where

r<sub>s</sub> – Spearman's correlation coefficient  $d_i - r_1 - r_2$ , r – rank, n - size of the sample. [6]

For Spearman's correlation coefficient the following statistical inference is commonly used (Table 1):

Interval of the Irl value	Interpretation
r  ∈ [0.00, 0.40]	Weak monotonous positive correlation
r  ∈ (0.41, 0.75]	Moderate monotonous positive correlation
r  ∈ (0.76, 0.85]	Good monotonous positive correlation
r  ∈ (0.86, 1.00]	Excellent monotonous positive correlation
Source: [7]	

Table 1 Statistical inference by Spearman's correlation coefficient

[/]

# 3. Findings

This part of the paper presents and analyzes the research findings regarding the impact evaluation of the environmental factors to the international competitiveness of the Western Balkans SMEs. Particularly, key environmental factors and those of international competitiveness of the Western Balkans SMEs are identified with an emphasis on their significant correlation.

Proper identification of the key environmental and international competitiveness factors of the Western Balkans SMEs in this research included the analysis of the reference literature, adequate theoretical backgrounds and research in this field, especially from the international competitiveness aspect. Therefore, the list of environmental factors includes internal and external barriers relevant for the operation and international competitiveness of the Western Balkans SMEs today. Keeping in mind the importance of the totality of factors of international competitiveness, the questionnaire used in the research includes the following modules for the factors of international competitiveness of SMEs:

- Management and strategy .
- Marketing •
- Finances .
- Control
- Fiscal policy •

- Innovations
- Technologies
- **Environmental awareness**
- Working force

Research results point out to the most significant environmental factors and those of the international competitiveness of the Western Balkans SMEs. It can be concluded that the exchange rate fluctuations, political instability on the domestic market, and problems with

overdue receivables are the most significant environmental factors which have an impact on the Western Balkans SMEs. In contrast, the least important environmental factors which have an impact on the Western Balkans SMEs are difficulties in purchasing/renting the property, expensive telecommunication services and the lack of raw materials (Figure 1).





Source: Authors' calculations

It can also be concluded that financial stability, existing human resources, financial capabilities, as well as financial resources present the most significant factors of international competitiveness of the Western Balkans SMEs. The least significant ones are public relations, relationship with consultants, as well as availability of professional help in matters of negotiation (Figure 2).





Figure 2 The most significant and the least significant factors of international competitiveness relevant for the Western Balkans SMEs

Source: Authors' calculations

Research results in the paper indicate that there is a presence of correlation between the observed pairs of the environmental factors and factors of international competitiveness of the Western Balkans SMEs. Particularly, application of the Spearman's rank of correlation determined the presence of the monotonous positive correlation, where the most important environmental factors and factors of international competitiveness of the Western Balkans SMEs have moderate monotonous positive correlation (Table 2).

Table 2 Impact correlation	n of particular enviro	onmental factors of	on factors o	of international
comp	etitiveness of the W	estern Balkans S	SMEs	

No.	Environmental factors of the Western Balkans SMEs	Factors of international competitiveness of the Western Balkans SMEs	Spearman's correlation coefficient   r	Statistical inference
1.	Lack of the local government stimulation	Relationship with the state government	0,6116	There is a moderate monotonous positive correlation in the sample.
2.	Inadequate bank support	Financial resources	0,5558	There is a moderate monotonous positive correlation in the sample.
3.	Juridical efficiency	Efficiency of lawsuit and defense of the firm in the court of law	0,4853	There is a moderate monotonous positive correlation in the sample.
4.	Implementation of law	Knowledge and expertise in law	0,4742	There is a moderate monotonous positive correlation in the sample.
5.	Exchange rate fluctuations	Financial stability	0,4958	There is a moderate monotonous positive correlation in the sample.

Source: Authors' calculations

The analysis of data in Table 2 shows that there is a significant correspondence between the stimulation of local governments and the state government, in regards to functioning of SMEs in the Western Balkans. The European Charter for Small Enterprises is one of the European Union's instruments for EU member states and candidate countries alike, intended to facilitate business environment for the Western Balkans SMEs. It is expected that its implementation will have a strong impact on state policies and influence positive repercussions on the local government stimulation to the Western Balkans SMEs. It is also concluded that bank support has an impact on the Western Balkans SMEs business possibilities, since it is a source of financial availability. In this sense banks directly influence international competitiveness of the Western Balkans SMEs, considering that they are among the most significant elements in determining the export activities of these firms on the international market. The possibility of effective resolution of judicial processes has positive repercussions on international competitiveness of the Western Balkans SMEs. Particularly, the recent period has been characterized by complex and long judicial processes, which is highly inconvenient for the Western Balkans SMEs. Efficiency/inefficiency of the court is in positive correlation with efficiency/inefficiency of law-suit and defense of the Western Balkans SMEs in judicial process, thus having an impact on the international competitiveness of these firms. Research results also indicate that law implementation has an impact on the international competitiveness of the Western Balkans SMEs, that is, the knowledge and expertise in law. In today's dynamic business environment, adequate implementation of law is of great importance for the Western Balkans SMEs, since it creates supportive atmosphere for potential domestic and foreign investors in the region. Also, the exchange rate fluctuations are in correlation with financial stability, which is a significant factor of

international competitiveness of the Western Balkans SMEs. The exchange rate fluctuations make it difficult for SMEs to make long term decisions and achieve financial stability, thus focusing only on short term results.

# 4. Conclusions

In the research key environmental factors were identified and their impact on the international competitiveness of the Western Balkans SMEs was evaluated. The findings indicate which key factors in the Western Balkans SMEs greatly influence gaining and maintaining of their international competitive advantage. The most significant environmental factors which affect SMEs are exchange rate fluctuations, political instability on the domestic market, problems with overdue receivables, finding of the corresponding business partner, inadequate bank support, as well as incompetent work force on the market. Also, the most significant factors in regards to international competitiveness of these firms are financial stability, availability of human resources, financial capabilities, financial resources, as well as effective methods of cost control.

Obtained research results point out to the most significant environmental factors and factors of international competitiveness of the Western Balkans SMEs with a special emphasis on their correlation. The research determined that the following environmental and international competitiveness factors of the Western Balkans SMEs are in a moderate monotonous positive correlation: a lack of the local government stimulation and relationship with the state government; the inadequate support of banks to firms and financial resources; the juridical efficiency and the firm's lawsuit efficiency and defense in the court of law; the implementation of law and knowledge and expertise in law; as well as the exchange rate fluctuations and financial stability.

The findings in this research should be interpreted with caution since there are certain restrictions. The main source of limitations in the research lies in the questionnaires which were filled out by an individual in the firm in a top management position. Hence, the answers were influenced by subjective perceptions and opinions of that person about the offered questions.

The findings in the research offer domestic and foreign investors important information based on the empirical and scientifically verified results about the most important environmental and international competitiveness factors which Western Balkans SMEs face, as well as their relationship. This information represents the basis for the decision making process in investing.

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# **Extended Abstracts**

Case Studies, Practicioner and Institutional Contributions

# Higher Education Learning Partnerships - Cooperation for Competitiveness

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Competition is fundamental to the operation of free markets. Competition is a driver of efficiency and innovation. Innovation can provide new ways of doing old things (the washing machine). More radically, innovation can revolutionise thinking, products, processes (the Internet). Broadly, the level of innovation will be determined by the quality and quantity of human capital. Human capital may be defined as the health, strength, education and skills that people bring to their jobs. The quality of human capital strongly influences the level of productivity and economic growth. Human capital can be improved through education and training. With regard to competitiveness, the quality of and access to adult education is an important determinant of the extent to which firms and individuals are able to respond to change. In this respect, access to adult education and relevant training opportunities is critical to enable firms and their workforces to be innovative in their responses to change and in maintaining a competitive position.

Adult education for training and retraining is a key component of lifelong learning that can promote innovation and competiveness at the level of the individual, firm and economy. In a globalised world, adult education must be dynamic in providing the training required to sustain and improve competitiveness in ways that raise productivity and increase standards of living. Over the past two decades Central and Eastern Europe have experienced unprecedented economic, social and political change. However, access to relevant training opportunities has not adapted to enable firms and their workforces to be innovative in their responses to change. Thus, a major challenge for transition economies is to address the shortage and mismatch of skills in the labour market. Increasing capacity for dialogue with social partners has been identified as an important precondition for the improved management of the transition process. In this respect, learning partnerships between education, enterprise and government can lead to training that is more relevant to the needs of enterprise and competitiveness at the local level.

This presentation will review the experience of the Higher Education Learning Partnerships (HELP) project funded by EU Tempus. It brings together universities and social partners in Hungary, Romania, Serbia and Croatia around the objective of establishing learning partnerships to promote dialogue on the regional skills agenda. The presentation will explore the model of stakeholder partnership established, the skill gaps identified by the project and the results to date of cooperation in training development at the national and regional levels.
# Research opportunities and constraints in transformation much smaller companies family enterprises

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The problem related to the failure of most former state and social enterprises, now privatized, is linked to the weakness of the privatization. The system was set to be carried out comprehensively restructuring. The process is reduced to a formal change of ownership. A significant number of companies blo possible implementation of a successful restructuring mechanism of transformation in a number of smaller companies. The key scientific disciplines that can help transform a lot of smaller companies was reengineering. Analysis of the process of organizational transformation in the smaller companies reengineering model shows that in addition to a series of options carries certain restrictions. In this paper, based on years of research conducted in a satisfactory sample of companies, presented the results to give an answer regarding the capabilities and limitations of transformation in smaller companies. The focus of our research and the creation of scientific views regarding the possibilities and limitations of small family businesses. The question is, why the transformation in family businesses and not in the business model of corporate governance.

Research that we conducted, indicate that under very low levels of the system of corporate governance, it is useful to phase transformation to be in a family enterprise. In the next stage of the condition of successful previous phase, it is possible to set up a successful organizational model based on the principles of corporate governance. The family business model creates the opportunity for the effective installation of the company transformed all four functions of management. The hypothesis of a successful reengineering process transformation applied to larger companies in a number of smaller, the operation is confirmed on the basis of analysis of the effects achieved in a particular situation. Viewed as a whole the company has followed the logic of the methodology of organizational transformation and reengineering integrated logic developed for the needs of a particular research project.

Featured model transformation is a powerful tool to prevent the possible deviation of a series of actions in the undeveloped stage of corporate governance. Smaller companies successfully went through the first stage of the transformation can certainly be a healthy basis for a successful system of corporate governance in the next developmental stage. During the research, related not only to the problem of organizational transformation, led to the conclusion that the reengineering process must be monitored enlightenment in the field of business engineering and management. It is very important to study to become a permanent part of the family culture of a family that wants to successfully manage a business. Only the enlightened members of the family knowledge in the field of corporate governance will be able to properly understand the value of corporate governance and benefit from the transformation of the system of corporate governance.

Research is one of the authors of this paper carried out for the second project show that the process of transformation of large enterprises in the less possible to achieve the following key effects: greater flexibility, increased innovation capability, faster response to changes, faster decision making, the lower the bureaucratization, the more incentive management and employees and greater probability of successful growth. The key limitations are. problem of division of technological processes, the lack of readiness for change and a lack of knowledge.

### The week of Innovation, Science and Technology in Novi Sad - A new approach in trans-national cooperation between Regional Information Systems

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We present the project InnoWeek - The week of Innovation, Science and Technology in Novi Sad - an initiative promoted by the Region Friuli Venezia Giulia (IT) and supported by the Autonomous Province of Vojvodina (SR), aimed at favoring and strengthening the cooperation between the two regions in the field of innovation and scientific and technological research.

The project is a further step in the pathway to merge the innovation capacities of Friuli Venezia Giulia and Vojvodina, putting together research centers and dynamic enterprises from both sides. Special attention is given to the fields of common interest: renewable energies (incl. bio-fuel), energy efficiency, agro-food, sustainable agricultural development, biotechnologies.

The project represents a new approach in trans-national cooperation between Regional Information Systems: built upon a high-level cooperation agreement between the two regional Authorities signed in 2003 (and renewed in 2009), it is aimed at establishing permanent cooperation protocols between scientific institutions and local actors of the technological development of the two regions, as well as promoting common projects and initiatives, and intensifying staff exchange programmes.

In recent years, many Innovation Support Schemes (ISS) have been adopted in single European regions, and a number of EU financed trans-national innovation projects have been run, but a real 'integration' of Regional Innovation Systems has never been attempted. Our perspective is to introduce a set of shared ISS to be adopted jointly (and not 'in parallel') by two or more regions, able to mutually enhance their overall R&D capacity.

Key Words: innovation, cooperation, regional innovation systems

### New approaches - new strategies for improvement, competitiveness of domestic companies

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Recently we have often come across the term "strategy". Our economy and companies are currently in such a position, that we have to decide whether to start from the beginning or get transformed. The question is how and what to change. We must decide what strategies to use in order to increase the competitiveness of Serbian companies, what to do with the companies which have fallen into difficulties... Do new technologies affect the productivity? Will they be the solution for the Serbian companies? What matters should we pay attention to? How should we invest our financial resources? Would this solution moderate the current crisis and the transition period? The information technologies have taken on a new significance. They influence the development and competitiveness of companies. The change of thinking, restructuring and investment in education are vital for the recovery of Serbian economy and bringing it back to European market. It also means making a bigger profit. The use of foreign funds, which are issued for the EU candidate countries, can be one of numerous sources for financing new companies, as well as for presenting the new high-quality products. The expertise and knowledge of the domestic companies is the first step to the EU.

Key Words: strategy, competitiveness, information technologies

### **Clusters and Universities in Regional R&D**

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The key element of the innovation support policy in Hungary is the National Innovation Fund that was created in 2004. Part of the fund is allocated to regions and it can be used for the implementation of the Innovation Strategies of the regions. Most of the Hungarian regions benefited from the Framework Programme of the European Union and developed their Innovation Strategies in co-operation with experienced European regions.

The national innovation policy had previously been based on the well established Hungarian research institutes. Later the focus was shifted to the joint research projects of universities and companies. The co-operation attitude was further enhanced by cluster initiatives that receive support from the Structural Funds of the European Union since 2007. Presently innovation plays a key role in the national cluster development policy in Hungary: innovative clusters are given priority access to European grants after they pass successfully a professional accreditation process.

DEAK Cooperation Research Non-profit Company carries out a central function between industrial research in universities and technology development in companies. DEAK develops and implements joint research projects where fundamental research activities and product oriented technology development is combined efficiently. Several clusters are functioning successfully in Szeged in the biotech field, particularly in pharmaceuticals, agro-food industry and in the biomass utilisation as renewable resource.

The local informatics cluster in Szeged is very active in the development of open source software and they intend to extend the territorial scope of their activities to the neighbouring countries. Similarly, the Printing, Packaging and Plastics (3P) cluster in Kecskemét is equally interested to establish research oriented partnership with suitable organisations in Serbia and Romania. Both clusters are the key regional player in their respective field of activities therefore they can be definitely recommended as potential partners for innovation oriented cross-border development projects.

The joint project for Science Park development of the Electrical Engineering Department of University of Novi Sad and DEAK Cooperation Research Non-profit Company will be an excellent example of putting into practice the above described development policies.

*Key Words:* Technology transfer, innovation system, innovative clusters, science park

# EU funded projects in Serbia – Key challenge, major success or both?

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Serbia as a country has the vision to join EU and on that track it has started transition phase almost a decade ago. How well and how soon that important job will be done depends greatly on country's ability to take advantage of new opportunities that are now open for Serbia and development trends these changes will bring. At this stage facing challenges that bring EU funded programmes, like Tempus, IPA and others, is not considered an easy task. Nevertheless, it will undoubtedly have big impact on building capacities for managing EU Structural Funds in the future.

One of the recent challenges for Serbian universities participating in Tempus IV Programme just opened last year with the opportunity of taking on the position of project grant holder. Luckily, many universities felt capable to take on the challenge. Consequently there are several active Tempus projects in Serbia, implementing not only project objectives, but pushing some greater changes in transitional process as well. Together with IPA funded projects, universities are contributing to defining optimal solutions for numerous problems they are facing in project implementation, due to discrepancy between EU guidelines and national regulations. Like any other project, they require good management, excellent coordination and well organized administration, and above all flexibility in interpreting confronted rules and regulations and proactive thinking in overcoming them. Having many partners involved in the projects these tasks make even more challenging, aiming to improve strong and successful partnership between EU and Western Balkans countries. Along with financial support, exchange of experience and learning from best practices are positively the leading benefits of these projects and common grounds for their longterm sustainability and networking.

Coordinating project has again come to the light the fact that Serbian education system and the economy require significant reforms in many segments. This has stimulated universities to gather all relevant stakeholders (state institutions universities, representatives of EU institutions, companies, NGOs and other players) to invest their effort, work, expertise and commitment in reaching competent solutions. This process is work in progress, but expectations are high. Simultaneously, having no time to waste anymore, universities are developing their internal schemes for successful project implementation, trying to bring together confronted guidelines and apply best practices.

This presentation will outline the one-year experience of the University of Novi Sad, as a project grant holder, in the implementation and coordination of the Tempus project "Conversion Courses for Unemployed Graduates in Serbia", emphasising benefits and positive experience, challenges and obstacles project team has successfully overcame or ones the team is still very much involved in.

Key words: IPA project, TEMPUS, coordination, partnership

# Designing usable assistive technology products

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Assistive Technology (AT) plays an important role in today's welfare society. The positive outcome of AT is evident as the AT devices and services improve the capacity of people and make everyday life easier. Despite the many benefit, the field also encounters many problems i.e. in designing usable products. Hence the AT devices are often left unused despite the true need.

Service and Product Development Programme PractiCo® at Tampere University of Applied Sciences studied the ways of AT enterprises to realize product development. In Finland 75 enterprises participated on the research, from which 77 percentages answered asking the opinions of AT users when developing new products. Half of the respondents reported involving the end users already in the development stage of the product. However, the research showed that asking users opinions does not mean systematic researches on customer satisfaction. The research also showed that many of the enterprises consider market researches that are made by another actor using systematic method more reliable and contain valuable information in respect of product development. In addition many of the respondents reported that involving the end users in the product development processes is extremely important and a good way to bring customers and enterprises closer to each others. According to the study the designers want to put more efforts to achieve among many usable, safe and pleasant AT devices and high quality AT services. The factors that should be most improved in the product development according to the respondents are; the ease of using AT device, the price of the device and the durability of the device.

PractiCo® has developed a service concept, which improves user involvement in AT development. The concept offers partnership for AT enterprises and enables participation of real end users in the AT development in genuine environment. Concrete tools of PractiCo® for this kind of development are Facilities for independent living and Assessment model. The Facilities offer a homelike environment, where diverse AT devices and living-related solutions can be tested. The Assessment model is a tool for assessing users' satisfaction with variety of AT. The tool is now developed and well tested and the next step for PractiCo® is to launch the model into practice together with AT enterprises.

Key Words: Assistive technology, product development, usability

### Spotlight on the Creative Industry in Hungary, Design Motivated Development Program for SME's

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Design has been long established as an integral part of the modern world's business culture. Design is an important component of any business success - from devising the company's image and marketing to creation of ergonomic products. Design carries a message and so does its absence. Our Small and Medium Enterprises sector is yet far from using all the potential that the design has to offer. The reason of this is partly the lack of communication between the design centres and the entrepreneurial sphere.

The immediate concern of our efforts in this field is the industrial development fostered by the oncoming Daimler investment. Kecskemét's small-regional Economy Development Group has set the following goals to the series of events it is monitoring:

- to create bridges between the Creative sector and the SME\'s
- to offer a consumer-friendly global view of design and its opportunities; educational purposes
- to initiate a project generating process, later to be supported by a special advisory board set up or this purpose.

The conference presentation deals with the economical role of design, its importance within particular branches and the specifics of the development program itself. We present the recent state of the Hungarian creative industry and also its international dimensions and possibilities.

Key Words: industrial design, creativity, service development

# Market positioning of Chambers in the region – example Regional Chamber of Commerce Novi Sad

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The Regional Chamber of Commerce of Novi Sad is the object of the presentation. The first part of the presentation refers to: establishment, organization and functioning of the chamber. The second part is reserved for the overview of market positioning of Chambers of Commerce in the region, the way it provides services to clients and what the Chamber has done in the field of innovation of its services, all with the aim of increasing satisfaction of its customer-members. The third part is reserved for concluding remarks.

Keywords: Region, Commerce, customers, markets, innovation, business improvement

# Serbian cluster initiatives performance analyses

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The promotion of cluster policy can be applied towards overcoming the problem of Serbia's international competitiveness in the enterprise sector. Such a proactive policy should primarily be directed towards investments in basic aspects of improving competitiveness, as well as implementing programs that provide direct support to establishing the growth of clusters in the region. In our country, the implementation of the program for clusters and the development of cluster initiatives began at the end of 2006, later than in other European countries. This paper shows the importance of providing institutional support to clusters in Serbia, due to the underdevelopment of clusters and existing barriers to their development. The genesis of political support, status and position of Serbia in relation to European cluster policies is herein demonstrated. The effects of such interventions are also evaluated and the rationale, goals and tools of cluster policy are analyzed as are the processes of cluster initiatives development in Serbia, their specificity, scope, internal dynamics and prospects.

Next, the paper shows in detail the state of development, number and classification and the results of cluster initiatives, assisted by the Serbian Cluster Development Support program. Policy aiming to support to cluster initiatives helps companies in searching and discovering new directions for achieving competitive advantage. Therefore, benchmarking, monitoring and experimentation are of the utmost important. In this paper, a method of monitoring and evaluating cluster initiatives is demonstrated and standards for benchmarking effectiveness are set.

**Key Words:** cluster, cluster policies, cluster initiatives, monitoring, evaluation and benchmark, network development, common activities, common services, innovation, institutions for collaboration.

# Venture Backed Innovation in Healthcare in Serbia

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One approach in improving the Serbian healthcare system is to implement latest world-class technology one disease condition at a time and measuring benefit. Serbia's healthcare system is small enough (450 Primary Care clinics) where positive technologies and breakthroughs could be implement country-wide with a bigger potential impact, than through regular healthcare changes. Serbia has an additional advantage of being still in a two-tier medical system: Public and cash-pay. The onset of medical insurance is still at a relatively nascent stage, allowing higher technology adoption to occur.

With a renewed emphasis on medical innovation due to rising healthcare costs, many venture capital firms are looking at Health 2.0 innovations as a means to reduce costs and improve patient care. These innovations typically range from IT only plays to medical device innovations to life science startups. Even investors in socialized health systems can see positive impact promoting latest technologies and methods as cost containment and innovation affect all types of private, subsidized, and public healthcare models.

Teleskin is a high-tech, venture backed startup that is one effort in attempting to demonstrate how taking one disease (Melanoma/Skin Cancer) and driving immediate positive impact in patient's lives and in healthcare costs. By reducing the diagnosis time, as well as introducing Health 2.0 type innovations such as virtual second opinions, patient quality and confidence in medical practitioners both benefit. This model could be implemented in many other aspects/countries.

Key Words: healthcare innovation entrepreneurship

# Potential of Business Plan Competitions to foster innovation in Serbia/Eastern Europe

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Lessons learned from business plan competitions around the world and their role in fostering entrepreneurship and investment in Serbia. There are numerous business plan competitions globally that promote innovation and economic stimulus in the world. These contests bring together great ideas, investors, resources and visibility. While still nascent in Serbia, youth participation in business plan competitions help gain experience in identifying opportunities in the Serbian market, as well as developing export opportunities of technology or goods and services in a global market.

One of the key strengths of business plan competitions is to give students a structure from which to learn from. Universities that business plan competitions, such as MIT, Stanford, Harvard offer participants a structured progression to develop and hone ideas. They not only allow students to interact and share ideas, a cornerstone to innovation, but can tie in resources of the faculty, investors, and industry leaders. Carefully prepared events, such as informal idea exchanges over potluck dinners, and presentations by industry leaders can tie in these universities and start-up incubators such as Belgrade's Business-Technology Incubator.

Sava Marinkovich is a 2003 winner of the MIT \$1k, finalist of MIT \$50k, runner up at the Stanford e-Challenge, and finalist at the Carrot Capital Challenge (740 teams).

Key Words: Innovation, Business Plan, entrepreneurship, youth

# Social entrepreneurship factor responsible local development

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In the former Yugoslavia there was an extensive entrepreneurial business that has produced a totally liberal economic system. Entrepreneurs are short-term profit-oriented. Virtually no entrepreneurial businesses that have long-term growth strategy focused on socially responsible companies. It is not necessary to prove that this is the result created a business environment and business culture created. Short-term profit orientation, in order to achieve the same readiness of entrepreneurs to engage in various business deviations, led to a situation where today we have a dominant enterprise and entrepreneurs who do not feel the necessary degree of corporate social responsibility. Its social value, use and accountability measures of the act's existence.

The question is whether the terms of a dominant share of entrepreneurial business entities that are installed on the style of poor corporate social responsibility can build a successful local development? Certainly not, because a successful local development, the factor of short-term profit-oriented entrepreneurship is not possible. Development in its business activity is being focused on the future and longer term. The activities of short-term character development not be adequate logistical support. The social irresponsibility is certainly a very influential structures of positive deviation value of the business climate. We need changes in the field of entrepreneurial values and styles of behavior. We need a socially responsible enterprise integrated with other relevant factors of development.

This paper addresses the integrated management of local economic development. In the structured model, entrepreneurship as a factor of development is treated from the perspective necessary and possible social responsibility. To have a socially responsible entrepreneurship is necessary to have a socially responsible businesses. Socially responsible businesses can have existence only in terms of permanent enlightenment entrepreneurs. Model of lifelong learning must become part of the business culture of most entrepreneurs.

Local communities, their economic and overall social development, can only successfully build on their own resources. Scientific approach to design development for a longer period, not only does not give a satisfactory result, but the application of the same has become very risky. Under the conditions of extreme dynamic changes, successfully managing change has become the measure of successful development. In order to successfully manage local economic development, it is necessary to create a favorable structure of developmental mechanisms, integrated in one system. Logistics for the successful solution of this problem can only request the appropriate knowledge. Entrepreneurship, an extremely powerful management science discipline and form of the operating performance of the business work in the structure of local economic development, must be viewed as an instrument of development and not as a goal.

The local community, based on the set of development goals and strategies must be capable and ready to build the necessary organizational structure of mechanisms to effectively manage local development. Local development should be treated as an extremely complex system changes. Development is the most complex social activity and for successful management development as a change is necessary to use reliable methods and techniques in the field of excellence. Holders of excellence can be people of exceptional creativity and creative abilities.

## Governmental and Regional Policies on Entrepreneurship and Innovation: Implementation of Japanese Prefecture Oita Rural Development Model in Serbia

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Nearly 40 years ago, young mayor of Oita (one of the least developed prefectures in Japan in that time) - Mr. Morihiko Hiromatsu, introduced entirely new idea of regional development policy. This concept was named One Village One Product (OVOP). Thereupon, Oita was poor agricultural region that produced limited and not well known products mainly for localized use. Oita was highly dependent on financial support given by Government. Young people were not attracted to stay in the region. Hence, they rapidly started to move to more developed parts of Japan that offered better opportunities. The main vision of Mr. Hiromatsu was to vitalize Oita prefecture economy by reenergizing actual community, promoting its own regional resources, local culture and technical knowledge. He shifted focus of local producers from agricultural production with low margins to value-added products with high quality and diversification. Mr. Hiromatsu strongly promoted continuous improvement and human resource development as main principles of new development paradigm.

30 year later, after Mr. Hiromatsu left his long lasting call as a mayor, Oita became 9th most developed prefecture in Japan (Japan has 47 prefectures). GDP per capita was 25-50% higher than neighbouring prefectures on the Kyushu Island, which still remained the least developed parts of Japan. After this great success of Oita prefecture, OVOP movement spread all over the world and became one of the most famous intrinsic methods for rural development.

This practitioner study analyzes principles which Mr. Hiromatsu introduced in Oita prefecture; local yet global, self-reliance and creativity, human resources development, and discuses about potential adjustment and implementation of these principles in rural regions of Serbia in a way to foster growth of entrepreneurship and product innovation.

Key Words: OVOP, Oita prefecture, Rural Development in Serbia

# **Rudjer Medikol Ciklotron LLC**

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The case study will present Rudjer Medikol Ciklotron LLC, a company jointly founded by Rudjer Boskovic Institute, Rudjer Innovations LLC and Medikol Polyclinic. The company will produce radiopharmaceuticals and perform research and development activities in the area. It will be explained the background of the project, the partnership and commercial aspect.

Key Words: Spin-off, commercialisation, entrepreneurship, SME, R&D

# Survey on Women Entrepreneurship in Macedonia

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According to the National state statistical office of Macedonia the ratio of employment among male population is 45,7%, while among female population is only 28,8%. The main reasons for significantly low level of economic activities within the women are family and home related activities, that is traditionally and historically mark for all Balkan countries, especially in rural regions. Therefore NCDIEL and BASME conducted survey in the period October 2009 – March 2010 in order to analyse current status and potentials for women entrepreneurship in Macedonia<sup>1</sup>. Survey was focused on two main groups – entrepreneurs (100 business women) and potential entrepreneurs (233 women students). Key findings related to business women are:

- 61% of businesses are in the service sector, followed by production 17%, trade 16%, and agriculture 2%; 40% of business women started their business at the age 30-39, and 33% at the age 20-29, while after 50's only 2% of women population are starting their businesses;
- Only 20% of business women started their business because they were left without job. 60% had clear idea and left their current jobs in order to open their own business. 88% of women prefer to have partner(s) in their businesses;
- 64% of business women started their businesses with less than 10 000 Euro;
- As processes that are hardest to manage within the company, business women noted: financial management, market analysis and human resource management.

Results for surveyed women students and recent graduates showed that:

- Only 18% will start their own business immediately after they finished their studies, while all others will prefer to work for others;
- 87% do not have enough knowledge acquired on the University to start their own business and 61% noted that the main reason for not starting new venture is (will be) lack of seed capital.

Both, business women and students, noted that in Macedonia women are not discriminated in business world, but as a main obstacles for establishing company they points: Balkan mentality and stereotypes, family obligations, not well developed entrepreneurial related formal and informal educational system, seed funding and courage.

<sup>&</sup>lt;sup>1</sup> Polenakovik R., Jovanovski B, Velkovski T, Delovska B., Gotovska E.: "Women entrepreneurship in Macedonia report", NCDIEL print, April 2010, Skopje, Macedonia Proceedings of International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2010

# Ss. Cyril and Methodius's R&D support Centre

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The Ss. Cyril and Methodius R&D support Centre was established as a project funded by the European Commission through the Tempus programme project: "Creating R&D Capacities and Instruments for boosting Higher Education-Economy Cooperation's" 2009-2011.

The establishment of the Centre is being conducted through 5 phases:

- Analytical analysis of current R&D situation at university and faculty level
- Setting up R&D strategy, structures and procedures at SEE universities
- Establishment of R&D Service Centres
- R&D services and instruments
- Pilot projects

As the part of the project three more Centres were established at University of Sarajevo, University of Podgorica and University of Pristina.

The main goal of the Centres is to develop instruments and services that will increase the researchers' performance through informing, networking and support to administrative and technical aspects.

The Ss. Cyril and Methodius's R&D support Centre is set to offer university researchers:

- Consultancy in fundraising
- Networking with researchers, academia and industry
- Support in writing applications
- Guidance in international project management
- Continuous informing through regular newsletters and info-events

The conducted analyses and assessments showed that the most important and slowest developing activity are the construction of consortiums, increasing the quality of researches and ensuring direct knowledge transfer. In that matter the main strategy of the centres is being focused towards networking between the 4 centres and future growth of the network.

## Application of MS Excel and VBA for Analysis of the Sector of Small and Medium Enterprises on the Territory of Autonomous Province of Vojvodina

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Particular attention in the analysis of Serbian economy should be paid to the sector of small and medium sized enterprises (SMEs), due to the transition process which is still in progress, and to the fact that SMEs, as business entities that are most adaptable to market trends, represent the main pillar of economic development of every country. The paper describes the results of the analysis conducted on data originated from the National Agency for the Development of SMEs and Entrepreneurship, and referring to SMEs from the Territory of Autonomous Province of Vojvodina. More precisely, the data were provided by four regional agencies for the development of SMEs in Vojvodina: The Regional Agency "Sombor" from Sombor, Agency for the Development of SMEs from Subotica, Regional Agency from Novi Sad and Regional Development Agency "Banat" from Zrenjanin. The data covers 2370 SMEs in Vojvodina province.

The enterprises have filled out a questionnaire consisting of 59 questions. The structure of the questionnaire had been devised by the National Agency for the Development of SMEs and Entrepreneurship. The processed questionnaires, along with the provided answers, were firstly stored in the operational database in MS Access. MS Excel, as a powerful spreadsheet, including the VBA tool (Visual Basic for Application), is very useful for creating diversified reports.

Therefore, the source data were transferred from MS Access database to MS EXCEL, and further preprocessed in order to be suitable for providing different reports in Visual Basic for Application programming language. The majority of the source database consisted of ID codes without further explanations, and consequently the embedded Excel function Vlookup had to be used for filling in the necessary attribute values. In a sequel, the form was built in order to allow the user to specify the reporting conditions prior to report generation in separate worksheet. These steps are also described in the paper.

Key Words: SME, Vojvodina, VBA, Excel

### Developing a competitive tourism sector in European regions: The TOUREG Project experience

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Tourism and Hospitality is a highly diverse and complex sector in Europe, providing significant potential for economic growth and regional development. It is a continuous growth market for many regions in Europe, particularly after the wider introduction of innovative Environmental, Information and Telecommunication Technologies and the adoption of new interactive multimedia platforms.

Focusing on tourism, this paper introduces innovative approaches for developing a competitive tourism sector, based on the creation of innovative mechanisms that enable the transfer of new R&D+I knowledge, and strengthen the establishment of international-level research driven clusters and networks in the tourism landscape.

Drawing from the TOUREG Project experience from six different European regions (Balearic Islands, Spain - Crete, Greece - Madeira, Portugal - Norrboten, Sweden -Mehedinti, Romania - South West, Bulgaria), the paper explains how establishing mechanisms that facilitate SMEs access to R&D tourism knowledge and interenterprise linkages can overcome common barriers and become an effective driveforce for business and regional development through the creation of new businesses and fostering innovative entrepreneurship for tourism related product and services. Integrated mechanisms have been developed to create and foster interactive collaborations among academic and research organisations, businesses. stakeholders and other public authorities at regional, national and international level, encouraging innovation in the tourism industry. Furthermore, the participation of research institutes and universities facilitates the process to adjust research to the real business needs such as new sophisticated technologies and equipment. The private sector contributes greater experience in technical development and greater response capability in the face of market changes, while stakeholders and public authorities can make easier the introduction of necessary changes to promote businesses innovation in the sector.

As a result, new international research – driven clusters can be created with the idea of transferring knowledge, technology and experiences between regions and countries. This can be accomplished with the establishment of a web-based platform focusing on generation and application of knowledge, called the Technology Map. The main purpose of the Technology Map tool is to promote innovative products, identify synergies within the cluster, and generate technological knowledge targeted to the Tourism sector, demonstrating how such technologies can be successfully transferred and integrated between regions.

**Key words:** Tourism, Innovation, Technology, European collaboration, Knowledge transfer, Network, Research driven clusters

### Technology transfer in Croatia - how far have we come and where should we go in the future?

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Institutionalised technology transfer activities in public research organisations and higher education institutions are fairly recent in Croatia. They have been fostered by Science and Technology Project of the Ministry of Science, Technology and Sports which started in 2006, involving several prominent Croatian science and research institutions. Rudjer Innovations LLC, a technology transfer company, owned by Croatial's largest multidisciplinary research institute - Rudjer Boskovic Institute (RBI), is first organisation of its kind in Croatia. Since 2006, when it was founded, Rudjer Innovations LLC have been conducting activities of identification, protection and commercialisation of research results generated at RBI. The presentation will outline the company's experiences acquired in Croatia, successes and discuss the challenges identified and make proposals for the future.

Key Words: technology transfer, innovation, intellectual property, commercialisation, research

### Technology Transfer as Recruiting Instrument and Facilitator of Entrepreneurship

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The Leibniz-Institute for Plasma Science and Technology (INP) is Europes' largest non-university research institute for low temperature plasmas and their technical applications. As the first Leibniz Institute out of 90 in Germany, the INP bundled its technology transfer activities in a separate private daughter company, neoplas, which acts as incubator for spin-offs, realizes specific technology transfer (also for external clients), helps with efficient technology management and professional science-tobusiness marketing. While INP focuses on scientific fundamentals and development of new technologies and processes from idea to prototype, the 100% daughter neoplas takes the next step from prototype to product. Since foundation of neoplas, two more spin-offs - neoplas control and neoplas tools - have been realised to take the last step, from product to market. neoplas itself takes 15%-25% of their shares. This simple but unique model creates a win-win-situation for the partners: hiring additional staff means interdisciplinary, flexibility and a widening of the spectrum of the INP as well as it allows the INP researchers to return to their scientific core competencies. neoplas as a company has the opportunity of non-tariff-payments, an important success factor to recruit skilled employees in remote areas. While INP as public body can not take product liability towards third parties, neoplas as a private company is able to do so. neoplas can also acquire follow-up orders and make use of other national or international funding programmes than INP is able to use. A personnel transfer is possible and ensures qualified work.



The trickling-down model of technology transfer has been a success story professionalizing the transfer competencies of a research institute, adding an increasing monetary value and offering more and more services to external partners. Including S2B-marketing competencies in this organisational model has been identified as one of the crucial success factors as well as a clear interdisciplinary and professional structure. Since foundation in 2005, neoplas has grown from 1 to 22 employees with a total turnover of 900.000 EUR. With the help of the neoplas, the Institute itself covers an increasing part of its 11.8 mio. EUR budget – nowadays about 5.6 mio. EUR – by third party money. Several research institutions in Germany are either requesting the services of neoplas or seeking for advice to establish a similar transfer body on their own.

## Spare me the Graduates?! Aspects of Knowledge Management at Small and Medium sized Companies in Hungary and Slovakia - a comparative analyse

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We chose this target to define features of knowledge management by economical actors in two neighbouring ex-socialist states. We try to give a taste of small and medium-size enterprises' attitudes towards knowledge. What competencies are expected from labour? How do they approach higher education? And what competencies are expected from companies? We used data from a survey we conducted at Slovakian and Hungarian enterprises during period from autumn of 2008 to Spring 2009. This data was analysed using simple descriptive statistical methods and explored deeper relations with Principal component analyse and regression analyse.

Key Words: Knowledge Management, SME-s, Higher Education, expectation, cooperation

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