



**FIMEK**  
FACULTY OF ECONOMICS AND  
ENGINEERING MANAGEMENT

**INOVAEDUCATION 2017**

***INNOVATION, ICT AND EDUCATION  
FOR THE NEXT GENERATION***

**THEMATIC PROCEEDINGS**

**Novi Sad, 2017**

***Publisher:***  
Faculty of Economics and Engineering Management

***Editors:***  
Dragan Soleša, Ph.D  
Vladimir Šimović, Ph.D  
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***Technical arrangement and printing:***  
Alfa Graf, Novi Sad

***Proofreading:***  
Ana Milenković

***Technical preparation and page breaking:***  
Alfa Graf, Novi Sad

***Number of copies:***  
100

ISBN 978-86-87619-84-5

***Publication of Thematic Proceedings was financially supported by  
Provincial Secretariat for Higher Education and Scientific Research***

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**PLENARY SESSION**

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***INVITED PAPER***





# THE IMPACT OF SNS (SOCIAL NETWORKING SYSTEMS) ON THE EMOTIONAL LIFE OF INDIVIDUALS

*Vladimir Šimović<sup>1</sup>, Sanela Karabašić<sup>2</sup>*

## Abstract

*The aim of this preliminary research was to determine to what extent do social network users express negative and positive emotions when it comes to the current social issues (with main topics), by analysing the comments of three dominant issues in Croatia in 2016. Hypotheses are formed based on the research questions focusing on the extent to which users of Facebook (as a social network) express negative emotions in relation to an event, and whether men are more inclined to express negative emotions than women. Primary research data were collected by analysing user reviews (& comments) in Croatia on Facebook in the period between February 1 and February 10, 2017. Research results show that in 72% of comments negative emotion was expressed, while in 28% of comments positive emotion was expressed. Therefore, it can be concluded that our main hypothesis has been confirmed, i.e. that a greater number of Facebook users express their negative emotions in their comments than those who express positive emotions in relation to the event.*

**Keywords:** *Social networks, Social networks impact, Facebook, Emotions, Information society*

## Introduction, Emotions, people relations and emotions valuation

With the emergence of new media, an individual stop to be only a passive recipient of content and now became increasingly active and involved almost in everyday event, both in the immediate and on global level. Social networks and the Internet help in bridging spatial and temporal constraints, thus enabling an increasing involvement of an individual. In this research article, we will focus on attempt to preliminary determine

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how much the impact of social networks on the everyday life and emotions of an individual limits us to this kind of communication with others and whether we are still only passive observers of what is happening around us or social networks become a tool that can be changed society.

Mainly according to (Duck, 2014, pp. 93-95): Choosing individuals that will belong to our circle of people is not just the result of attractiveness and friendship or cognitive information management processes. Social status, age, gender, family relationships and previous friendships shape and direct our choice of individuals and restrict freedom in everyday life. Relations between people take place in the context that creates conversation, not just thoughts and feelings. Mainly according to (Duck, 2014, pp. 141-145): Each communication contains a certain amount of persuasion by introducing into the interaction of cultural and social influences that then bring certain consequences. Likewise, relationships affect us, creating a context for all forms of persuasion from those from parenting authority, through routines in relationships, to social networks that are intertwined with personal decisions. Mainly according to (Oatley, 2002, p. 98): Emotions are difficult to define, appear suddenly, they are usually caused by something and have consequences. Showing this process gives us: “Evaluation => Context-Based Evaluation => Readiness to Action => Physiological Change, Expression, Activity”. A good summary of the idea of estimation as important to the purpose was given by Lazarus (Oatley, 2002. pp. 100-101; Lazarus, 1991.), and he calls it “the primary estimate and believes that it has three main features: (a) Whether or not it is important to the goal - emotions will only occur if the event is important to the goal or interest; (b) Aggregation with a goal or disagreement with the goal of - bringing the goal to a positive emotion and distancing causes negative emotions; (c) The type of ego involvement in the event, its importance to the person; For example, if the event involves self-esteem, opportunities are pride or anger.“ Mainly according to (Oatley, 2002. pp. 100-102): The idea of self-assessment is subjective to the individual, so Oatley say that with the idea of assessment is associated with certain difficulties. As thoughts are crucial in our emotional experience, such mental activity stimulates our emotions. If we are anxious we stop thinking about what can happen, if we are angry our thoughts are focused on planning revenge. That is why emotional thoughts are necessary. If our adaptation depends on our understanding of the unexpected and the adoption of new plans, then the preoccupation with the emotions of great importance. So emotions suggest changes in our behaviour and help us focus on the problems and adapt my own behaviour when solving them. It is important, however, to note that readiness as well as plans generally relate to other people (Oatley, 2002. p. 103).

## **Information society: communication context and relationships**

Mainly according to (Uzelac, 2003, pp. 35-36): The time of globalization influenced the development of all segments of society. Communication, as one of its most important elements, is subject to the influence of these changes. So Uzelac states that when we communicate face to face we share the same physical space with some, we use common communication methods i.e. common language while modern telecommunication technology expands the common space into an electronic (virtual) space, which allows communication over large distances and in some way abolishes physical space dimension. Social networks, in turn, become a place where the activity of exchanging any information and data is intensified. It is clear, therefore, that no matter what means of communication we still use, there is a connection and the desire to help, even if only by sharing the published content, hoping to see it and someone who can really help.

According to (Barabasi, 2006, pp. 153-168): “Many factors have had an important impact on the development of information society, and one of them was certainly the cold war era. Paul Baran, within Rand Corporation, was given the task of developing a communications system that would survive a nuclear attack. In the sixties of the last century, this was a potential war scenario that came with justified fear. Baran then described the vulnerability of the existing communication infrastructure and suggested better - the Internet. An important role in the development of the Internet was also the Advanced Research Projects Agency (ARPA), which strictly supervised most of the advanced military research projects, and funded IT (Information Technology) research”. According to (Uzelac, 2003, p. 31): “Communication has always determined social paradigm, ie social institutions. Modern technology today extends such interaction to larger groups of people by creating global institutions and global culture. Today, global communications networks carry far more rapid and far-reaching impacts, thereby creating a global intellectual and cultural space and losing many local cultural differences”. According to (Uzelac, 2003, p. 13): “The complexity of social change that has affected today’s society is reflected in the frequent use of concepts such as information society and networks. The emphasis on interactivity, networking and individualism today is the determinant of development trends in the field of technology as well as society.” According to (Kirkpatrick, 2012, p. 78): “More and more people were familiar with electronic communication, initially through commenting on online groups and over the chat.”

## **Social networking systems (SNS): Facebook and virtual communities**

According to (Stanojević, 2011, p. 168): “The Internet, and then the social networks, have changed the human understanding of communication. Social Web, as we know today, has given new meaning to the notion of communication. Changes have been changed for people to go online. Sometimes that was because they wanted to be informed, wanted to see and experience, read, and learn. The reason people are leaving today is that they want to be part of communication, want to participate in it, want to be present, want to read them and want to read about others.” This is exactly the moment Osrečki (Osrečki, 2014) says when he says that social interests and interaction use technology simply because it also enables communication and presence and information and interactivity. Mainly according to (Kirkpatrick, 2012, 79): The basic features of a true SNS are that it is a service where users can create a public or semi-private profile, articulate a list of other users they are connected to, and view their list of links as well as lists created by other members of the system. The most popular Matching page that launched its services was launched in 1994 and was filled with personal information collected for a specific purpose. Classmates.com appeared in 1995 as a service that helped people find real communication names and communicate with their former school colleagues (Kirkpatrick, 2012, 71-79). Mainly according to (Kirkpatrick, 2012, 79-81): The era of modern social networks began in 1997 with the appearance of a sixdegrees.com web site based on real names. In 2003, there is also a virtual community of free, useful and fun services from college students called College Online. Yale University Student Council has launched a online dating site, Yalestation, just one week after launching the Facebook (Kirkpatrick, 2012, 89-91). Mainly according to (Milardović, 2010, 10): Regarding the history of social networks, it can be said that the story coincides with the development of ICT and the Internet. For the first time, from 1980 to 2002, there is a characteristic phenomenon of prototypes of social networks that we know today as Facebook, MySpace and others. The real rise of social networks emerges after the year 2002. The MySpace Social Network was founded in 2003 and was the most popular and most dominant. 2006. The LinkedIn Business Network was founded, while Twitter and Facebook are the most influential today, which will later be the talk. So, as the main features of social networks, we can state that it is a universal means of communication, and that people gather together on common interests.

Mainly according to (Uzelac, 2003, p. 57-65) each technology is the result of a social need and is necessarily based on the culture of that community

so that the Internet cannot be an exception. With the commercialization of the Internet, virtual communities have also changed. Although they did not replace or change existing social structures, their application gained ever greater popularity (Uzelac, 2003, p. 57-65). Mainly according to (Christakis, 2010, pp. 253-254): Unlike other online groups and communities (Wiki et al.), SNS are organized around people, not topics. SNS have become an integral part of the lives of millions of people, enabling us to maintain contact with people we would otherwise have been very poorly connected. The basic feature of social networks is to “enable public or semi-personal profile profiles in a restricted access environment, display a list of other users they share, and view and manage their own connections and other connections within the system”. Social networks are different in terms of privacy, who can join, what can be set up, and how others see network connections and how to move between them. What the social network differs from other websites is that on social networks our relationships are visible to us and to all who are connected with us.

Mainly according to (Milardović, 2010, str. 100-102): Technologies change social forms as they live in an information society now mediated by new information and communication technologies. Over time, different profiles or types of social networks were shaped. It is about the personalization process in line with the needs and interests of users that are grouped according to the needs, interests, social roles and social status criteria. This means that social networks are sorted by features, so we can share them on personalized and specialized social networks (Milardović, 2010, str. 100-102). Today there are different types of social networks, so they can be classified (classification of social networks according to (Milardović, 2010, p.102)) into those SNS that are oriented to: (a) Friendship and entertainment: Bebo, Facebook, FriendFeed, Friendster, Hi5, Jaiku, MySpace, Netlogu, Orkut, Tagged, Twitter, Whispurr ibibo; (b) Work: LinkedIn, Twitter, Viadeo; and Science: SixDegrees.com, Tribe.net; (c) Music and film: LastFM, Flixster iLike; and Hobi: ActionProfiles, FanIQ.

Mark Zuckerberg, Harvard University's second year student, in September 2003, made an online program called Course Match. This program wanted students to help before choosing a course based on who had chosen them for more than a year. Encouraged by the unexpected success of the Course match, Zuckerberg decided to try out some more ideas. He started his next project a month later and called it Facemash. The purpose of the program was to determine who is most prominent at the university. The program compared two different faces of the same sex, and the students decided

which face was more appealing. Photos for Facemash are taken from the so-called Facebook, a database that stores photographs of all undergraduate students. Zuckerberg was delighted with the success of his program to continue programming. He wrote a six-step Harry Lewis program, in honour of his favourite computing professor. Using Harvard Crimson articles, he tried to figure out relationships between people and created a network of links to Lewis, based on these relationships. It could have typed any student name with Harvard, and the program would show how that person was associated with Professor Lewis. Zuckerberg registered the face at thefacebook.com in January next year. This page was used by ideas from Course match and Facemasha, as well as from the Friendster web pages of which Zuckerberg was a member. Zuckerberg wanted to make a reliable database of students with the true information that was the central concept of thefacebook. Unlike Friendster, which was intended for arranging the outings, thefacebook was a software solution to solving the simple problem of collecting college colleagues and what they did with them (Kirkpatrick, 2012, pp. 27-39). In February 2004, thefacebook became publicly available. Thefacebook could search people from their university, find out who goes to specific lectures, look for friends of their friends, and look at the visualization of their social network. Thefacebook, unlike others, has taken into account two important components: the first is social, given that the users of that network are mostly the younger population they used to search for partners, friends, and the like, and the other practical because it enabled the finding of groups for learning aids, organizing meetings of different clubs, and setting up party announcements (Kirkpatrick, 2012, pp. 39-42). Over time, the interest in the Zuckerberger network has been increasing, confirming that both of its managers from Google expressed interest in co-operation and even buying. Thefacebook is getting bigger and requires bigger investments. In a very short time, thefacebook had more than 200,000 users alongside plans to expand to another 70 universities (Kirkpatrick, 2012, pp. 43-76). Facebook is the site of social networks with more than 1.5 billion active users making it the world's largest social service and the largest online image sharing service. In September 2006, it is open to users since the age of 13, when its exponential growth begins. In August 2008, the number of users exceeded 100 million, and in January 2011, 600 million. That's when Facebook became the largest social network, leaving behind My Space (which was still run by the number of users) in 2008 and the other network (Čačić, 2012, pp. 58-59).

## **Advantages/Disadvantages/Influence of social networks**

One of the major problems of social networks is the problem of identity because the social networking problem is fit for manipulation and masking of identity. Computer technology has created the possibility of transforming the identity of social network users, which is the simulation and the construction of virtual identity. In a virtual community, identity is unclear because it lacks many of the basic features of personality and social roles we are accustomed to in the material world. So are the features of identity in cyber space transformation, masking, sex replacement, lying, hiding, beautifying, stealing and the problem of sustainable privacy (Milardović, 2010, pp. 102-104). Benefits of Social Networks according to (Milardović, 2010, p. 104): Restoring old friendships; Making new friendships; Promotion of a personal profile; Promotion of company profile; Network marketing; The possibility of digital business. Social networks today have a more prominent business or marketing role, so most social networks have their advertising value. Social networks in a friendly and business sense have advantages that cannot be socially denied (Milardović, 2010, pp. 103-105). Social network disadvantages according to (Milardović, 2010, pp. 105): Disclosure; Loss of privacy; Manipulation of private data for marketing purposes; Anonymity and virtual identity; Virtual friends or avatars; Second Life; Loneliness - Isolation - Social escapism; Alienation and the world of aliens / Cyborgs; Addiction; Social networking risks as the risks of a global information society. The disadvantages of social networks can be classified into several groups. The first group presents the deficiencies associated with social psychology and somehow personal psychopathology, the second group presents the deficiencies of philosophical or social philosophical nature, the third related to security issues or information society risk, and the fourth represent the disadvantages of the new media ethics. Dependence as a lack of social networks is certainly one of its biggest drawbacks, as it manifests itself in the over-occupation of life in the virtual world and the neglect of personal and social obligations, lack of sleep, seeking only sexual intercourse or experience, etc. (Milardović, 2010, pp. 105-114).

Osrečki states that “social interests and water interaction use technology, so those who are dissatisfied with their living conditions will express their dissatisfaction with collective action. In this context, new communication technologies do not cause unrest, but unhappy will use all means, including communication technologies, to achieve their goals (Osrečki, 2014, p. 104). Professor Stančić also states in his article “Principles of Digital

Communications” (Stančić, 2011, p. 63) that “before the digital era, media content consumers were passive and there was no way to actively engage in content creation, with the direct inclusion of viewers or listeners through a telephone connection”. With YouTube service today, everyone can produce and publish video content around the world, and video clips from that service can be tracked not only on computers but on mobile phones, TVs connected to Internet TV, etc. (Stančić, 2011, p. 63). Krolo (Krolo, 2015, 146) states that such communication, realized and maintained via the Internet, is considered less valuable than face-to-face communication which, according to him, raises the question of how much such friendships can be measured with those achieved and real life and whether the total number contacts is a credible indicator of belonging to a particular group.

### **Research: purpose, subject, objectives, questions, hypotheses, sample and methodology**

Today’s importance of social networks in everyday life is significant. The high speed of publishing various and even multimedia content and the ability to comment on them very fast and easy opened the ‘big’ door to a really new way of participating in social events. Not only ease and very speed, but ease and anonymity of that participation affect an individual who reacts on his own emotions which have completely new environment. It is precisely the subject of this research that will give answers to the extent to which Facebook social network users express their emotions at certain events, whether they are positive or negative, and respond more often to men or women. The scientific and professional literature available in the field of sociology, psychology and communication was used for this thesis. Other sources have been used, such as electronic databases with complete scientific texts and other online resources dealing with social networks, information society, mass media, digital culture, interpersonal relationships and emotions. The purpose of the research is to determine to what extent the social network Facebook affects the individual, whether they include commenting on current events and how they react. The subject of research is the response of individuals to the three dominant social themes published in the Social Network Facebook in 2016. The main purpose of this research is to analyse the emotional responses of individuals to dominant social issues during 2016 published on Facebook’s social network. To determine the extent to which a social network affects the emotional life of individuals, the following research questions are defined:



**RQ (1):** To what extent are social network users Facebook expressing negative emotions in relation to the event?

**RQ (2):** Who is more inclined to expressing negative emotions, men or women?

Along these lines, the research has the following hypotheses: **The general hypothesis** of this research is that users in relation to an event on the social network Facebook are, in a larger percentage, expressing negative emotions than positive ones. **H0:** The greater the number of Facebook social network users who express negative emotions in their comments than those who express positive emotions in relation to the event. In addition to the general hypothesis, there are two sub-hypotheses for each of these three 'social topics' or events (themes): **First event-theme ("Croatian curricular reform"):** **H1:** There is a smaller number of Facebook social network users who in their comments on curricular reform express negative emotions than those who express positive emotions. **H2:** Men are more inclined to express negative emotions than women. **Second event-theme ("Croatian Law definition of marriage"):** **H1:** Larger number of Facebook social network users who in their comments on the issue of referendum "Are you adopting a provision in which the marriage is a woman's and a man's life in the Constitution of the Republic of Croatia?", express negative emotions from those expressing positive emotions. **H2:** Men are more inclined to express negative emotions than women. **Third event-theme ("Saying "for a home ready" in Croatia"):** **H1:** The greater the number of Facebook social network users who express their negative emotions in their comments, saying "for a home ready", of those who express positive emotions. **H2:** Men are more inclined to express negative emotions than women.

For the purposes of this research, the method used to analyse the content of 3 social topics that were represented or commented on the Facebook social network. The sample of analysis is three topics and three publications with the largest number of reactions to each of these topics:

- **The first issue ("Croatian curricular reform")** is the curricular reform, that is, the media release on the dissolution of the expert group on May 25, 2016, which is why Croatia organized protests organized by the initiative 'Croatia can be better'.
- **The second issue ("Croatian Law definition of marriage")** is media reports on the issue of referendum 'Are you in the Constitution of the Republic of Croatia to make a provision by which marriage is a living

community of women and men?’ Launched by the association On behalf of the family.

- **The third issue (“Saying “for a home ready” in Croatia”)** is media coverage on the topic of ‘homecoming’ after the football match Croatia Island - Croatia in 2013, where football player Josip Šimunić grew up with that greeting.

**Table 1 - Categorizing emotions in relation to an event**

EMOTION IN RELATION TO THE EVENT 1:						
Publish #1 Link to publication:	Total number of comments:					
Types of emotions:	Number of comments in which emotion is expressed			Number of comments in which emotion is dominant		
<b>POSITIVE EMOTION</b>	<b>M</b>	<b>W</b>	<b>TOTAL</b>	<b>M</b>	<b>W</b>	<b>TOTAL</b>
Joy						
Love						
Surprise(*)						
<b>NEGATIVE EMOTION</b>	<b>M</b>	<b>W</b>	<b>TOTAL</b>	<b>M</b>	<b>W</b>	<b>TOTAL</b>
Anger						
Fear						
Jealousy						
Hatred						
Mourning						
Disgust						
Surprise(*)						
TOTAL:						

*(Notes: (\*) How the emotion of surprise can be positive and negative is placed in both groups and will be interpreted in the context of commentary. According to ‘Psychological dictionary’: joy, anger, surprise, fear, disgust, and sadness fall into primary (basic) emotions, while all the other derived or secondary.)*

Categorization of emotions were recorded, for each event and every publication as shown in Table 1. Independent variables are sex or gender, and depend on positive or negative emotional reactions to the event. The analysis was conducted from 1<sup>st</sup> to 10<sup>th</sup> February 2017 in a way that three issues with the largest number of comments were taken on each topic, and then categorized according to the type of emotion in relation to the event. Emotions are recorded in two categories for each comment, the first category include all the emotions that are expressed in the same comment,

and in the second category the emotion that were dominant in each individual comment are recorded. The first phase of the research is related to the reading of the comments and data collection, the data collected in the second phase were categorized according to the given criteria in the Table 1, while the third phase analyses the obtained results. After the research was carried out, the analysis determines the occurrence of certain emotions. The data obtained were numbered and graphically displayed individually at the level of each publication at the level of an event, and in bulk - including all three themes, which confirms or not confirms the main and auxiliary hypotheses.

### **Analysis, research results with interpretation**

The research analysed three social topics that were represented, that is, commented on the social network Facebook. For each topic, three publications with the largest number of comments were selected:

**Theme 1: Curricular Reform.** For the first topic, the curricular reform, the following announcements were selected:

**1. Tportal.hr:** Hrvatska može bolje: Vlada šumom, građani drumom, 2<sup>nd</sup> June 2016. The report was commented by 101 people, 54 men and 47 women. Positive emotions were expressed by a total of 38 persons, 14 men and 24 women, while negative emotions were expressed by 63 and 40 men and 23 women. The men expressed their emotions in the following way: their joy was 7%, pleasant surprise 2%, anger 53%, 1% frustration, 2% hate, 9% sadness, 5% disgust, and unpleasant surprise 21%. In the comments of men, 15% of positive emotions were expressed while the negative was 85%. Dominant emotions in men's comments were: joy 13%, pleasant surprise 2%, wrath 28%, fear 2%, hate 2%, sadness 15%, disgust 8% and unpleasant surprise 30%. Women expressed their emotions in the following way: their joy was 23%, pleasant surprise 21%, wrath 12%, sadness 21%, hate 6%, and unpleasant surprise 17%. Women reported 34% positive emotions and 66% negative. Dominant emotions in women's comments were as follows: joy 23%, pleasant surprise 11%, wrath 17%, sadness 23%, quake 9%, and unpleasant surprise 17%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men to 8% of comments, while the percentage for women was 15%. When it comes to negative emotions, men have expressed them in 49% of comments while women have done so in 28% of comments.

**2. Jutarnji:** We are living in protest Croatia can do better in Zagreb, 1<sup>st</sup> June, 2016. The report was commented on by 640 people, 415 men and 225 women. A total of 328 people, 197 men and 131 women expressed positive emotions, while negative emotions were expressed by 312, including 218 men and 94 women. The men expressed their emotions in the following way: joy was expressed by 41%, pleasant surprise 5%, anger 19%, hate 3%, sadness 11%, disgust 13%, and unpleasant surprise 9%. In male comments, 47% of positive emotions and 53% of negative (47) were negative. Dominant emotions in men's comments were: joy 45%, pleasant surprise 3%, anger 17%, hate 2%, sorrow 12%, disgust 14%, and unpleasant surprise 7%. Women expressed their emotions in the following way: joy was expressed by 47%, a pleasant surprise of 12%, wrath 13%, fear of 0%, although one person expressed this emotion, 1% hate, 9% mood, 11% discomfort and unpleasant surprise of them 7%. Women reported 59% positive emotions and 41% negative. The dominant emotions in the comments of women were: joy 56%, pleasant surprise 2%, anger 11%, hatred 0% although one person expressed this emotion, sadness 11%, disgust 12 and unpleasant surprise 8%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men to 8% of comments, while the percentage for women was 15%. When it comes to negative emotions, men have expressed them in 49% of comments while women have done so in 28% of comments.

**3. Government of the Republic of Croatia:** Curricular reform goes on, 25<sup>th</sup> May, 2016. The report was commented by 141 people, 94 men and 47 women. Positive emotions were expressed by 17 people, 13 men and 4 women, while negative emotions were expressed by 124 and 81 men and 43 women. The men expressed their emotions in the following way: 9% joy, pleasant surprise 4%, anger 49%, hatred 1%, sadness 13% disgust 8% and unpleasant surprise 16%. In men's comments, there was only 14% of positive emotions while the negative was 86%. Dominant emotions in men's comments were: joy 11%, pleasant surprise 3%, wrath 50%, hate 1%, sadness 11%, disgust 8% and unpleasant surprise 16%. Women expressed their emotions in the following way: joy was expressed by 11%, pleasant surprise 2%, wrath 41%, sadness 23%, disgust 12%, and unpleasant surprise 11%. Women reported 9% positive and 91% negative emotions. Dominant emotions in the comments of women were: joy 6%, pleasant surprise 2%, anger 40%, sadness 26%, disgust 13% and unpleasant surprise 13%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men in 9% of comments, while the percentage for women was 3%.

When it comes to negative emotions, men have expressed them in 57% of comments while women have done so in 31% of the comments. Overall, for all three reports related to curricular reform, 217 (60%) men expressed positive emotions, while 147 (40%) women likewise did it. When negative emotions were concerned, there were 339 (68%) men and 160 (32%) women. As regards the ratio of positive and negative comments to all three publications related to the subject of curricular reform, it is the following: 364 (42%) positive and 499 (58%) negative emotions were expressed.

**Theme 2: The referendum question ‘Are you in the Constitution of the Republic of Croatia to make a provision by which marriage is a living community of women and men?’** For the second topic, the referendum question is ‘Are you in the Constitution of the Republic of Croatia to make a provision by which marriage is a living community of women and men?’, the following announcements were selected:

**1. On behalf of the family:** 19<sup>th</sup> May, 2016. The report was commented on by 222 people, 79 men and 143 women. Positive emotions were expressed by 20 persons, 5 men and 15 women, while negative emotions were expressed by 202 and 74 men and 128 women. The men expressed their emotions in the following way: joy was expressed by 7%, pleasant surprise 1%, anger 17%, hate 2%, sadness 40%, 13% disgust, and unpleasant surprise 20%. Only 6% of positive emotions were expressed in men’s comments, while negative was 94%. Dominant emotions in men’s comments were: joy 5%, pleasant surprise 1%, wrath 12%, hate 4%, sadness 44%, 4% disgust and unpleasant surprise 30%. Women expressed their emotions in the following way: joy was expressed by 7%, love 1%, pleasant surprise 3%, wrath 12%, sadness 39%, disgust 8%, and unpleasant surprise 30%. Women expressed 10% positive emotions and 90% negative. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men in 2% of comments, while the percentage of women was 7%. When it comes to negative emotions, men have expressed them in 33% of comments while women have done so in 58% of the comments.

**2. On behalf of the family:** Marko Perković Thompson: Marriage is a fortune, 15<sup>th</sup> May, 2013. The comment was commented by 341 people, 246 men and 95 women. A total of 73 persons, 53 men and 20 women expressed positive emotions, while negative emotions were expressed by 268, including 193 men and 75 women. The men expressed their emotions in the following way: joy was expressed by 15%, pleasant surprise 4%, wrath 28%, fear 6%, hate 2%, sorrow 13%, disgust 10% and unpleasant surprise 22%. Only 22% of positive emotions were expressed in men’s comments, while negative

was 78%. Dominant emotions in men's comments were: joy 16%, pleasant surprise 5%, wrath 27%, fear 1%, hatred 1%, sadness 16%, disgust 12%, and unpleasant surprise 22%. Women expressed their emotions in the following way: joy was expressed by 16%, a pleasant surprise of 3%, wrath 18%, fear of 1%, hate 2%, sadness 18%, disgust 12%, and unpleasant surprise 30%. Women reported 21% positive emotions and 79% negative. Dominant emotions in women's comments were: joy 20%, pleasant surprise 1%, wrath 17%, hate 2%, sadness 15%, disgust 11% and unpleasant surprise 34%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men to 15% of comments, while the percentage for women was 6%. When it comes to negative emotions, men have expressed them in 57% of comments while women have done so in 22% of the comments.

**3. Index.hr:** Udruga "U ime obitelji": Prikupili smo dovoljno potpisa za referendum!, 22th May, 2013. The comment was commented on by 242 people, 124 men and 118 women. A total of 61 people, 28 men and 33 women expressed positive emotions, while negative emotions were expressed by 181, including 96 men and 85 women. The men expressed their emotions in the following way: joy was expressed by 41%, pleasant surprise 5%, anger 19%, hate 2%, sadness 11%, disgust 13%, and unpleasant surprise 9%. In comments by men, there were 45% positive and 55% negative emotions arose. The main emotions in men's comments were: joy 41%, pleasant surprise 5%, anger 19%, hate 2%, sadness 11%, disgust 13% and unpleasant surprise 9% (40). They expressed their emotions in the following way: joy was expressed by 47%, pleasant surprise 12%, anger 13%, fear 0% although one person expressed this emotion, hate 1%, sadness 9% 11% disgust and an unpleasant surprise 7%. Women reported 59% positive emotions and 41% negative. Dominant emotions in the comments of women were: joy 47%, pleasant surprise 12%, wrath 13%, fear 0% although one person expressed this emotion, hatred 1%, sadness 9%, disgust 11% and unpleasant surprise 7%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men in 29% of comments, while this percentage was 21% for women. When it comes to negative emotions, men have expressed them in 35% of comments while women have done so in 15% of comments. In total, for all three publications related to the referendum question, are you saying that the Constitution of the Republic of Croatia imposes a provision in which marriage is a living community of women and men? 86 (56%) of men expressed positive emotions while doing so 68 (44%) of women. When negative emotions were concerned, 363 (56%) men and 288 (44%)

women expressed this. Regarding the proportion of positive and negative comments on all three issues related to the issue of referendum issue, is it because of the fact that the Constitution of the Republic of Croatia imposes a provision in which marriage is a living community of women and men? Positive 154 (19%) and 651 (81%) negative emotions.

**Theme 3: Hello ‘for a home ready’.** For the third topic, Hello ‘for a home ready’, the following postings were selected:

**1. Sports News:** Šimunić answers what he would have done to bring him back to time: ‘I would still shout vigorously ‘For Home - Ready!’’, 23<sup>rd</sup> October, 2015. The report was commented by 341 people, 329 men and 12 women. Positive emotions were expressed in 90 persons, 85 men and 5 women, while negative emotions were expressed by 251 and 244 men and 7 women. The men expressed their emotions in the following way: joy was expressed by 20%, love 1%, pleasant surprise 1%, anger 18%, jealousy 0% although one person expressed this emotion, hate 9%, sadness 11% 25% disgust and an unpleasant surprise 16%. 26% positive and 74% negative emotions were reported in men’s comments. Dominant emotions in men’s comments were as follows: joy 23%, love 2%, pleasant surprise 2%, wrath 14%, jealousy 0% although one person expressed this emotion, hatred 6%, sadness 16%, disgust 22% and uncomfortable surprise 15%. Women expressed their emotions in the following way: 41%, 4% love, 14% wrath, 4% hate, 14% mood, 9% discomfort and 14% unpleasant surprise. Women expressed 42% positive emotions and 58% negative. Dominant emotions in women’s comments were: joy 34%, love 8%, hatred 8%, sadness 25% and unpleasant surprise 25%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men in 2% of comments, while the percentage of women was 7%. When it comes to negative emotions, men have expressed them in 33% of comments while women have done so in 58% of the comments.

**2. Jutarnji:** BUSINESS PETITION SIGNED AND SIMPLE From the president, they are looking for a greeting “For a home ready” in the Armed Forces!, 24<sup>th</sup> August, 2015. The report was commented by 360 people, 295 men and 65 women. A total of 76 people, 59 men and 17 women expressed positive emotions, while negative emotions were expressed by 284, including 236 men and 48 women. The men expressed their emotions in the following way: 19% joy, 1% love, pleasant surprise 0% although one person expressed this emotion, wrath 23%, hate 1%, sadness 24%, hate 16%, and an unpleasant surprise of 16%. In men’s comments, 20% positive and 80% negative emotions were expressed. Dominant

emotions in men's comments were: joy 20%, love 0% though one person expressed this emotion, wrath 22%, hate 1%, sadness 25%, disgust 17%, and unpleasant surprise 15%. Women expressed their emotions in the following way: joy was expressed by 22%, love 1%, pleasant surprise 1%, wrath 17%, sadness 31%, disgust 8% and unpleasant surprise 20%. Women reported 26% positive and 74% negative emotions. Dominant emotions in women's comments were: joy 25%, pleasant surprise 1%, wrath 8%, sadness 37%, disgust 8% and unpleasant surprise 21%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men to 16% of comments, while the percentage for women was 5%. When it comes to negative emotions, men have expressed them in 66% of comments while women have done so in 13% of comments.

**3. Jutarnji:** MARATHONIAN TRIAL Šimunić defended himself to the dark, Slovenian assures CAS that 'for the home is ready' Ustasha crap, 9<sup>th</sup> May, 2015. The report was commented by 373 people, 311 men and 62 women. A total of 74 people, 61 men and 13 women expressed positive emotions, while negative emotions were expressed by 299 and 250 men and 49 women. The men expressed their emotions in the following way: joy was expressed by 20%, love 0% although two people expressed this emotion, pleasant surprise 1%, anger 28%, hate 11%, sadness 18%, disgust 11% Annoying surprise 12%. In male comments, 20% positive and 80% negative emotions were expressed. Dominant emotions in men's comments were: joy 20%, wrath 26%, hatred 10%, sadness 16%, disgust 11%, and unpleasant surprise 17%. Women expressed their emotions in the following way: their joy was 16%, wrath 37%, hate 4%, sadness 35%, disgust 7%, and unpleasant surprise 1%. Women reported 21% positive and 79% negative emotions. Dominant emotions in women's comments were: joy 21%, wrath 27%, hate 2%, sadness 29%, disgust 8% and unpleasant surprise 13%. The proportion of dominant emotions in men and women commentaries is shown in the following percentages: positive responses were expressed by men in 16% of comments, while the percentage of women was 4%. When it comes to negative emotions, men have expressed them in 67% of comments while women have done so in 13% of comments. Overall, for all three announcements regarding "home-ready" greeting, 205 (85%) men expressed positive emotions while 35 (15%) women likewise did. When negative emotions were concerned, 729 (88%) men and 104 (12%) women expressed. As for the positive and negative commentary for all three postings related to the topic of 'home for the home', it is the following: 240 (22%) positive and 834 (78%) negative emotions were expressed.



There were 3920 emotions in total, of which 999 (25%) were positive and 2921 (75%) were negative. Of the 999 positive emotions recorded, 666 (67%) were male and 333 (33%) women. Out of the reported 2921 negative emotions, 2125 (73%) were men and 796 (27%) women. A total of 2741 commentaries were commented, of which 1939 were men and 802 women. Positive emotions were given by 508 (67%) men and 250 (33%) women. Negative emotional comments gave 1431 (72%) men and 552 (28%) women. Of the total number of comments, 2741, with positive or negative emotions expressed, 758 (28%) people expressed their positive emotion, while their negative emotion was expressed in 1983 (72%). By analysing all the announcements for all three topics covered a total of 2741 comments, 1939 men and 802 women. The first issue, related to curricular reform and the departure of the expert group on 25<sup>th</sup> of May, 2016, why Croatia organized protests organized by the initiative “Croatia can better”, commented 556 men and 307 women. The second issue, referring to the referendum question, is ‘whether you have a provision in which the marriage is a woman’s and a male’s life in the Constitution of the United States?’, 449 men and 356 women commented on while the third theme, ‘For home ready’, updated after the match of Croatia - Island 2013, commented on 934 men and 139 women. **H0:** The results of the research show that in 72% of the comments negative emotion is expressed, while in 28% of the comments the positive emotion is expressed and it can be concluded that the main hypothesis is confirmed, or that a greater number of Facebook social network users express their negative emotions in their comments than those who express positive emotions in relation to the event. In addition to the general hypothesis, there are three hypotheses for each theme (or event): **First theme: H1:** The obtained results show that on the topic of curricular reform, 58% of comments express negative emotion, while 42% of them express positive emotions, so it can be concluded that the first hypothesis has not been confirmed, about claiming that the smaller number of Facebook social network users in their comments, on the subject of curricular reform, express negative emotions from those who express positive emotions. **H2:** About 68% of men and 32% of women expressed negative emotion, suggesting that the second hypothesis has been confirmed, which claims men are more inclined to express negative emotions than women. **Second theme: H1:** The results obtained have been ascertained that on the topic of referendum on marriage as a living community of women and men, 81% of comments are one of the negative emotions and only 19% positive, so it can be concluded that the first hypothesis is confirmed, about that the greater number Facebook social network users who in their comments on the issue of referendum

‘Are you in the Constitution of the Republic of Croatia to make a provision by which a marriage is a living community of women and men?’, express negative emotions from those who express positive emotions. **H2:** Research results suggest that 56% of men in their comments expressed some of the negative emotions, while 44% of women did so, so it can be concluded that the second hypothesis that men are more inclined to express negative emotions than women is confirmed. **Third theme: H1:** Based on the research conducted it was found that 78% of the comments on “home are ready” in 78% commented on some of the negative emotions, while the invocation of emotions contained only 22% of the comment, so it can be concluded that the first hypothesis is confirmed, that there was the greater the number of Facebook social network users who express their negative emotions from those expressing positive emotions in their comments on the topic of ‘home ready’. **H2:** Results obtained by research indicate that negative emotion was expressed by 88% of men and 12% of women, and another hypothesis is confirmed, that men are more inclined to express negative emotions than women.

## Conclusion

The conducted research confirmed the main hypothesis that a greater number of Facebook social network users’ express negative emotions in their comments than those who express positive emotions in relation to an event. Likewise, the research found that, irrespective of topics, a greater number of comments with negative emotions than positive ones, and how men are more inclined to express such emotions. The only hypothesis that has not been confirmed is a hypothesis related to the publication of curricular reform claiming that there are fewer Facebook social network users who in their comments express negative emotions than those who express positive emotions. For further research it is very important to make adequate semantic context of review on the results of this preliminary research:

The results of the research show that in 72% of the comments negative emotion is expressed, while in 28% of the comments the positive emotion is expressed and it can be concluded that the main hypothesis is confirmed, or that a greater number of Facebook social network users express their negative emotions in their comments than those who express positive emotions in relation to the event.

Overall, for all three reports related to curricular reform, 217 (60%) men expressed positive emotions, while 147 (40%) women likewise did it. When negative emotions were concerned, there were 339 (68%) men and 160 (32%) women. As regards the ratio of positive and negative comments to all three publications related to the subject of curricular reform, it is the following: 364 (42%) positive and 499 (58%) negative emotions were expressed.

In total, for all three publications related to the referendum question, are you saying that the Constitution of the Republic of Croatia imposes a provision in which marriage is a living community of women and men? 86 (56%) of men expressed positive emotions while doing so 68 (44%) of women. When negative emotions were concerned, 363 (56%) men and 288 (44%) women expressed this. Regarding the proportion of positive and negative comments on all three issues related to the issue of referendum issue, is it because of the fact that the Constitution of the Republic of Croatia imposes a provision in which marriage is a living community of women and men? Positive 154 (19%) and 651 (81%) negative emotions.

Overall, for all three announcements regarding “home-ready” greeting, 205 (85%) men expressed positive emotions while 35 (15%) women likewise did. When negative emotions were concerned, 729 (88%) men and 104 (12%) women expressed. As for the positive and negative commentary for all three postings related to the topic of ‘home for the home’, it is the following: 240 (22%) positive and 834 (78%) negative emotions were expressed.

Overall results: There were 3920 emotions in total, of which 999 (25%) were positive and 2921 (75%) were negative. Of the 999 positive emotions recorded, 666 (67%) were male and 333 (33%) women. Out of the reported 2921 negative emotions, 2125 (73%) were men and 796 (27%) women. A total of 2741 commentaries were commented, of which 1939 were men and 802 women. Positive emotions were given by 508 (67%) men and 250 (33%) women. Negative emotional comments gave 1431 (72%) men and 552 (28%) women. Of the total number of comments, 2741, with positive or negative emotions expressed, 758 (28%) people expressed their positive emotion, while their negative emotion was expressed in 1983 (72%).

By analysing all the announcements for all three topics covered a total of 2741 comments, 1939 men and 802 women. The first issue, related to curricular reform and the departure of the expert group on 25<sup>th</sup> of May,

2016, why Croatia organized protests organized by the initiative “Croatia can better”, commented 556 men and 307 women. The second issue, referring to the referendum question, is ‘whether you have a provision in which the marriage is a woman’s and a male’s life in the Constitution of the United States?’, 449 men and 356 women commented on while the third theme, ‘For home ready’, updated after the match of Croatia - Island 2013, commented on 934 men and 139 women.

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# TRADITIONAL SCHOOLS IN THE MODERN AGE

Nenad Suzić<sup>1</sup>

## Abstract

*In this paper the author lists ten key problems of the traditional school and proposes ten solutions to these problems. The author starts from Einstein's thesis that everybody is a genius, but reaches the conclusion that genius is not supported by modern education. The model "to teach everyone everything" is still the predominant model of education. Schools of today kill the creativity of students. The solution is to encourage divergent production. School is a decadent institution which is hierarchically organized. The solution is inclusion, i.e. engaging students in peer coeducation, in creating a climate of support and cooperation among students. Another problem is work for average students. The solution is in the individualization of teaching process. The next problem is contained in the thesis that the work of teachers is the job of gods. The solution is in the social and media affirmation of this profession, as well as in adequate payment of teachers. The solution lies in the education of partners and managers. Yet another big problem of the traditional school is encouragement of competition, i.e. rivalry and envy. The possible solution is in developing competencies. Traditional school inhibit exploratory behaviour, i.e. research and curiosity of students. Today we can see this solution being implemented in Finland, which has already abolished the curricula. From the author's perspective, the last problem is the predominance of memorising. The solution is in developing a new school of thought. This paper is somewhat futurological since it provides solutions that will hopefully be implemented in the future.*

**Keywords:** *metaphysics, walking encyclopaedia, learning to learn, competence, creativity*

## Introduction

We live in the age of learning civilization. Education systems in different countries are facing their own past and metaphysics. Around 80% of

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teaching materials in schools are dedicated to the past or to coping skills to get through a school maze. One example of looking to the past is stated by Donald Hirsch, a professor at the University of Virginia. He said that Europe, thanks to the light it saw during the Humanism and the Renaissance, and after the Dark Ages, overloaded its curricula with these amenities of romantic past (Hirsch, 1996). Stanley Greenspan, a renowned professor at George Washington University, said that as a young man he was told that in life he will not be happy if he does not know the equation with two unknowns. Now, near the end of his life, he is dealing with the methodological phenomena that require a very high level of mathematics, but he never needed equations with two unknown, not even now. He laconically concludes that in his youth there was dishonesty to him (Greenspan & Benderly, 1997). Greenspan gave us one frame which unfortunately accurately reflects today's education.

Schools are still depleted by the question of how to pack the children's head with all the new knowledge in various spheres of science, thus neglecting the knowledge that this is unnecessary work. First, it is impossible to transfer all new scientific knowledge to the curricula, and also in textbooks. Second, curricula and textbooks are already overburdened. So, dealing mainly with the cognition, modern education has ignored the emotional, social and practical competences and their moral and aesthetic dimension (Suzić, 2005). People live in the modern age of XXI century, while schools live in both XIX and XX century. Could education be modernized and actualised, could it respond to the challenges of XXI century and the needs of modern man? The answer is yes, but the first step needs to be done right now since it may be too late tomorrow. This issue is further addressed in the paper. Specifically, I'm trying to point out what is necessary to do so our schools would not be fully overcome. Key problems and solutions I summed up in ten-point (Table 1). Each of these points will be explained in more details in the following sub-headings so as to clear what is meant in the content of individual theses and so as to make it clearer what should be done in terms of change.

### **Every child is a genius**

Einstein's thesis that everybody is a genius (The Ultimate Quotable Einstein, 2010) differs from the modern education. When a rabbit runs away from a dog, it would be the best for it to climb the tree. However, the rabbit does not know how. Now it is logical to introduce the course "climbing a tree" in the school for rabbits. After a while the teachers will

conclude that rabbits are stupid since they cannot cope with that course. Andrea Canevaro gives the solution to this problem when he proposes to give a child to do what it can (Canevaro, 2000). Modern education follows the model “teach everyone everything”. Curricula are developed or fragmented by subjects. Every child has to master each subject so as to pass further in the school hierarchy. In doing so, we have a series of absurd situations. For example, a future expert in international law must learn factorization of a trinomial in the second grade of a secondary school. He does not want to and cannot do that, just as the rabbit cannot climb a tree. The student must repeat a year to learn something s/he will never need in the life. Most students learn that only to pass to the next grade, and then forget all of it with pleasure. It does not matter that s/he is talented for law when s/he cannot climb a tree!

Einstein says that in science there are dogmas, rules, canons that scientists must respect, then a fool comes and scrambles all that thus discovering something radically new. He claims to be one of those fools. Education follows its forms, dogmas, canons and rules, and children have to obey it. Any deviation is sanctioned, and sanctions are sometimes brutal.

When I went to school for teachers, I was taught never to admit the children that I do not know something. I was advised to answer the children that they will learn that later or to delay the answer for the next time, and in the meantime to study the phenomenon, or to say that it was provided neither by the curriculum nor by the textbook. Model by which the teacher is a “walking encyclopaedia”, thank God, survived today. Today the teacher should admit the children that s/he does not know that, and to praise the one who raises such an issue, to task a group that will study the Internet and other sources and find the answer for the next time or in a few days.



**Table 1** *Ten key problems of modern education and ten solutions*

Traditional (problems)	Modern (solutions)
1. Everybody is a genius (The Ultimate Quotable Einstein, 2010), said Einstein.	Schools should discover and develop individual potentials of students.
2. School kills creativity, individuality and performs intellectual violence.	Schools should develop and encourage divergent production of students.
3. Education is decadent, not progressed in the last 150 years.	Life brings prosperity, progress and a new technology. Schools should prepare young people to live with this progress, that they are free.
4. The teacher is superior. The student must raise a hand if s/he wants to say something. Teachers are telling them what to say and how to think.	The school should encourage students to ask questions, to the acceptable opposing, to the creative, critical and innovative thinking.
5. Teaching is adapted to “average” students, and there are no two equal students or two brains alike.	Curricula should be abolished, the children should be taught in areas that suit them best, and give them a minimum of knowledge in other areas.
6. The teacher can sadden a child to humiliate him or make him cry, and also can make him happy. Today, teachers are not up to the job they perform.	Teacher’s job is a job of the gods. They should be adequately paid for the job.
7. Curricula are not created by teachers. They are created by people who without a day long experience in a teaching process. School packs curricula in textbooks and in the heads of children.	Curricula should be means to develop the individuality of each student.
8. Teaching is repetitive and competitive.	Teaching should encourage collaboration and creativity.
9. The teacher is always right. Disobedience of students is punishable. The model “Magister dixit - discipuli repitunt” is the dominant one.	Curiosity or inquisitiveness should be encouraged and not killed.
10. Education produces “encyclopaedia slaves”. Children eventually “internalise” norms of school and society to the level of their own freedom.	School of memory should be converted to the school of thought.

In every classroom there are as many talents as there are students. Much easier is to “teach” the material than to reveal all the talents. The problem is not only in the teachers. Parents often burden the kids with their own ambitions and aspirations. We often hear the father say: *If I did not have the opportunity to develop into an excellent football player, my son will accomplish that.* However, the boy is just above an average, but not a talent. Forcing the football that parent may have stifled the real talent that child has. How to discover this talent? The simplest way is to observe the child while still very young. Something the child insists, usually makes an area of talent in which the child shall later in life accomplish.

### **School kills creativity**

Forcing storage and playback, schools remain at the lowest levels of Bloom’s taxonomy (Bloom, Englehart, Furst, Hill, and Krathwohl, 1956). Ask Elklit shows that in Danish teaching process rules the stereotype according to which teachers present the dogmatised and canonised, and if a few students can repeat the key information, they are satisfied with their performance (Elklit, 1991). Bad teachers learn dozens of empty phrases, facts and classifications of the courses they “teach”, and then ask the students to repeat, or learn that. For instance, a professor of physics in high school soon notices that students do not know the physics, neither the parents know that, nor teachers of other subjects. The most common consequence of this knowledge is narcissism. This is particularly true for the university professors. The high school teacher transfers to you elementary knowledge, multiplication tables in physics, and he wants to be experienced as a scientist. The conflict with the students and the reality is inevitable for him.

Requiring memorising, playback or replay, teachers reduce the teaching process to the simple level of repetition, which is opposite to creativity. The condition for creativity is divergent production (Robinson, 2001). In 1950 Guilford displayed a model of the intellect in which divergent production was presented with creativity (Guilford, 1950). It is not reasonable to expect someone to give creative solutions if s/he does not think differently, divergently. Children love divergent production, yet the schools do not support it. Performing a topic in geography entitled “Atmospheric precipitation” I asked the twelve-year old children why it rains. They said that at 4.500 m altitude it is cold, the steam condenses into droplets, and then they are drawn by the earth’s gravity, and so it rains. I told them they are children, not scientists and they should answer

divergently. For example, *It rains since there are no ladders for drops to get down*. They were delighted, and a smart one asked: *Teacher, shall I get an A if I answer in that way in the test?* I told her that I will make a test to measure precisely that – divergent production, and that she will get an A. Then a general enthusiasm arose in the classroom. *Angels take shower! Rain has no elevator to come down!* – these are some of the answers from the brainstorming that followed. They asked questions, laughed, yelled. Some of their questions I wrote on the board. One of the questions was: *Why sometimes it thunders and there are lightening when it snows, and there is no rain?* I told them the answer is in the textbook, divided them into groups, and one group was tasked to answer that very question. Their task was to be teachers and answers to the question tasked to that group but in a way everyone in the class understands and learns the answers. They did not want to go on a lunch break. That day, they had geography in all five classes, but they were not bored. We started with divergent production, and ended in the search for information and its presentation.

Displaying ready-made knowledge and seeking their reproduction schools stifle the creativity of children. There is no creative thinking without divergent production. This production can be encouraged without changing the existing curricula.

### **Education is decadent**

It is believed that the church and the school are most difficultly changed. If a teacher who died a hundred years ago would get up from the grave, for two to three weeks he could be in a classroom so up-to-date that he would be indistinguishable from the others. If an engineer who died a hundred years ago would get up from the grave, he would not be able to cope with the modern technology. So, education changes very slowly. Why? The answer is simple. The facts about the past are safe, but the facts about the future are not. Today's education is based primarily on memory and reproduction of facts. If the school turns towards the future, the current system of education and upbringing collapses. Schools should move from deductive to inductive logic. Teachers are not prepared for it, they are not trained for it. What is the solution? To enable teachers to futuristic models of work, for learning of learning, for the application of games in the classroom.

One of the trends of pedagogy in the XXI century is a reorientation from the past to the present and future (Suzić, 2005). This can be achieved in

the existing curricula. For instance, teaching of a lesson on atmospheric precipitation can be linked to climate change on planet Earth, global warming, HAARP and other technologies for climate control.

Today, schools still resemble factories of XIX and XX century. At the sound of the bells classes begin, breaks are time limited, to the sound of the bell class end, performance or achievements of children is measured by memorising and reproduction of facts. Besides, the schools significantly resemble the barracks. The teacher is a superior, a student must be obedient. Refusal of a teacher's task is punishable as a disciplinary offense. Disobedience is punishable by lowering marks for behaviour or by poor grade in a subject.

Nowadays, schools work as they prepare children for life in the XIX and XX century and not for life in the XXI century. Dominating is the lecturing approach (exposing), the material is intended to be "pushed" in the children's heads, the contents are not innovated—what was taught in the past is also taught now. Thus, the decadence of education today can be identified in every classroom. Generally, a key factor of change is the teacher. Teachers cannot train students in the area they do not know themselves, they cannot teach them how to learn if they themselves are not trained for this. They cannot forward futuristic orientation unless they are enabled for it.

### **Hierarchical organization of the school**

The teacher is superior, he asks, the students answer, or reproduce. Schools have strict rules and rigorous sanctions. For instance, for the absence from classes in many schools the student may be expelled or lose the status of students. Teachers in today's schools should be seen by the students as a "walking encyclopaedia". He knows everything, he is always right, he evaluates and determines the fate of the children, and so on. The teacher is the boss, and students are executors. Previous sentences show stereotypes of today's hierarchically organised school.

Some questions of students in the classroom are undesirable because they are perceived by teachers as provocations. These are mainly those questions that teachers do not know to answer. The teaching that encourages students is open, progressive and motivational questions. A teacher in such a teaching process is competent, innovative and willing to establish new interpersonal relations with students. When he activates

students in intensive and cognitive way, a teacher creates in their mind a situation of discrepancy, defects or problem between previous and new knowledge, and this result in motivation and activity (Juric, 1974, p. 51). Discrepancy in psychology is recognised as incongruence or dissonance (Festinger, 1957), while research or curious behaviour is recognised as exploration (Berlyne, 1966).

In hierarchically organized teaching process the teacher needs the auditorium, he needs the audience so as his exposure makes sense. Even better is that the auditorium *has* to listen, as is the case with the classroom of students. In such a hierarchical organisation of teaching process the teacher does not have to take into account whether everybody listens and understands him. It is important they are quiet and obedient, and not disturbing the lectures. Students in such a process “lean brains out to pasture” drift cognitively in a cafe or at a place they like. Svetozar Milijević researched the attention distractors during classes. He applied *the technique of puncture*. During the class, the students wrote on a piece of paper what they were thinking about. One girl wrote she imagines to be playing with a dog at a meadow, while one boy was thinking about how it would be “over“ with him the next time if the teacher physics starts calling names from the last, because in this case he is the first who will be called out (Milijević, 1984 ).

In hierarchically organized teaching process a student is involved when the teacher asks him to. For the time of teacher’s lecturing a student’s engagement can be primarily cognitive, but in this case the student can opt out of teaching himself.

Teachers who include students, create a warm emotional climate in the classroom (Reardon, 2011; Song, Bong, Lee, & Kim, 2015), reduce anxiety of students (Ahmed, Minnaert, van der Werf, & Kuyper, 2010; Leung, Yeung, & Wong, 2010), are more popular among students (Suzić, 2003). If they support and include students, teachers strengthen mastery goal orientation (Bong, 2009; Church, Elliot, & Gable, 2001, Patrick, Ryan, & Kaplan, 2007). Knowledge acquired through individual efforts remains longer and has a higher usable value.

The enthusiasm occupies a very important place in the teaching profession. Some professions can be performed routinely, without enthusiasm, but there is a significant difference between teachers who work with enthusiasm, and those who work routinely. This difference is easily registered by students.

Studies have shown that students attribute more positive characteristics to teachers who are seen as enthusiastic (Harris & Rosenthal, 2005; Witt, Wheelless, & Allen, 2004). Our research pointed to three features of teachers' enthusiasm: (1) teachers have a higher level of assessment of their own enthusiasm than students' assessment of their enthusiasm, (2) those teachers evaluated by students as enthusiastic, have a higher level of assessment of their own enthusiasm and (3) positive emotions of students are a significant predictor of teacher's enthusiasm (Suzić and Trifunovic, 2013). Moreover, studies have shown that the enthusiasm of teachers positively affects the academic achievement of students (Patrick, Hisley, & Kempler, 2000; Song, Bong, Lee, & Kim, 2015). Thus, a hierarchically organised school is more convenient to the teachers formalist than to the enthusiasts. However, the current curricula provide space for the teacher to be an enthusiast. In fact, he does not have to implement all the units and go all the material. Most of the teachers do not know this nor do they want to know.

In hierarchically organized school teacher is in charge, he lectures, evaluates, punishes, sets the tasks and the like. Peer support is a specific form of interpersonal relationships in the teaching process. A teacher who allows students to learn from each other, allows them to learn from their peers, allows them to learn in a “zone of further development” (Vygotsky, 1996). The teacher has built a professional vocabulary children often do not understand. A number of teachers are trying to remain unintelligible because they want to certify a superior position in a hierarchically organized school. Studies have shown that peers can better explain the material, that peer argumentation contributes to the understanding of what is taught (Asterhan & Babichenko, 2015; Asterhan & Schwarz, 2009). Peer support is now studied as a phenomenon important for the efficiency of modern teaching (Song, Bong, Lee, & Kim, 2015).

Hierarchically organised school weakly activates students. Teachers are most important to exercise their leadership role, to respect the order and discipline.

### **Mediocrity**

In traditional teaching, teachers adapt materials to an “average“ student who does not exist. Every individual is average in something, and above average in something else. Even the curricula and textbooks are made for “average” students. The reasons for this approach are manifold, but

primarily it is economy. Economically it is profitable that one teacher teaches 20-40 students. It is much cheaper than that the teacher works individually or with 3-4 students. At Oxford and Harvard and some other well-known universities, teaching is individual. It is for our conditions in the Balkans impossible.

If a teacher conducts classes for the “average” student, he automatically ignores above and below average ones. This moulding into the “average” results in formalizing and stereotyping of education and upbringing. If the doctor prescribes the same medicine to all patients, the consequences will be tragic (Prince Ea, 2016). All students are served the same teaching content, the same methods, in the same way. All have equal obligations, although they are different. This is absurd and nonsense, it cannot meet the needs of students.

Solution to the problem of “mediocrity” of contemporary approach in education is in abolishing the curricula, in training of children in areas in which they have skills and in teaching with the minimum requirements in areas which do not suit them and which will not be important in life. The example of Finland is an illustrative one today. They eliminated curricula and homework. If this would be done in the Balkans, there would be a chaos. However, in this direction it is necessary to take the first step. To us, this step would be the introduction of *integrated pedagogy* (Suzić, 2005), but with the training of teachers and pedagogues. Integrated pedagogy implies that all knowledge of other sciences, psychology, sociology, physiology, and so on, useful for education, integrate into the system of scientific knowledge useful for the realization of education and upbringing, i.e. in pedagogy.

Another solution for mediocrity is in the individualization of teaching, in applied pedagogy which meets the needs of each child separately. In relation to the current system of education it looks like “the end of the world”, yet Waldorf schools show that it is certainly possible (Steiner, 2001). Namely, the only innovation which as a complete alternative solution compared to traditional school survived the twentieth century was the Waldorf School. In the afternoon children learn the areas they are talented for, and in the morning they learn the required courses. For example, a child does not have to go to an elementary school, and then in elementary music school because, instead of attending the two institutions, all that is included in Waldorf school.

## Job of Teachers is a job of Gods

If a baby immediately after birth is transferred in Dinder, Sudan national park in which live about 1.000 tribes that speak about 1.000 languages, it will become a hunter, gatherer, a shepherd or a housewife. If another baby immediately after birth is transferred from Dinder to Europe, it will grow up with European children and became a baker, a pilot, a professor or something else. This paradigm is about the omnipotence of education. Parents are trying for 4-5 years at home to teach a child to read and to know all the letters. Most children learn a few letters, not to mention reading. However, a teacher for a year teaches children to distinguish all the letters, to master numerical relations in the first and second decades. So, what parents could not achieve in 4-5 years, the teacher realized for a year. All people reproduce the species, create genetic material shaped by the family, society and school. In this shaping a teacher has a special role. To shape a man's soul is job of Gods.

The teacher can make a child happy, make it proud and pleased, but he can also make it cry, insult and humiliate it. A teacher has enormous power. The way he will use this power, unfortunately, mostly depends on the personal characteristics of a teacher, and less on professional education or from training. However, if the teacher is involved in the workshop where he will assume the role of a child, we can expect his pedagogical performance to improve. It is very difficult to change the style and method of work of teachers. Peter John, English teacher, says that the style and manner of work of a teacher can be change by: (1) undermining the old beliefs and prejudices, (2) offering new and better solutions, and (3) joining new experiences with old biases (John, 1996, 101). I checked this three-stage model of Peter John in a survey in five phases: (1) theoretical lectures (2) workshops, (3) application in teaching, (4) evaluation and (5) verification (Suzić, 2004). Preconceptions, i.e. prejudices of teachers in literature are mentioned by using the terms *the implicit theories and implicit bias* (John, 1996; Osborn, 1996). Literature and practice show that we can change the teachers' preconceptions. This change Vasa Pelagić called "expert recovery" and "professional ascension" (Pelagić, 1953), or "self-polishing" (Milijević, 1999).

The teaching profession is very important, but this profession is not socially recognized or adequately evaluated. Education, along with the media, is the strongest factor of shaping public opinion. A government that wants to motivate and mobilise the mass must rely on education. This population



is easiest to obtain by professional development. These are reasonable people who will accept objective criticism, who will improve their work if they are assured that it is justified and if they are offered specific and applicable teaching models.

### **Schools produce encyclopaedism slaves**

Packing teaching courses in the heads of children, school produce submissive and obedient people. Submission and obedience are the properties of slaves. Critical thinking, creativity and non-conformism were expelled from our schools. The schools today educate people to be more expensive on the market, to be more sought commodity. It is neo-slavery. Those who have money can buy experts and their inventions, and these are happy if they get a job, if they manage to sell themselves. To whom such a relationship corresponds? To those who have money, the creators of the new world order.

In a market economy which is pre-dominant today, labour force becomes commodity. Their “forces proper” (own powers) people place to a market and sell. Today, only fifteen out of a hundred who graduated higher education can be employed. This is the result of application of new sophisticated technology. We live in a time of historical contradictions. In fact, seen throughout the history, the most developed societies were those who had the most obvious division between intellectual and physical labour. For example, a man digs a channel - works physical job while a second draws an excavator – works intellectual job. The one who invented the excavator is more efficient than a few thousand of those who dig channels. The modern world is now gripped in this collision. Sophisticated machines that perform a large number of jobs that people previously performed professionally arrived. These people are left without work and income necessary for life. These machines can be bought by those who have money. In this way, they take the money the workers previously received as a salary. This accumulation of capital in the hands of a small number of people today led to a drastic stratification. More and more people is unemployed, while a number of the enormously rich is decreasing. The rich can buy intellectual services, inventions and operation of the fittest people, thus increasing their capital. We live in the era of civilizational collision, the work is mainly transferred “from this to the other side of this necessity”, but the disintegration of society is deepening. The most developed West countries are trying to solve this paradox by social benefits for the unemployed and disadvantaged. They are given a monthly amount of money sufficient for

elementary survival. Poor people in Africa and the Middle East saw this as “paradise on earth” and rushed to the developed countries as asylum seekers and refugees. These are also people from war affected areas.

How to resolve the collision of stratification of the modern world? There are two directions of resolving: (1) mass rebellion or revolution, and (2) a new social relations in which money, the traditional shops and alike are abolished. Christopher Lasch argues that the time of barricades passed, Gavroche and Kozete claim that today the time has come for “rebellion of elites” (Lasch, 1996). Thus, mass rebellions or revolution is not an option that deserves attention. We can look at a new society that comes in the future. This is the society of “vertical trade” (Stewart, 2000), of the evolution outside the Earth (Suzić, 2012), of getting the man and the machine closer (Suzić and Suzić, 2013) and other radical novelties. These novelties are coming quickly and without asking (Toffler, 1970, 1981). Indeed, imagine now to get back technologically to 50 years ago, and to implement that time in relations established today. This would be an unprecedented disaster. Only education would be able to operate undisturbed.

Solution to the problem of producing encyclopaedism slaves is in a new, innovated school system. Instead of producing slaves, on existing curricula, schools today can educate partners and managers. This again depends on the teacher. The basic approach would be in training students for learning to learn, in creating a favourable working climate in the classroom where children would not fear but enjoy learning, where they will be playing through learning and learning through playing. Teaching should encourage cooperation among students, to reward creativity.

### **Replace Competition with Competence**

The stereotype that exists in schools of nowadays can be recognised in the model in which the teacher “lectures“ the material, and then to test with short questions whether students can understand or repeat it. For example, on the blackboard there is a big title of the unit “Solenoid in a magnetic field.” The professor asks students “What we learned today?” The student who raises his hand and reads the title of the blackboard, in fact demonstrates conformity and wholeheartedly. The student who respects himself will not answer this question. Teachers reward students who often raise their hands and answer questions for activity and give them high marks. A number of students understands this and “hunts“ marks through the sympathy of teachers. They answer questions like this because they

know they will be rewarded by a grade. This is one of the ways in which schools today encourage competition or rivalry among students.

What is a competency? The shortest definition is that the competencies recognized as the ability at work (Suzić, 2010). For instance, someone may not know to ride a bicycle, but it does not mean s/he is not capable, but when s/he learns to ride a bicycle s/he has this competence. It can be on several levels, but it is a competence. The question is how to develop competencies of students in disciplines or subjects that are primarily theoretical, such as, for example, history. One illustrative example deals with this. History teacher work at topic Napoleon's war. He divided the class into two groups. One group was led by a student who played Napoleon, a second group was led by a student who played Kutuzov. For details, i.e. scenario each group used the textbook. I am convinced that this kind of work left a strong impression on students and that there was no student who was not able to talk later about this battle. In addition, I believe that many searched through internet and encyclopaedia for details of this historical event.

The solution to shifting competition to competence is to reorient a competitively and hierarchically organized school to the development of competencies of students. This means that students need to be put in a situation to apply and demonstrate what they have learned, to show and prove competence. Dales's experience pyramid confirms that applied knowledge contribute to the efficient acquisition of material that is taught (Hartop & Farrell, 2000). In a situation when the teacher exposes, and students are merely repeating, the teaching process develops competition among students rather than competence.

### **Encourage exploration**

Exploratory or research behaviour of students a teacher can encourage by forcing the questions: why, what will I use this material for in my life, is there something more important I should know and alike. For these questions the teacher does not have time today since he works in a very condensed curriculum. A try to "put" all the new discoveries of a science into the curricula is known as scientism (Suzić, 2005). By implementing scientised curricula, teachers do not have time for questions and curiosity of students, and especially not for questions like this: *Why should I learn?* Resourceful teachers solve this by assigning homework of exploratory type. However, it is also formal since they have no time in the classroom to deal with this explorative knowledge of students.

Can schools with existing curricula encourage and develop students for exploration? Yes, but it is very difficult. Specifically, it depends on the teacher. The teacher is not required to carry out all the content of textbooks and curriculum. He needs to realize those activities that will contribute the most to the development of competencies. However, most teachers believe to be obliged to implement the prescribed curriculum, so they prefer to flee to this sphere of obligation than to work creatively and for the benefit of student needs. In this case the subject of teaching is the material, not the student. Dealing with the material, and not the students, teachers tend to repetition, to the traditional methods of teaching, not learning methods. *Repetitio mater studiorum est* (Repetition is the mother of knowledge) – is the phrase known since ancient times. It, unfortunately, dominates today as well. Students have their own expressions: cramming, slamming, booming, the inculcation and the like. Education must get out of this Prokrust's model and encourage exploratory activities of children.

### **Turn school of remembering into a school of thought**

The traditional school is based on memorizing and reproduction of facts, while a school of thought includes a series of questions for students such as: *Is that so? Why do I learn this? In what way would I need this in life? What is the alternative? Is there another solution?* and similarly. Quickly find the information, use it and then store it so that we can quickly and easily be able to find it again - this is the basis for the functioning of education in the future. Thinking can be encouraged not only in physics or mathematics but also on prose texts and the syllabus of history. If students are rehearsed not to read graphemes - letters, words - terms or sentences – thoughts but to read paragraphs – ideas, we put them in a position to think. Each paragraph, or an idea, can be converted into a question and thus more thoughts or sentences express succinctly. If out of twenty, 3-4 most important paragraphs are chosen, and we decide to remember that, the model of learning we used is OBN (Suzić, Jelic and Milivojac, 2013; Suzić and Radonjic, 2015; Suzić, Selimovic, Stankovic-Jankovic, Mikanović, Kević-Zrnić, Suzić, & Tubica, 2016), but this method unquestionably increases reading speed and comprehension of the text (Suzić and Radonjic, 2015). If we make a scenario out of one material, and afterward introduce the same “mistake“, we should have a model “learning from mistakes” (Suzić, 1999).

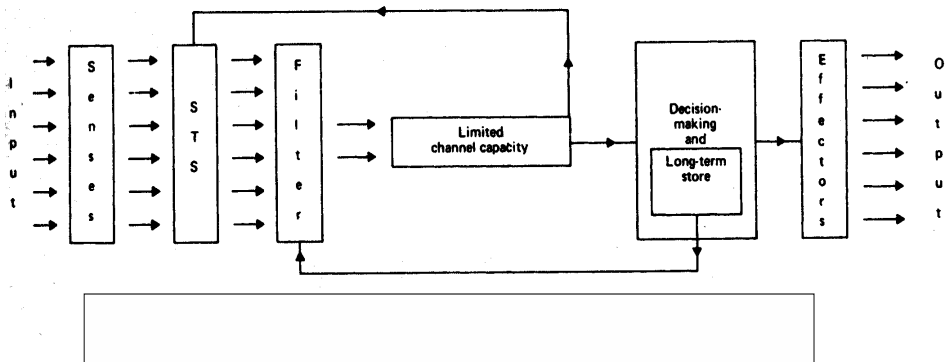
What is the solution? How to convert the school of memorising to school of thinking? Again, the key is the teacher. School is what it evaluates and marks are given by the teacher. The teacher may give marks to reproduce

facts, but can also evaluate the creativity and commitment of the students to think for themselves. It is much easier to assess how well students know the facts, but whether and how they think for themselves. So, the first move in this respect would be to enable teachers to assess divergent production, creativity and productive thinking of students. At first sight it seems “mission impossible”, but we know that this is possible and every teacher can do it.

Rene Descartes said that there is no thinking without facts (Descartes, 1649/1985). In other words, in the schools, we must maintain a certain level of memorising. However, we need to reduce memorising to the optimum level, since reproducing and thinking is not the same. Our brain works 24 hours a day. When we sleep it manages the work of the heart, controls the operation of the internal organs, deals with dreams and the like. Human brain is dead if it does not think. Forcing memorising and reproducing directly reduce the process of thinking of students, thus killing the brain. Let us remember how many times the teachers used to say: It is not yours to think, but to learn. In the existing curricula it is possible to develop and encourage critical thinking of students. However, it does not happen in our schools. Why? Simply, teachers would need to give up their authoritative position and prepare differently. They are not trained or paid for it. Here, another Descartes thought is important: *Cogito ergo sum* - I think, therefore I am (Descartes, 1637/1951). The only thing we can be certain is thinking – considered Descartes. If a student 8-9 years in a primary school, and then another 3-4 years in high school reproduces and reiterates, executes orders of teachers, he becomes submissive and obedient, which are the characteristics of slaves. At the end of the XXI century we will differ partner or creative from slave nations. Today no one can forbid us to educate managers and partners, to encourage divergent production and creative thinking. However, we do not do it, we work for the benefit of our own damage.

Our brain forgets nothing, but working memory has a limited capacity. Broadbent (Broadbent, 1987) gave a scheme of functioning of memory, from the sensor to the long-term memory (Figure 1). Sensory initiatives are first processed in the short-term memory (STM), then through a narrow nerve pathway (Limited channel capacity) are forwarded to the long-term memory.

**Scheme 1** Broadbent filter theory of short-term and long-term memory



In the long-term memory information is stored, but the path to them is often not clear due to the effects of retroactive inhibition (ibid). In our schools they are struggling “throw“ any new information in working memory, so the students could easily reproduce them. However, the capacity of working memory is limited. The solution is to set up “signs along the way” – as Ivo Andric would. In other words, the way to the information in long-term memory should be marked.

Innovative interventions during the twentieth century tended to break the stereotypes of teaching classes, however, only some of these innovations offered solutions that build on traditional teaching in the direction of initiating and developing unconventional and creative thinking of students. Kilpatrick’s project-method is one of such innovations, but it is not an alternative to a traditional school. That’s why Donald Hirsch writes that this method seriously jeopardized US education (Hirsch, 1996). Namely, the students work on a project, but the knowledge in other areas not affected by this projects is neglected.

Solution to the question how to turn school of memorising into a school of thinking is manifold: encourages students’ questions, stimulate various forms of students’ involvement in the work on the material, transmit learning through a game, encourage research of students, introduce peer interaction, train students for cooperation and interaction, etc. All of these approaches are compatible with traditional teaching.

## Conclusion

In this paper, I analysed ten key problems of traditional schools: (1) every child is a genius, (2) school kills creativity, (3) education is decadent, (4) schools are hierarchically organised, (5) teaching is based on mediocrity, (6) job of teachers is job of gods, (7) schools produce encyclopaedism slaves, (8) replace the competition with competence, (9) to encourage exploration and (10) convert the school of memorising into the school of thinking. For each of these problems there is a solution within the existing system of education. Thus, the present system of education should not necessarily be radically changed. It is possible to introduce changes that will ultimately result in the schools required by the people in the XXI century step-by-step.

This work is largely futurological. Specifically, for each problem of the traditional school a solution that can be achieved in the future was given. Whether these changes shall start now and wait for “better times” depends on those who manage the changes in this area. The fact is that today the most developed countries invest the most in education. The fact is that Finland abolished curricula, and some experts say that country is light years ahead of the others. Critics will say that there are problems in Finland for this reason. But such criticism is more inferiority complex than objective consideration. It would be naive to expect a country to abolish the curricula, and has no problems after. The fact is that today’s school operates according to the curricula which are implemented by the subjects in which human cognition is fragmented into teaching topics and teaching units. In this way students learn something they will never need in their lives. In the learning civilization of XXI century schools should enable children to learn quickly and easily.

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# THE FOURTH INDUSTRIAL REVOLUTION AS A CHALLENGE FOR INTRALOGISTICS MANAGEMENT

*Bojan Rosi<sup>1</sup>, Tone Lerher<sup>2</sup>*

## Abstract

*Our present and especially our future are intertwined with new technical-technological discoveries. Based on this fact, new and increasingly more complex managerial challenges or problems arise, bringing with them the necessity for comprehensive changes that are greater and more extensive than ever. Among these is definitely the fourth industrial revolution (Industry 4.0) that completely changes or even rejects traditional technologies and also the traditional way of thinking and functioning. Of course, we cannot ignore the risks that occur when implementing such enormous and extensive changes. If we focus on the increasingly more complex problem of logistics management of any important company activity, we can find that its efficiency depends on reliable and predictable market behaviour. This is the phenomenon of quick adaptation to changes, which with classical (already obsolete and therefore one-sided) approaches cannot be guaranteed anymore, particularly not sustainably. This means that it is necessary to manage such complex problem situations as a whole (socially responsibly).*

*Within the scope of this paper, a case study of implementing an automated warehouse system in the field of Intralogistics 4.0 is presented and discussed.*

**Key words:** *fourth industrial revolution, phenomenon of problem, system theory thinking, intralogistics management, intralogistics 4.0, case study.*

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## **Historical background of the fourth industrial revolution**

The word “revolution” marks fast and radical changes, which are driven by advanced social forces. Historically, revolutions were triggered by new technologies and new ways of interpreting the world around us. This brought fundamental changes to economic systems and social structures. With history being the reference time frame, the speed of implementing revolutions can last over many years. Approximately 10.000 years ago, the farming revolution brought the first significant change in our lifestyle. The next revolution was in production, transport and communication, which combined forces of humans and animals. Food production was improved step by step, which encouraged population growth and enabled growth in size of human settlements. Eventually, this led to urbanization and the rise of cities (Schwab, 2016).

The first industrial revolution lasted from 1760 to 1840—railway construction and the invention of the steam machine, which led to massive machine based production. The second industrial revolution beginning is dated to the late 19<sup>th</sup> century and lasted to early 20<sup>th</sup> century. It was characterised with serial production, based on widespread availability of electricity and the invention of conveyor belt. The third industrial revolution began in the 60s of the 20<sup>th</sup> century. It is called the computer or digital revolution, since it was encouraged by semiconductor development, computer station use, the development of personal computers in the 70s and 80s and the emergence of the internet in the 90s (Schwab, 2016).

A series of industrial revolutions marked the transition from physical to machine generated power, which developed to a point where today, during the fourth industrial revolution, enhanced cognitive strength allows for increases in human production.

If we take into account the various definitions and explanations that the academic sphere uses to describe the first three industrial revolutions, we can certainly claim that we are currently witnessing the beginnings of the fourth industrial revolution (Schwab, 2016). It began during the transition into a new millennium and it builds on the foundations of the digital revolution. It is marked by the omnipresent and mobile internet, ever smaller, more powerful and less expensive sensors, and artificial intelligence with machine learning. Digital technologies, which are based on computer software and hardware, connected into networks, are not novel, but are becoming more and more sophisticated and integrated in

comparison to the third industrial revolution. Consequently, these networks are changing the society and global economies.

In Germany, the term “Industry 4.0” is widely used. This term was coined in 2011 at the Hannover fair to describe the revolution in organization of global value chains. The fourth industrial revolution brings “smart factories” and consequently creates a world that enables virtual and physical production systems global and adaptable cooperation – as an example of the IoT (Internet of Things) so-called an announcer of the fourth industrial revolution. This enables complete adaptation of custom made products and creation of new business models (Schwab, 2016).

However, the fourth industrial revolution is not only comprised of smart and interconnected machines and systems. Its scope is significantly broader, since it is also supported by further discoveries on various fields from gene sequencing to nanotechnology and from renewable power sources to quantum computer science. The fusion of these technologies and their interaction in physical, digital and biological spheres are the aspects that differentiate the fourth industrial revolution from the previous three.

In the current revolution, new technologies and widely useful innovations are implemented significantly faster and more extensively than in previous ones, which have not completely ended in some less developed areas of the world. 17 % of the world still has not completely lived through the second industrial revolution, since approximately 1,3 billion people so not have access to electricity. Similar is also true for the third industrial revolution, since more than a half on the world population, over four billion people mostly from developing countries. In comparison: the use of a spindle, the flagship of the first industrial revolution, remained enclosed inside European borders for over 120 years, while internet use spread throughout the world in less than a decade (Schwab, 2016).

The lesson from the first industrial revolution that progress is dependant on the level of acceptance of technological advances in society is still relevant. The government and public institutions must also play their role as well as the private sector, where it is crucial that citizens see the long term benefits on implementing innovations. We are certain that the fourth industrial revolution will be no less important, influential and historically relevant than the previous three. Despite this, some influential factors have to be addressed, which can limit the potential for effectiveness and cohesive implementing of the fourth industrial revolution. These are (Schwab, 2016):

- Low level of management and understanding of evolving changes in all sectors, mostly due to non-responsiveness (ed. note: and lack of systemic or holistic thinking) to the complexity of influences of the fourth industrial revolution on economic, societal and political systems. Consequently, on the national and global level, the institutional frame that is needed to spread innovations and forward their influence is inadequate at best, and non-existent at worst.
- There is a worldwide lack of concise, appealing and common efforts that identify opportunities and challenges of the fourth industrial revolution. These efforts are essential to ensure power to a group of varied individuals and communities and to avoid mass opposition to substantial changes that will be the consequence of the coming revolution.

Currently, there is a significant amount of theoretical and practical advice, techniques, methods, etc. for the more effective and successful management of technical and technological innovations introduced by the fourth industrial revolution (Rosi, 2004, 2008, 2015). However, without knowledge of the phenomenon of the problem and the use of systems thinking it would be impossible to integrate theory and practice into a so-called continuous interdependent dynamic process. It is exactly such (everyday) processes that cause complex problem situations to arise – these can no longer be solved with simple and oftentimes obsolete methods.

### **The phenomenon of problem – What constitutes a problem and its dimensions?**

The answer to a seemingly simple question, *What is a problem?* is far from straightforward. One can always think back to specific problems they have encountered or resolved; however, it is difficult to ascertain their common identifying characteristic. There may be several common features, ranging from incomplete tasks, issues, obstacles, dangers, unclear situations, unresolved open questions, to challenges or even opportunities. (Rosi, 2004, 2008, 2015; Rosi, Mulej, 2006; etc.)

Everyday business situations present us with complex problems that need to be resolved, but cannot be solved without difficulty. *What we call an enterprise is characterized by multi-layered interconnected problem solving activities* (Gomez and Probst, 1997). This does not imply that problems exist only within businesses, but rather that the authors see problem solving as an endeavor which demands a clear process for it to



succeed. A model of a problem solving process has to be established. To a certain extent, all employees are a part of the problem solving activity, which leads to the realization, through synergistic effect, of a common goal – for instance, a quality product or service, customer satisfaction, increased market share, etc. These problems can only be partially solved through the application of usual methods and tools or ‘common sense’. These methods are only applicable to problems of low level complexity and difficulty. On the other hand, we are continuously faced with complex and extensive problem situations that cannot be resolved by known methods and models, at least not without adequate knowledge. (Rosi, 2004, 2008, 2015; Rosi, Mulej, 2006; Rosi, Rosi 2011; etc.)

A problem (from Greek *próblēma*, i.e. something put forward) is an expression for theoretical, technical, ethical, and other issues, where the solution to the issue is only partly known or even fully unknown. Well defined problems are often the basis for scientific breakthrough, theory, or invention (Birkebihl, 1994).

Sruk’s definition of a problem is more comprehensive (Sruk, 1980 in Kajzer, 1983): *Problems emerge as a result of conscious human activity, i.e. practice. They are the momentum of all creative endeavor in all spheres of social life and consciousness (scientific, philosophical, art, legal, business, moral, political, and other problems). It is important how we form or articulate problems; there is only a short distance separating a logically, adequately, and meaningfully posed question and a correct and relevant answer. Different formulations of problems result in the difference of outcomes.*

As Kajzer (1983) points out, even such a definition does not explain when and why a certain phenomenon presents itself as a problem. It seems adequate to refer to a state or action as a problem when it has the following characteristics:

1. It affects the person and his or her position in a significant way.
2. It deviates from the desired outcome.
3. It does not have a previously determined solution; the solution needs to be found.

Keeping in mind the above characteristics, it is quite evident that the most vital question is in no way how to solve a problem (*know how*), which is sometimes the predominant view in practice and also in general opinion. Before trying to solve a problem, we have to answer two more basic and

fundamental questions, i.e. 1) Is this a problem? (*know why*) and 2) What do we wish to achieve with the solution to the problem (*know what*)? The formulation of the solution itself is therefore only a third step in the above outlined hierarchy and thus necessarily less urgent than the other two steps.

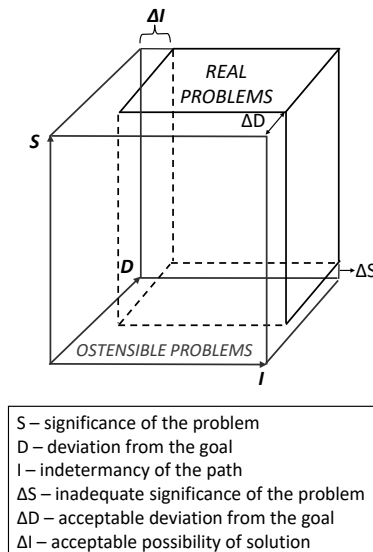
Trstenjak (1981) also, quite rightly, claims that '*problem solving is often less creative and important than the posing of the problems themselves.*' This implies (Trstenjak 1981 in Kajzer, 1983) that any state defined as a problem has at least three dimensions:

1. significance accorded to the phenomenon – problem;
2. deviation from the goal set in relation to this phenomenon;
3. indeterminacy of the path leading from the present state to the desired goal.

In light of this, a problem can be geometrically represented as seen in Figure 1. This shows us that a phenomenon is a fully constituted and real problem only when it is simultaneously 1) important enough, 2) in a state irreconcilable with the goal, and 3) unsolvable in ordinary (proven) ways. Problem space can be further divided into two characteristic subspaces, i.e.:

- subspace of true or real problems in need of recognition, definition, and solution;
- subspace of ostensible problems that are not real problems; it is therefore meaningless to define them and solve them.

**Figure 1** Problem space and its dimensions (cf. Kajzer, 1983; Duh, Kajzer, 2002; Rosi, 2004, 2008, 2015).



According to a general definition, a problem is a question, doubt, a controversial issue (theoretical or practical), a scientific task, a difficult task; a difficulty or concern that needs to be addressed. To solve problems and the concomitant problem situations, one needs to have a comprehensive knowledge of (more on this topic in Rosi, 2004, 2008, 2015):

- types of problems and their ways of presenting;
- characteristics of people solving the problems;
- problem solving processes;
- ways of approaching problem solving in complex business environments.

Conclusion is that everyday theory and practice presents us with problems and problem solving processes. Once we have detected a problem and wish to identify it, we are faced with a challenge. We need to decide (Kajzer, 1983) whether we are presented with a real or a merely ostensible problem. In all social contexts real problems are determined by phenomena in objective reality and to a great extent also by subjective viewpoints.

However, we need to differentiate between problems and symptoms, which is especially difficult when dealing with symptoms of deep seated problems, such as it brings the fourth industrial revolution. A symptom is only a small, superficially evident and recognizable part (tip of the iceberg), indicating (to those capable of recognizing and classifying them) a deeper, and usually more serious and complex problem. Therefore the first task is to train problem solvers in recognizing the visible part of the problem, i.e. symptoms, and to then react timely and correctly (approach the management or solving of problem situations). (Rosi, 2004, 2008, 2015)

### **System approach as a condition for sufficiently holistic adaptation of innovations fourth industrial revolution**

Our past, our present and the ensuing actuality, and our future are parts of our world; if we so choose, we can realistically look at them as an interwoven– networked system (i.e. a complex whole and its mental representation, developed from a chosen perspective or dialectic system of perspectives). There is an enormous discrepancy between what there *used to be* and what there *will be* (or what we wish for in the future), since the effect of human action has become increasingly intense and global (globally interwoven). Due to its scope, the world is in state of constant change. We are continuously presented with new problem situations and the need to look for adequate solutions; both problem situations and solutions share

common characteristics, among them complexity (i.e. intricacy, as affected by interrelation) and dynamics.

The *traditional definition* reads that a system is a complex or very complex feature made of a set of elements and a set of their relations; it may have an environment and relations with it, as well, or not. Due to relations, and hence interactions – a system is more than a sum: the whole system has properties, which single elements do not have: it has *synergies*. In mathematical terms, a system is an ordered set and systems form a hierarchy (Schiemenz, 1994).

The point of the original introduction of the system's concept was an *end of the oversight of synergies* that result from interdependencies. The systems view's holism replaces one-sidedness due to which the Humankind has suffered terribly forever and especially in the first half of the 20th century (two world wars, world economic crisis in-between, poorly working complex products, etc.). Decades of application of such a concept of the 'system' demonstrated that it is a good concept in its very general, philosophical contents, but its aim is hardly attainable if no *methodology supports holism well enough*. This fact demands human attitudes and behavior to change – a narrow specialization is still unavoidable, but no longer sufficient, it oversimplifies. (Mulej, Zenko, 2004; Mulej et al, 2007; Rosi, 2004, 2008, 2015; Rosi, Mulej, 2006; etc.)

What we humans need, is both a narrow specialization and (the requisite) holism achieved by interdisciplinary cooperation backed by ethics of interdependence.

If the selected approach causes an *exaggerated simplification*, the usual oversight causes *complex consequences*: it is *not reality*, which is simplified, but only human dealing with it. That's why we must be able to be systemic in our thinking, feeling and acting. But, systems theory has never been able to become a mass movement instead of being a rather closed-in science worked on and used by a few only (Molander, Sisavic, 1994). There were several attempts to solve the said problem such as the General Systems Theory, Cybernetics, Soft Systems Methodology, Living Systems Theory, Viable System Model, Fuzzy Systems Theory, Critical Systems Theory, Autopoiesis, to name but a few. Each of them made a different contribution.

We seldom approach the various, more or less complex problems of our everyday lives in a systemic manner (Rosi, 2015). Instead, we prefer to focus

on the resolution of selected parts of problems and consequently ignore their comprehensiveness; this leads to sometimes dangerous oversimplification of the perceived problem. The emergence of a new problem situation, such as Industry 4.0 and management of logistics, may consequently surprise us and further incapacitate us, so that we are not able to control it, let alone resolve it. This leads to diminished effectiveness and success.

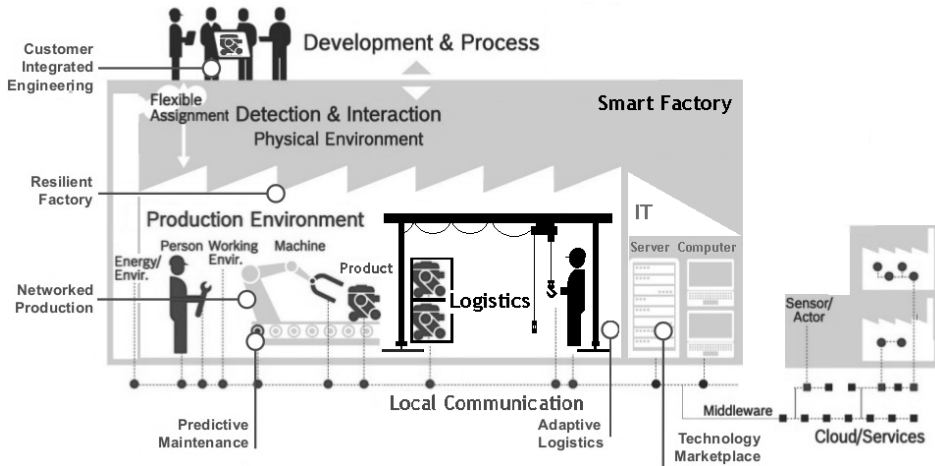
As evidenced by the development of science and technology, especially in today's dynamic environment, matters are further complicated by the fast growth of various complex phenomena. We are witnessing a pronounced rise of seemingly incomprehensible and unmanageable complex systems. Continuous watershed changes, such as for instance the Industry 4.0 and management of logistics, fundamentally affect our social and economic systems. In today's globalized world we cannot allow ourselves *not* to think systemically, i.e. holistically; we need to recognize the characteristics of potential problem situations. It is important for us to knowingly and willingly define subjective and objective foundations for the managing and resolution of complex problematics and to thus enrich our resources of knowledge and processes available for problem solving.

### **Intralogistics 4.0**

The development trend of intralogistics, in a variety of industries, is based on the development of new technologies, the introduction of Information and Communications Technology (ICT), the concept of the "Internet of Things" (IoT) and the concept of Industry 4.0. Using an interdisciplinary scientific approach implementing advanced and environmentally friendly technology, these elements together create the condition for new possibilities and dimensions (Figure 2).

The future of manufacturing companies lies not only in the development of new products. Markets and competition also require the development of excellent services that lead companies to realize or even to anticipate the needs of buyers well in advance. During intermediate stages, companies strive to optimize the utilization of partners' transportation / storage resources. In order to develop a logistics system that runs these services, it is necessary to begin in the core of the enterprise, where this is called as intralogistics system. The development of intralogistics systems represents a great opportunity for industry, as through the simultaneous rearrangement of production and intralogistics systems and the use of new technologies, companies substantially increase their competitiveness on domestic and foreign markets.

**Figure 2** *A smart manufacturing system of the future*



The modern development of intralogistics 4.0 requires the simultaneous treatment of production and storage infrastructures, transport-warehouse techniques and technology and information support based on a company's material flow. Industry requirements guide scientists to integrate environmental protection standards, ergonomic principles, occupational health and safety standards as well as social and economic impacts within models. Due to the contributions of organizing intralogistics in manufacturing enterprises to lower costs and improve customer satisfaction, the demand for transport-warehouse processes optimization by manufacturing companies is growing. In order to meet this demand, there exist many opportunities for research work. For example, analysing the application of different types of automated systems into Intralogistics 4.0.

### **Case study – the application of automated warehouse systems into Intralogistics 4.0**

#### ***Crane-based automated storage and retrieval systems***

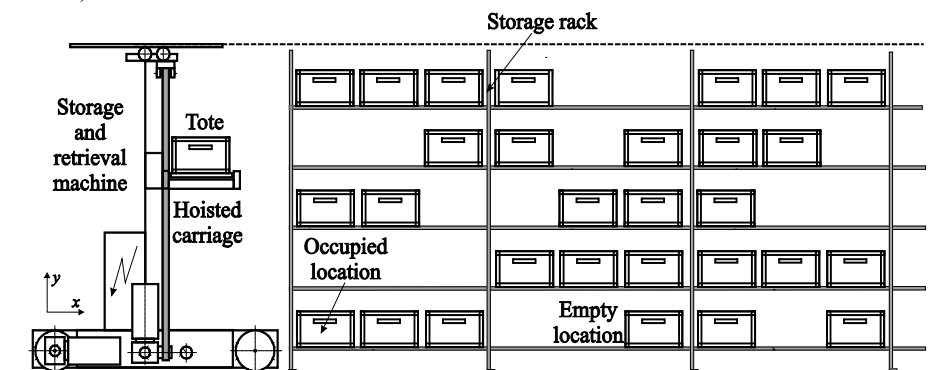
Crane-based Automated storage and retrieval systems (AS/RSs) exist on the market for nearly 50 years or more. Crane-based AS/RSs can be divided by unit-load AS/RSs for manipulating SKUs and mini-load AS/RSs for manipulating totes. The basic components (Figure 3) of mini-load AS/RSs are Storage Racks (SR), Storage and Retrieval machines (S/R machines), Input and Output (I/O) locations and accumulating conveyors (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

The main advantages of the application of mini-load AS/RSs are: Efficient utilization of the warehouse space, reduction of damage and loss of goods, increased control upon storage and retrieval of goods and decrease in the number of warehouse workers (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

Due to the well-known advantages of mini-load AS/RSs a high initial investment is necessary for the success of such systems. In the total initial investment in mini-load AS/RSs alone S/R machines represent approximately 40% or more of the cost (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

From the material handling point of view, the mass of the S/R machine is relatively high compared to the mass of the tote that is being carried by the hoisted carriage. The latter has an impact on the high energy consumption distributions (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

**Figure 3** *Mini-load automated storage and retrieval systems (Lerher, 2016a).*

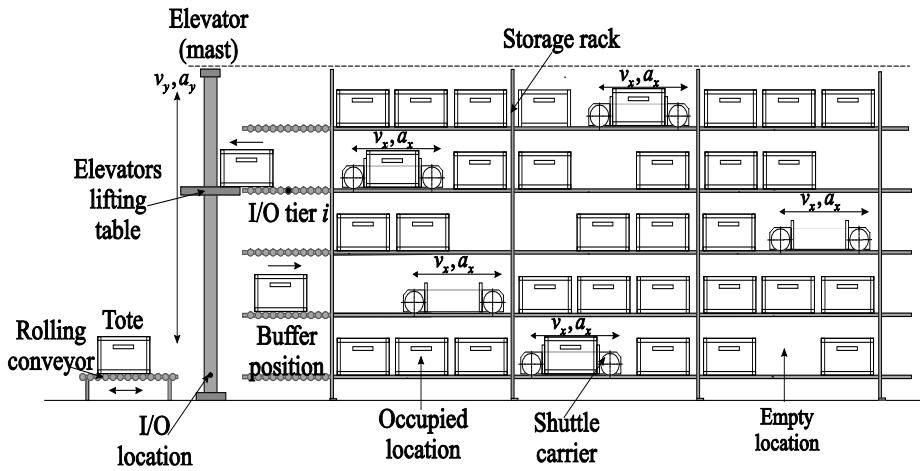


For these reasons, major material-handling providers have introduced to the market new technology, which enables higher throughput, flexibility and scalability.

### ***Shuttle-based storage and retrieval systems***

Shuttle-based technology is a special design of an automated warehouse, which is assembled with an elevator with a lifting table, tier-captive shuttle carriers and the storage rack (Figure 4).

**Figure 4** Shuttle-based storage and retrieval systems (Lerher et al., 2016a).



Shuttle-based storage and retrieval systems (SBS/RSs) are engaged with the elevator (elevator's lifting table) and shuttle carriers for feeding the storage rack.

The elevator's lifting table provides vertical movement for totes to reach the buffer position in the  $i^{\text{th}}$  tier of the storage rack. The elevator's lifting table can reach a velocity of up to 5.0 m/s. Elevators are usually the bottleneck in the SBS/RS, therefore they determine the performance of the SBS/RSs as a whole (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

The shuttle carrier is an autonomous vehicle that transports totes from the buffer position to the  $i^{\text{th}}$  storage locations in the storage racks. The shuttle carrier is equipped with telescopic attachment for manipulating totes in the storage rack. The maximal payload of a tote should not exceed 50 kg/shuttle carrier. A shuttle carrier can reach a velocity up to 4.0 m/s or more (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

In SBS/RSs, there is usually a shuttle carrier in each tier of the storage rack. There are two buffer positions, each serving one side of the storage rack at each tier. These positions are used for buffering totes moved by the elevator's lifting table for the storage process and by shuttle carriers for the retrieval process (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).



The storage rack is composed of storage columns and tiers. By multiplying storage columns in the horizontal and tiers in the vertical direction, the length  $L$  and the height  $H$  of the storage rack are achieved (Lerher, 2016a; Lerher et al., 2016b; Lerher et al., 2015a; Lerher et al., 2015b).

### *Performance measures compering both technologies*

In continuation, performance measures compering both technology in practice will be presented and discussed.

**Table 1** *Performance measures compering both technologies*

Performance measure	Mini-load AS/RSs	SBS/RSs
Flexibility	low	high
Scalability	medium	high
Throughput	low	high
Utilization	high	high
Energy consumption	high	low
Investment cost	medium	high

As for the flexibility, mini-load AS/RSs show low level of flexibility, since these systems are relatively inflexible under future changing in throughput capacity and warehouse volume. On the contrary, SBS/RSs show high level of flexibility, since we can easily added more shuttle carriers into the system, if needed.

Regarding the scalability, SBS/RSs show high level of scalability, since we can enlarge the storage rack by adding more tiers and columns. This is not the case for the mini-load AS/RSs, since the height of the storage rack depends of the height of the S/R machine, which is fixed.

Concerning the throughput performance, SBS/RSs can reach up to 1000 totes/hour (depends of the geometry of the storage rack, velocity profile of the elevator's lifting table and shuttle carriers, storage policy, etc.) compared to mini-load AS/RSs that can reach up to 140 totes/hour.

Both systems work with high utilization.

Regarding the energy consumption, mini-load AS/RSs consume more energy (electricity) for travelling of the S/R machine in the horizontal and moving of the hoisted carriage in the vertical direction. On the contrary,

shuttle carriers weight a lot less compared to the S/R machine, therefore SBS/RSs consume less energy (electricity). For this reason, SBS/RSs are energy efficient and friendlier to the environment than mini-load AS/RSs.

As for the investment cost, SBS/RSs require more investment in the equipment (hardware and software) compared to mini-load AS/RS.

From the above analysis of the performance measures, SBS/RSs overcome mini-load AS/RSs. SBS/RSs are flexible, scalable, energy efficient, work with high utilization and produce high throughput capacity. The only weak point, why these systems are not used more often in practice, is relatively high investment cost. It is believed that in several years SBS/RSs will take the advantage over the mini-load AS/RSs and will be used more frequently in Intralogistics 4.0.

## **Conclusion**

In this paper, the fourth industrial revolution as a challenge of intralogistics management is presented by utilising the application of automated warehouse systems into Intralogistics 4.0.

We wanted to stress that the various methods have been developed for solving systemic problems emerging from the complexity of the whole. They mainly differ on the level of actualization or in their applicability to various groups of systemic problems. However, specific methods emerge from very similar basic principles; they use similar models and complement each other.

With new technology introduced by the fourth industrial revolution, businesses and other organizations will becoming increasingly difficult to control. This means that the number of their basic and peripheral parts – system components and environment – continues to grow and with it the variety of their possible interrelations. This will require new managerial skills (competencies) needed for the training and motivation of employees (potential problem solvers) for the opportunities posed by the fourth industrial revolution. This calls for the establishment of effective problem solution processes, which, unfortunately, also implies the possibility of mental mistakes being made, either willingly or unwillingly. The appearance of mental mistakes may lead to crisis and its potential failure. Practical experience and research show us that current major crises are the result of decision makers, no matter the degree of their training or

ambition, failing to holistically recognize the systemic nature of specific fields of action and the probability of emergence of systemic mistakes. This is often the result of a lack of familiarity with systems thinking and action, which will require a fourth industrial revolution.

In the proposed case study we originate from automated warehouse systems known as mini-load automated storage and retrieval systems and shuttle-based storage and retrieval systems. Various performance measures (factors) have been examined, such as: Flexibility, scalability, throughput, utilization, energy consumption and investment cost, in order to investigate the efficiency of the proposed automated warehouse systems.

According to the performance comparison, SBS/RSs overcome mini-load AS/RSs, since these systems are flexible, scalable, energy efficient, work with high utilization and produce high throughput capacity.

The proposed findings could be of considerable help to professionals in practice, when making decisions in the early stages of design (warehouse) project and when deciding which type of material handling technology (mini-load AS/RS or SBS/RS) will be most promising.

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# INNOVATIONS IN COMPUTER SCIENCE TEACHING USING DISTANCE LEARNING

*Dragan Soleša<sup>1</sup>, Snežana Anetić<sup>2</sup>*

## **Abstract**

*With the rise of information and communication technologies, and especially the Internet and its services, obstacles such as time and space are no longer an issue. Knowledge and information are at your disposal quickly and easily, stored on servers worldwide. There is a new problem, however. There is no lack of information, as before, but there is a surplus of information, and to solve this problem we need new knowledge and skills. The purpose of this paper is to set up an understandable and acceptable foundation for working on the demanding and responsible job of introducing e-learning into the teaching process. This paper also discusses the key aspects of e-learning, as well as the tools needed to develop and improve the educational software.*

**Key words:** *e-learning, net-generation, Moodle, LMS, m-learning*

## **Introduction**

Establishing information society and knowledge society brings about new challenges for the system of higher education. How to keep the continuity of traditional values that are provided through university education, while at the same time respecting and incorporating new forms of knowledge and skills, demanded by today's student and their future employers? The questions of the quality of education, the efficiency of the educational process, as well as relevancy and sustainability of knowledge that is the result of the process of education are today at the forefront when it comes to changes brought about by the Bologna process, throughout Europe and in Serbia, as well.

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At the same time, the systems of higher education are facing the problems of limited financial and physical resources, and an accompanying rise in the number of students and educational groups. At the same time, it is expected to provide more attention to each student and secure the individual approach in team and project work environment, and all this without a real possibility to increase the number of teachers.

Apart from globally recognizing the importance of knowledge and education, one cannot disregard the fact that they have become global, just like the processes linked to them, competitiveness in the field of education and the market of knowledge and education, as one of the most important markets of today (Clark, 2012).

On the other hand, information and communication technologies (*ICT*), especially e-learning technologies, offer new possibilities and secure the advancement of the educational process and its results. These technologies can ensure new strides being made in quality, scope and variety of educational content, as well as the efficiency of progress measurement and educational quality supervision. The application of e-learning contributes to the standardization of the educational process, ensuring the equality of the scope and quality of knowledge gained by the students during their education (Soleša, 2006).

E-learning technologies can improve the efficiency of teaching and learning, as well as the efficiency of using the existing human and material resources, especially in cases where a large number of students are at a satellite campus.

New technologies have become a part of our everyday lives, and this is why the social pressure for them to efficiently integrate into educational process is on the rise. This pressure is justified also due to technologies (and especially e-learning technologies) being the most perspective medium for achieving lifelong and constant education of the citizens in an information society environment. This is another serious reason why we should expect and plan for the use of these technologies to become a standard in higher education, thus ensuring that the knowledge and capability to use e-learning technology become an integral part of every citizen's basic literacy (Clark, 2011).

There is no generally accepted definition of e-learning, however, the one used most often is the one defining e-learning in the broadest of senses as any kind of learning (education) supported by information and communication technology, with the goal of using ICT to advance the process of teaching and learning and improve the quality of the results of the education process.

Practice and experience collected over the years at many universities in the world point to the existence of various models and shapes of e-learning, differentiated according to pedagogic models they are based on, as well as teacher/student roles and responsibilities, physical location and temporal compatibility, and ICT application level. In practice, the hybrid models of e-learning have proven the most optimal (in accordance with real situation).

A good and proper strategic positioning and planning of e-learning as an integral part of the education process, as well as a quality and sustainable system of e-learning support have a crucial influence on the success and results of introducing e-learning in higher education. Bates (Bates, 2000) states the following in his *“Managing Technological Change: Strategies for College and University Leaders”*:

- The use of ICT and e-learning technologies has to be efficiently and directly connected and adjusted to the set educational (pedagogical) principles and goals in every concrete case;
- The decision on using e-learning has to be a strategic one, made by the university in the context of a general strategy of action and development of the university;
- Necessary resources need to be allocated for the application of e-learning, and the process of introduction and application has to be supported and continually supervised by those responsible;
- Use of technology must be simple and adapted to real needs of teachers and students alike, which is possible and necessary to achieve through a solid system of e-learning support;
- For a systematic application of e-learning at university level and achieving long term breakthroughs, a system of technical (ICT) and other (i.e. methodological, pedagogical) type of help and support must be established that will be stable, sustainable, reliable, efficient and accessible to both teachers and students;

Significant changes have been instigated at Serbian universities, based on the principles and goals of the Bologna declaration. Many important questions of principle need to be analyzed, such as the quality of education and training of students regarding the needs of the modern society and employers. This also includes practical questions that arise from the limited financial, material and especially human resources of the universities. Properly applied technologies of e-learning can enable and instigate processes in higher education, and make them significantly easier. Also, we have to emphasize that the inadequate use of e-learning technologies can bring increased resource spending without corresponding results.



The analysis of existing experiences and different approaches to e-learning introduction in the world, as models for the transfer of these experiences and creation of strategies and plans adapted to the specific conditions and needs of the Republic of Serbia can be directly useful for all the universities in Serbia that are rethinking their development and long-term activities.

To go from where we are now, with sparse positive examples at our universities, to the state of systematic and efficient use of e-learning at the level of the university and the entire higher education system, it is especially important to find and define adequate and appropriate goals, strategies and plans, while at the same time establishing a high quality, sustainable system of e-learning support.

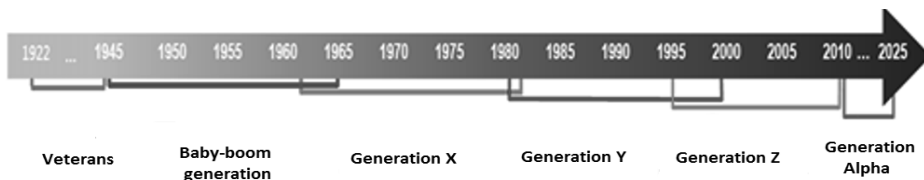
### The Net Generation

Generation is a group of people defined by their age, i.e. these are people born during a specific time period, who grew up in a similar way and had similar experiences, so that their values and attitudes are similar. Numerous authors (Harrington, 2009, King, 2009) agree on that there are five basic generations of employees:

- Veterans (the Quiet generation)
- Baby-boom generation (Boomers)
- Generation X (the lost generation)
- Generation Y (the Internet generation)
- Generation Z (known as Generation 2020)

Newer papers from the field of managing different generations also state the newest generation, Generation Alpha (Grail Research, 2011). Considering that the members of Generation Alpha were born after 2010 and there are no scientific papers regarding their particular traits, therefore this generation will not be paid attention to in this paper. Fig. 1 shows the timeline of different generations.

**Fig. 1** Graphical representation of the years of birth of the members of specific generations



**Source:** Grail Research Analysis, 2011.

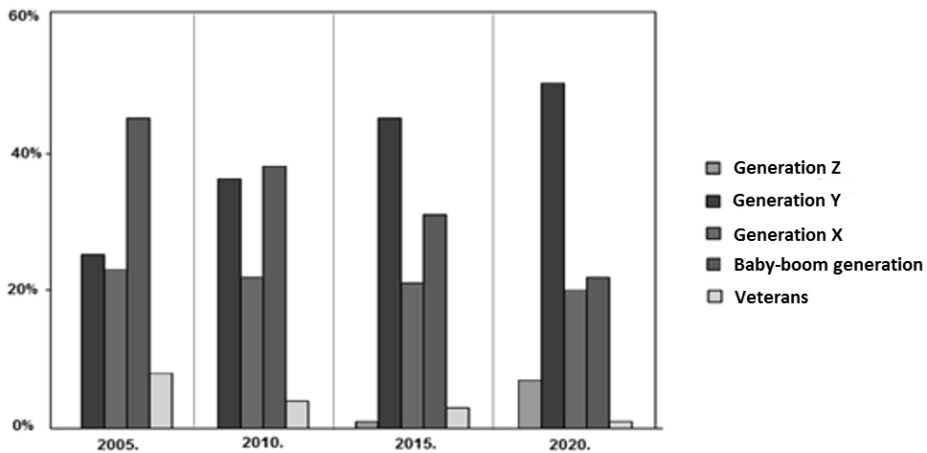
Authors of the paper on managing different generation cannot agree where a certain generation starts and finishes (Fig. 1). Zemke, Raines and Filipczak explain that there are no strict timeline borders for the end of one generation and the start of the other. Some authors still mention the following periods that mark particular generations (Zemke, Raines and Filipczak, 2001):

- Veterans – born in the period of 1922-1943
- *Baby-boom* generation – born between 1943 and 1960. Born in the period of exceptional optimism, great opportunities and progress.
- Generation X – born in the period between 1960 and 1980, at the time when the *Asian tigers* progressed: Hong Kong, South Korea, Singapore, Taiwan.
- Generation Y – born between 1980 and 2000. Grew up in a highly technological, optimistic times.
- Generation Z – born between 1995 and 2010. Grew up surrounded by information and communication technologies (Levickaité, 2010).

Today's generation of pupils and students belongs to the generation born at the time of the Internet. Contemporary psychologists, sociologists and pedagogues mark it as Y or Z generation (Prensky, 2001). This generation started to use the computer between the age of 5 and 8, while at the age of 16 to 18, almost the entire generation started to use the Internet (Jones, 2002). In the USA, the exposure to technology starts early, kids who are 6 years of age or older spend on average 2 hours a day using electronic media (TV, computer, video-games), which is almost equal to the time spent playing outside of the home. The mentioned activities dwarf the time spent reading (39 minutes). It is worth mentioning that students usually use more than one kind of media at the same time. For children and teenagers it is normal to be on the Internet, communicate via social networks or their phone, watch videos and listen to the radio. Over 2 million American kids aged 6 to 17 have their own Web-pages (Montana&Petit, 2008).

Graph. 1. Shows the number of employed people according to the generations stated above in USA in 2005 and 2010, as well as future predictions for 2015 and 2020.

**Graph 1** *Five generations in workplaces in the USA*



**Source:** *Bureau of Labour Statistics Employment Projections, 2007. According to Meister and Willyerd, 2010.*

Currently there are four generations present in workplaces, placed into four categories according to different experiences and values. Never in human history had it happened that four very different generations had to work together (Yu&Miller, 2005). The skills and potential do not correlate with age and experience, and this makes the respect towards unique ideas and perspectives of others is more important than ever (King, 2009).

Differences between generations can bring about the necessary heterogeneity at the work place, but can also cause potential conflicts and complications when employees of different generations have to work together (Stevens, 2010). This is exactly why good management of different generations is so important. Many organizations have started organizing various activities in order to overcome the generation gap (Hudson Jordan, 2010).

Along with the necessary heterogeneity, today’s organizations have another goal, which is attracting and keeping the best work force. The way in which companies manage different expectations, career needs, communication styles and employee preferences definitely influences how well they will attract, develop, engage and retain top talent. It is important to understand each generation, as well as the challenges that generational differences bring. Understanding each generation is of utmost importance, because only this kind of employers can adapt to multigenerational workforce and

attract high quality workers as the war for the best workforce is reaching its peak (Meister&Willyerd, 2010).

## **E-learning**

E-learning, or electronic learning, has been around for more than a decade, as learning which is amplified and made easier through the use of Information and communication technology. Technology of communication allows for the use of the Internet, e-mail, discussion groups and the system of collaborative learning. E-learning is used for long-distance studying, through Intranet network, and can be considered a part of flexible studying. When studying is done exclusively over the Internet, then it is online learning. When studying is done via mobile devices, such as mobile phones, laptops and similar portable devices, then it is called m-learning. Mobile learning (m-learning) and learning over a network (online learning) are two subsets of electronic learning (e-learning). All three of these sets belong to long-distance learning. As opposed to distance learning, learning in a classroom (face-to-face) provides the contact between the teacher and the student, and it is also known as contact learning. In practice, each of these types of learning is combined with learning in a classroom, providing a mixture called flexible or hybrid learning.

Electronic learning systems such as Moodle ((Modular object – oriented dynamic learning environment, <http://www.moodle.com>) offer learning solutions which are student-centered, built on socio-constructivist pedagogy. Students construct their knowledge through discussion, improving their thinking skills. Technological advancement made possible the creation of better, web-based, collaborative learning solutions. Asynchronous activities use the technologies such as blog, wiki, discussion groups and allow participants to cooperate when they are available. Synchronous activities happen to all the participants gathered in the same moment, such as chat-sessions, virtual classrooms or conferences (Rice, 2015).

E-learning is a term describing the educational process improved through the use of ICT. It is any form of learning, teaching or education that is helped primarily by web-based technologies. E-learning contains different aspects of ICT use in education: from simple use of computers in traditional classrooms (PPT presentations, computer simulations of processes, multimedia presentations, using Web content, and the like), through ‘transient’ or ‘hybrid’ teaching that uses both the direct classroom contact and online activities, to an online-only teaching where all the

activities of the teacher and the student are done without physical contact. It is important to emphasize that when we talk about defining e-learning, we talk more and more of a qualitatively new education that will provide an interactive or two-way process: teaching that will be student-centered (and not teacher-centered) and encourage active adoption and application of new knowledge, as well as joint cooperation between students and teachers.

E-learning provides numerous advantages for both the student and the teacher. Students are allowed flexibility in terms of time and space, as they can use the learning materials anywhere and at any time, which brings education to those who cannot normally visit the classroom. Learning becomes personalized, and all the relevant learning materials quickly available. Interactive learning content is used (simulations, online knowledge tests), as well as various media for content presentation (text with images and sound, video, animations, simulations, etc.). The interaction between the student and the teacher which is done via the computer is often more direct and intensive than classroom communication. Apart from communication, group work is also encouraged, which develops social and communication skills and brings the constructivist and collaborative principles of learning to the forefront. The teachers also take advantage of the flexibility regarding their time and location when teaching, with an easier way to communicate with the students and direct their work, as well as ensure a high-quality, more creative manner of achieving the set educational goals. Learning content can be updated easily and quickly, with the addition of newest findings and relevant information (Arshavskiy, 2013).

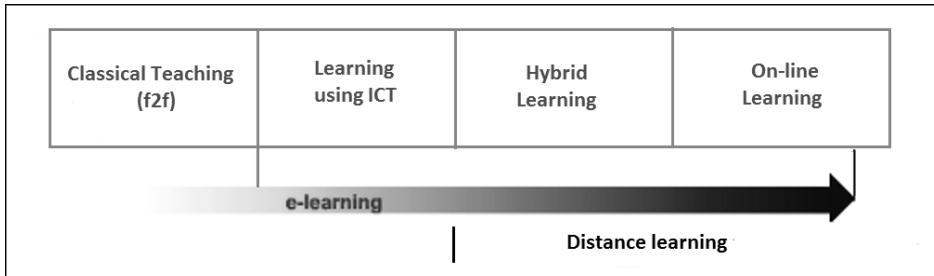
E-learning as a way of education existing at several levels: as a fully independent form, as well as an integral part or addition to classic education. Classification is mostly done based on the degree of differentiating it from the traditional learning strategies. Commonly, two approaches are mentioned:

- **Hybrid education** or a transient form of teaching (hybrid learning, mix-mode) – a combination of classic classroom teaching and teaching with the help of ICT.
- **E-education** (e-learning) – form of teaching where students learn independently and online.

Extended classification or ‘timeline’ of e-learning shows education as a continuum, with the left end reserved for classic or traditional teaching (f2f, face-to-face teaching). The step towards e-learning starts with the

introduction of ICT to f2f teaching. This is the most ‘primitive’ form of e-learning and it includes, for example, using a PowerPoint presentations when teaching in the classroom or using web pages with information regarding a certain subject. The central part of the ‘timeline’ regarding e-learning is occupied by hybrid teaching or the transitory approach to teaching. Online education as an independent form of teaching is located at the right end of the continuum (Fig. 2).

**Fig. 2** *The e-learning continuum*



As Fig. 1. shows, e-learning and distance learning are often the same, although it has to emphasized that these are not the same forms of education. There are types of e-learning that are not done online, while there are also forms of distance learning that do not use ICT. Going from the left to the right on the ‘timeline’, e-learning is increasingly using ICT in educational categories (Elkins, 2015).

E-learning includes many different technologies and ways of communication between the student and the teacher, and this paper will present three types of e-learning:

1. Electronic learning done in the classroom with both the student and the teacher present. There are developed programs, some of them using for presenting the material without interaction, others with interaction – such as programmed tests – and the third option is to turn on the control of student’s computers.
2. Independent use of prepared materials that are at another location. With this type of electronic learning, the materials are given to students on a flash drive or optic disk or the student uses them via Internet. This type of learning is an addition to classic teaching done in the classroom and it is known as blended learning or mixed more.
3. The entire learning process is thought out in such a way that it is done entirely online, and this means e-learning becomes one of the forms of distance learning. This is where Internet solves the problems of

communication between the institution and the student, as well as the distribution of materials in a comfortable way. This is the solution of the modern age, accepted by both the institutions and students.

We can say that two forms of e-learning that belong to the third type are trending today, and these are: Learning Management System (LMS) and videoconferencing via Internet. LMS is a system for managing the e-learning environment and it allows the following:

- Introducing e-learning participants into the system, as well as their organization through group membership
- Introduction of SCORM compatible interactive or passive content
- Organization of students, content and mentors per classes,
- Communication between participants
- Online teaching, testing, tracking, and statistics of working with groups of students

Videoconferences imply a two-way, simultaneous (synchronized) transfer of sound, picture and other data between two or more remote locations. Videoconferencing systems can be divided according to the number of participants into personal and group systems, which demands differently organized technical systems. Personal ones demand a personal computer, while the group videoconferences are done from specialized areas – classrooms for remote teaching – TCR (TeleConferencing Rooms). Group systems allow for a large number of participants, while the personal systems have a limited number of participants.

### **Development of e-learning technology**

In the beginning of the development of e-learning in higher education institutions, e-learning mainly served as a place to store the virtual student and ‘digital textbooks’. The teacher had difficulties updating the material on the server, and it was carried out using a manual method of content preparation in an HTML tool. PowerPoint presentations used to be converted into HTML pages. All the materials had to be transferred to the server via an FTP client. Communication between students was mainly performed via e-mail, and later in forums. Later, better solutions for content management systems started to appear, with the ability to change parts of the content on the server. The next step in the development was the emergence of systems that enable user/student registration, thus limiting the number of users to participants of the courses. Later developments include integration of system usage information, which made it possible to

keep track of when and what users of the system used. Such systems, which manage e-learning environment, are called LMS (Learning Management System) systems.

### *Courseware tools*

It is impossible to imagine E-learning today without courseware tools. They are not a substitute for traditional books and textbooks, but only a supplement in the classroom. Courseware tools serve to provide a clearer presentation of the material, a different way of systematization of knowledge and a place for communication. They will never replace the communication with a 'human being'. All those tools depend on the teacher. If the teacher is good, they will help them be even better, if the teacher is bad, they will not help them get better, unless they work on materials, presentation methods and adjustment to the new medium. One definition of courseware tools is: Educational software designed for education. The term was coined by blending 'course' and 'software'.

All courseware tools consist of two parts: a space for the teacher and a space for the student. These two spaces are connected by knowledge. The space for students is designed for the best presentation of knowledge, while the space for teachers is optimized for the best knowledge input into this space. Further division of the space for teachers is: space for an author, a system administrator and a lecturer. A person who is the author of the material is not necessarily the person who will teach. People who are authors of the material are usually textbook authors and other people can help them with the input of the material, in case they do not possess sufficient computer skills. A new profession has been established in the world (designers of educational media) and specialists in this field are skillful in the adaptation of teaching materials to courseware tools. The role of a teacher is to teach the material, encourage communication and work with students to help them better understand the material.

The teacher can use the more advanced features of these tools to monitor students' progress, teach material by employing synchronous communication or participate in discussion groups. In order for those tools to work properly, an administrator is necessary. They are skilled in maintaining software and hardware equipment. The administrator monitors the operation of the entire system, assigns permissions to users and creates backups. Today, many courseware tools are available in the market, both commercial and free. Two best free tools are: Moodle and Claroline.



They allow the input of the desired content, displaying it to participants, discussion groups and assessment tests. Commercial solutions are very expensive, and are in accordance with the standard for data exchange. Some of the better known are: WebCT, BlackBoard and IntraLearn.

### ***E-learning standards***

Standards allow for a fast and painless transition from one courseware tool to another. Standard is very important in e-learning; it should be respected in order to avoid the situation in which some educational content developed in one tool is lost because the software maker discontinued it, which happens in the market. Currently, there is a number of standards in the market for exchanging content between courseware tools, but the most popular is SCORM (Shareable Content Object Reference Model) which represents a set of technical specifications based on the work of the AICC (Industry CBT Committee), IEEE LTSC (Learning Technology Standards Committee) and the IMS Global Consortium, and the idea was to create a single 'content model'. Specifications are developed through the SCORM initiative, a standard is still being developed and distributed by ADL (Advanced Distributed Learning) organization.

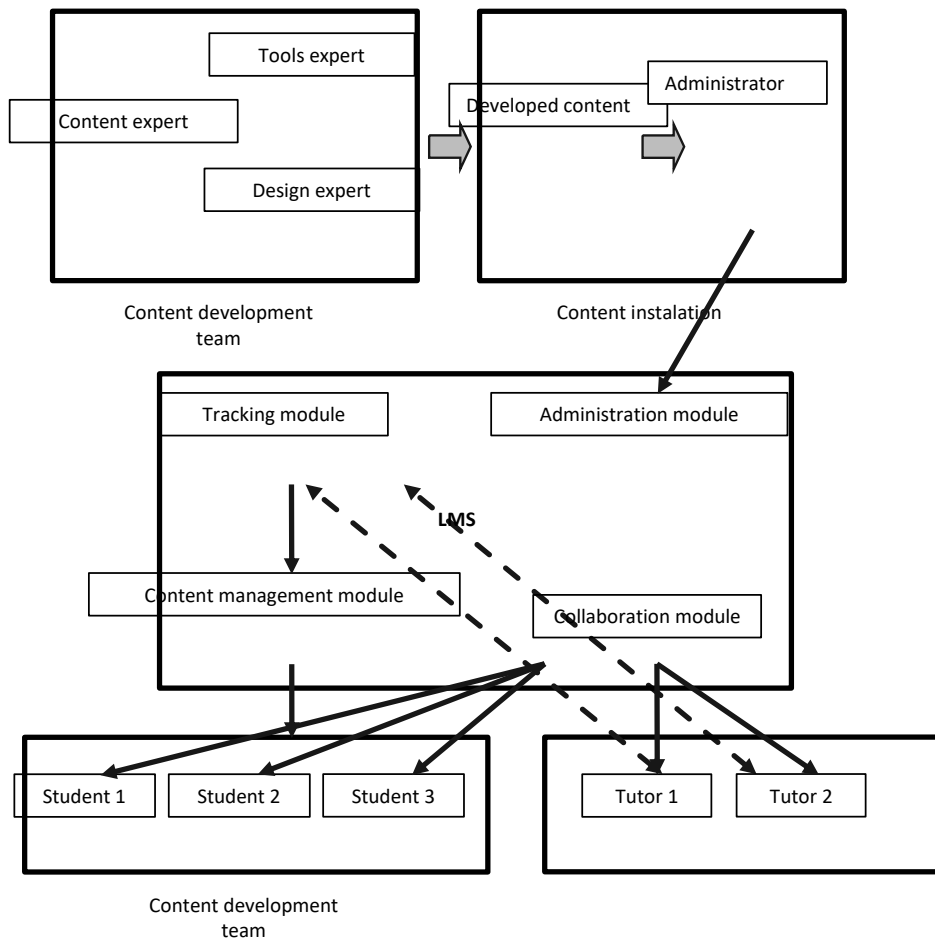
SCORM is a standard which enables the system for internet learning to import, export, use, share and find content in a standardized way. There are programs on the market that allow SCORM entry in accordance with the content, so it is not necessary to enter the content directly into the tool, which is sometimes challenging. IMS Global Learning Consortium has launched the project called the National Learning Infrastructure Initiative, sponsored by Educause, an organization for the promotion of educational technology. Today IMS has grown into an international organization for formal and corporate education.

### ***Learning Management System (LMS)***

Located at the top of the pyramid in the structure of e-learning. Today, no serious e-learning system can be imagined without such complex software. It enables the delivery of learning content, monitoring, reporting and administration of learning content, monitoring the students' progress, communication between mentors and students as well as among students (Figure 3). LMS features are: application and billing, testing, process control, user functions, monitoring and tracking and administrative functions (Horton, 2011).

Application and billing feature enables authorized application and verification of the application, and conducts billing (in case of public portals). The testing function is carried out through quizzes related to lessons, and tests, related to more lessons together. The function of managing the process of training refers to the modules, lectures and seminars. User functions allow users to plan and monitor their own development (communication with tutors and other members of the group, access to account status, online help, dictionary, and so on). Monitoring and tracking allows for picking members of the virtual class, monitoring the progress of each member of the group, communicating with all members of the virtual class. Administrator functions include activities such as content control, record keeping, backing up, reporting, and the like.

**Figure 3** *E-learning and LMS*



## *Moodle*

As the world's most popular and widespread educational platform, Moodle is placed among the top open source projects. Developer communities around the world contribute to the development of Moodle by adding new code and plugins every day. Excellent organization of comments within the code and its documentation by partner development programming communities outside of Moodle contribute to innovation in the field of development of educational software.

One of the innovative trends in Moodle is the introduction of badges for students. Functionality and application of badges as rewards for participants for achieving a high score on the basis of specified criteria and levels of knowledge encouraged the students to develop competitiveness, a better concentration and rigor in the application of knowledge. Badges are placed by teachers on the students' profiles and they are publicly available for all to see. There are two types of badges: at the level of Moodle website, which are used based on the activities of participants in all courses and at the level of the course, where each participant is awarded for the result achieved within a specific course.

Another way to motivate students, which proved to be the second most effective way, is to introduce games to Moodle. By installing the game plugin, teachers are able to motivate course students through game and development of competitive spirit. Some of the available games are crosswords, sudoku and Who Wants to be a Millionaire. The content of each game is exclusively linked to the subject to be treated in a given course. Motivation of the students increased by the wish to score the best results, the possibility of leveling up and, in case of a wrong answer, additional opportunities to repeat the current level, led to remarkable developments in online learning.

With the development of mobile technology and m-learning, Moodle also developed learning on the mobile phone as a way to motivate the students. The application is available for Android and iOS. The idea behind it is that participants do not have to be at their computers to learn. At any time, via a wireless network or mobile Internet, they can log in to their Moodle account and access the content of the course. As an improvement to m-learning, the participants are given an opportunity to use their mobile phone to post images, audio and video recordings as well as to add communication channels with other participants and teachers.

## Conclusion

The traditional approach to teaching as a way of acquiring knowledge by transferring knowledge from the teacher to the student has weaknesses and shortcomings, especially due to the lack of encouragement for students to actively acquire the knowledge. The education system should raise the interest of students for independent learning and prepare them for lifelong learning that comes up as a necessary precondition for successful operation in the future knowledge society.

Although it is very often the case that students have more command over ICT skills than their teachers, international experience shows that the lack of ICT skills among teachers is not the main problem in the implementation of e-learning. The biggest problem is most often the lack of institutional vision and definition of guidelines for the use of new technologies in teaching, as well as the lack of adequate technical and professional support to teachers. It is, therefore, necessary for all levels of the education system (strategic, tactical and operational) to adopt a strategic document that will determine what is to be achieved by introducing ICT into the education process and developing a system of technical and professional support to teachers in the implementation of e-learning.

Establishing virtual universities, which offer full online education and obtaining qualifications through e-learning is the current world trend. These universities were often formed by the modernization of correspondence forms of teaching, and due to geographical features they have a long tradition and are very numerous in the United States and Canada. However, in recent years, the introduction of the system for distance learning and online education opportunities, there is a worldwide increase in the number of students who live far from educational institutions. E-learning and developed e-learning platforms, such as Moodle, encourage and motivate young people, as well as the elderly, to continue education.

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# ARE FARMERS READY FOR CHANGES THAT INTERNET AND SOCIAL MEDIA BRING?

*Maja Ćirić<sup>1</sup>, Boris Kuzman<sup>2</sup>*

## Abstract

*There are more and more scientific researches and practical experiences which prove the fact that the agricultural sector is changing due to the advancing information technologies and the internet. Innovations such as mobile telephones, social media, agricultural drones, Internet of Things (IoT), big data, and cloud computing presented new challenges and opportunities for agribusinesses. The role of the Internet and social media becomes more and more important, especially in the diffusion of knowledge and innovation within the agricultural sector. Having in mind these trends in agriculture, we wanted to find out whether and to what extent farmers in Serbia use Internet and social media. The preparation of this paper involved using the survey method on a sample of 167 respondents on the territory of Serbia. The results that we obtained helped us check whether farmers in Serbia have made the first step in the improvement of their agribusinesses. Naimely, we discovered the extent to which they use Internet and social media and whether they are ready and sufficiently prepared for the changes they bring.*

**Keywords:** *Internet, Social media, Innovation, Farmers, Agriculture*

## Introduction

Development of ICT and the exponential growth of internet use, as in developed as well as in developing countries, led to numerous changes in business in almost all industries, and agriculture as well. Many states, multinational companies, SMEs and start-ups in recent years invest huge efforts in finding ways to implement the ICT innovation in agricultural sector in order to increase its competitiveness. Large countries such as USA, India, China, but also some smaller countries in South Africa, Israel,

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Turkey and Switzerland, single out by the research and investments extent in the application of information technology in agriculture. Considering the strategic significance of food, and therefore the agricultural sector, for each country, it is quite logical and reasonable effort to look for ways of improving the entire value chain in agriculture through the application of the newest ICT achievements. However, a fact which numerous researches have confirmed is that regardless in which extent some innovation was extraordinary and useful, there were still occurred obstacles in the process of its implementation. There are also studies which show that always must take into consideration characteristics and specificities of a local market in which implements, when implementing innovation. Therefore the goal of this research was to determine what the situation regarding the connection between the agricultural sector and ICT in Serbia is, and in which extent are farmers in Serbia ready for innovation and changes which the internet and technological innovation bring.

In accordance to the FAO statistical data in 2015, even 44.4% of Serbian population is rural population. In the year 2014, 35.064,000 ha was agricultural area, forest 27.186,000, and other land 2.521,000, which shows the importance of development and improvement of agriculture for the entire development of a country. Besides, *according to the Statistical Yearbook of Republic of Serbia 2016*, we can see the share of agriculture, forestry and fishery in the year 2014 was 7.7% of gross domestic product, processing industry was 15.7%, and the average earnings in these two sectors were below the average earnings in Serbia. It points out to unsatisfying situation of employees in these sectors and a need for some changes in them. It is inevitable to notice that professional, scientific, innovation and technical activities were present with only 3.2%, and informing and communications with 4.3% of gross domestic product. Thus, Serbia within the purview of ICT should do much more in order not to come to the current situation improvement, which is not satisfactory. According to quotations of the Institute for Biosens in Novi Sad (p 14), there are 631.552 farms in Serbia. An average farm is relatively small, with a size between 2 and 5 hectares. Most of households are family farms. Since their share on market is negligible, family households are forced to procure supplies (seed, fertilizers, etc.) in smaller quantities, and therefore at higher prices. Selling their products is also a problem, since it is individual (transport and human labour significantly affect profit), or through middlemen (a price is dictated by big companies, and the potential quality of goods is hard to value). Although in the year 2011 there were around 1,500 agricultural cooperatives in Serbia which could



help in solving the mentioned problems, they weren't functional. For these reasons, small firms profit is still low and unsustainable. Introduction of ICT innovation in agriculture could solve many problems, for example, by creating virtual cooperatives is possible to improve small and medium farmers business. Introducing virtual markets for B2B and B2C trade would increase the speed of information flow, facilitate communication, increase transparency, there would be easier to approach buyers and sellers, and all of these would raise the overall level of agricultural sector competitiveness. Furthermore, by applying modern technical solutions for obtaining the accurate and precise information, which will be available to all participants in an agricultural value chain via internet, as well as a series of other innovation, would enable making decisions according to precise information, and not according to intuition and tradition.

Possibilities for the improvement of agricultural production are numerous, however, the question is if farmers in Serbia are generally information literate, in which extent they use internet, whether they are informed about the leading social media and whether they use them for the improvement of their own agri-business. The purpose of this paper is exactly in coming to know if farmers in Serbia have taken a first step in accepting new ICT technologies for their own business improvement. Or better to say, whether they use the internet and social media, because without their application, it is not possible to talk about taking advantage which ICT can contribute to agricultural business.

### **Internet and its application in the agriculture sector**

The U.S. Department of Agriculture studies revealing an increase in adoption of internet access by the U.S. farms and ranches since 2013. It mentions the importance of farmers finding that internet access in conducting their day-to-day business operations (Buckley, S. 2015).

As well as studies show that only 0-24% of farmers in Europe use ICTs in their work routine, while the respective percentage in US reaches 80%. The root for this disproportion is not the lack of technological solutions, but the European market approach. Namely, the current approach used by ICT companies is technology push, rather than user driven, so launched solutions mismatch the real farmers' needs. That is the reason why the agricultural results are below the true potential and why there is great potential for ICTs to improve many aspects of agriculture and ensure

safe and adequate food for European citizens, with minimization of environmental impact of farming activities (Institute Biosense, 34).

According to carried out researches (Novalić, F., Selimović, F. and Biševac, F., 2011) on a sample of agricultural manufacturers in Serbia, Montenegro and Bosnia and Herzegovina were concluded that the internet was an opulent source of matters of information and educational character; e-trade has been present in agriculture; in certain moment some activities, such as the stock trades and informing can be done only via internet. However, there are a small number of farmers who use internet; Associations of farmers neither stimulate farmers to use internet, nor help them. The authors of this research had drawn recommendations that farmers should be facilitated the use of internet, intensify the utilization of resources, even enable them to indirectly receive information from the internet.

The agricultural sector is changing due to the advancing information technologies and the internet. Information is required by agricultural producers which cover all aspects of agricultural production including the processing of agricultural products on-farm or in rural areas. The abundance of agricultural information however does not necessarily imply better informed producers, especially if their information behavioural patterns are not studied. Therefore the appropriate information services should be developed in order to meet specific information needs and information behaviours in the agricultural sector (Kostagiolas, P., Souliotis, A., Boskou, G., 2014).

Agricultural development also faces multiple challenges including 1) climate change, 2) sustainable natural resource management, 3) food security, 4) shortages of fresh water, 5) limited availability of agricultural land, and 6) changing consumer expectations. In this context, ICT can play an important role in improving efficiency and leading to smart farming in the future of agriculture (Guerrini, 2015). Today's modern farms are adopting new technologies and generating unprecedented amounts of data, including field-specific information, yield mapping, soil moisture and nutrition, weather, leaf-area index, insects, and farm management data. Data collected from farms are a fundamental block for data-driven farming decision, and it is critical to turn the data into value to support better farming decision making. ICT now plays increasingly important role in future farming (Xin, J. Zazueta, F., 2016, p. 276).

Successful integration of IoT, mobile, farm management and knowledge-based software solutions, and real-time analytics in a cloud environment

will create new solutions for smart farming. Given that many decision tools developed in the public and private sectors are already available, an integration of these tools into a cloud environment could serve farmers better, especially smallholder farmers. By making farm specific data and analysis tools available, farmers can assess different scenarios resulting from different farming decisions. Although such work remains to be done, it is clear that future of agriculture will be data-driven, knowledge-based, and farmer-centred smart farming solutions in a cloud or mobile cloud application models (Xin, J. Zazueta, F., 2016, p. 279).

### **Importance of social media for farmers**

Social media has an amazing growth within few decades. It has become part of everyday life for most people in the developed and developing countries. At present social media is the world's largest communication network. It is the simplest and fastest way for sharing information such as file, photos, videos etc. Social media is not only a tool for reaching large audiences; it is also an opportunity to develop relationships (Jijina C.K, Raju G., 2016, p. 22). Social media cannot be defined as a type of web pages by which was enabled linking the modern internet technology (Web 2.0) with users' interaction (17). The biggest advantages of the social media and the reason for the great popularity of some services of this type are: Simplicity of use – Everyone can use the social media, Authentic two-way communication (conversation) – Generally observed, very few people have a real culture of conversation (in addition to providing information, it is necessary to receive them as well), because they simply “listen, but not hear” what was being said/talked/written to them. Exactly for that reason, the use of social media for realizing different goals represents a big challenge in Serbia and in the world. The most popular social media currently in Serbia, among different groups of users, are: Facebook, Twitter, Instagram, LinkedIn, Youtube (Ljubojević, Č. Ćirić, M., 2017).

Development and introduction of smartphones, broadband, and 3G mobile networks have provided opportunities for farmers to connect with their peers in spite of the distance separating them. Farmers can use internet tools such as web forums for discussion and debate, internet searches, digital versions of farmer magazines (Farmers Weekly, 2016) to learn new knowledge, query problems, and access information on their phones, even in the middle of a field. Moreover, social media, such as Twitter, Facebook or a Google group, enables them to instantly communicate, over an electronic hedge, with online peers who may never meet face-to-face, but can advise, sympathise and relate. Finally, several studies suggest that farmers tend to prefer kinaesthetic

(“learn by doing”) or audio/visual learning to other learning styles. As a result, IT now can allow farmers to view or record videos, listen to recordings and watch live web-streaming of conferences, with the subsequent benefit of enabling them to develop their knowledge and learning without having to leave their farms (Burbi, S. Hartless Rose, K. 2016, p. 2).

The use of social media sites help to enable collaboration, information sharing and partnerships for innovation among literate farmers, stakeholders, extensionists and other actors. Enabling farmers and others to “gain a voice”, offering localized and customized information, helping to share and manage the information are the main advantage in using social media in agricultural extension services. Also social media creates meaningful relationships with customers and improves market intelligence and get ahead with competitors (Jijina C.K1, Raju G., 2016, p. 23). Major agricultural companies are currently using various forms of social media such as YouTube, Twitter, and Facebook. Social media and agricultural companies have the potential to build strong connections between consumers, workers, and the general public with technical, relevant, and interesting information (Carter, J, 2013).

Technical and educational illiteracy, unavailability of high speed internet connection and recording equipment, unauthentic information, data charges and accessing device are the main limitations in using social media (Jijina C.K, Raju G., 2016, p. 24).

### **Research method**

The purpose of this paper is to get to know whether farmers in Serbia have taken a first step in accepting the new ICT technologies for the improvement of their own agro-business, i.e. whether they use the internet and social media, because without their use it isn't possible to speak about using advantages which ICT can bring to agricultural business.

The goal of this research is to determine the current state in Serbia regarding the correlation between agricultural sector and ICT and in which extent are farmers in Serbia ready for innovation and changes that the internet and technological innovation make.

In researching consumer behaviour we applied the quantitative research method, in order to carry out statistical analysis and generalize the obtained results onto broader population. We applied the survey method, and the instrument used for conducting the survey was a questionnaire which was

not standardized but created for the purpose of this research. We opted for data collection through phone calls and via direct interview.

The research sample consisted of 167 randomly selected respondents. We used the method of random selection for selecting a representative sample. The data were analysed using SPSS for Windows 20. The following methods were used: descriptive statistics – frequencies and percentages.

### Research results and discussion

In this research we selected gender, age structure, education, household type as the most important demographic characteristics of consumers. Based on these characteristics were analysed tested sample of agricultural manufacturers in order to get to know in which extent the demographic characteristics of tested sample are in favour of using the internet and social media.

**Table 1 – Demographic characteristics of consumers’ test sample in Serbia**

Ordinal number	Question	Answer	Count	Percent
1.	<b>Gender</b>	Male	109	65.26%
		Female	58	34.73%
2.	<b>Years</b>	Up to 20	1	0.60%
		20-30	37	22.29%
		30-40	41	24.70%
		40-50	29	17.47%
		50-60	34	20.48%
		Over 60	24	14.46%
3.	<b>Professional qualifications level</b>	PS	26	15.57%
		SS	109	65.26%
		College	17	10.18%
		University degree (bachelor)	13	7.78%
		Others (master of sciences/arts, M.A./ M.S., PhD)	2	1.20%
4.	<b>Members of your household</b>	I live alone in the household	15	9.03%
		I live with my wife in the household	36	21.69%
		I live with my wife and child in the household	19	11.44%
		I live with my wife and children in the household	47	28.31%
		I live with my wife, children and parents in the household	9	5.42%
		I live with my parents in the household	41	24.69%

**Source:** *Made by authors according to the survey*

According to data shown in *Table 1* can be noticed that, in a tested sample of agricultural manufacturers, prevail men with 65.26% compared to women (34.73%). This data was expected since men in Serbia are dominantly engaged in agriculture.

Speaking on age, there can be noticed in a sample the smallest share of examinees up to 20 years of age, with only 0.60%, then people over 60 years of age, with 14.46%, while other categories of examinees (20-30, 30-40, 40-50 and 50-60) are pretty evenly distributed, provided that examinees between 30 and 40 years of age prevail with 24.70%. This age structure of sample enables a good insight in the use of internet and social media of all generations which are engaged in agricultural production, except those younger than 20 years of age, who were insignificant in this sample. Reason for their small share in a tested sample can be described by a fact that people younger than 20 years of age in agricultural holdings mostly live with their parents, who furthermore are the main decision-makers in the process of agricultural production, so consequently in this survey parents had answered the questions, and not children younger than 20 years of age. If we analyse age as a demographic factor and their significance for accepting innovation, it is important to say that, according to research they have conducted (Lu, Y.-T., Chang, Y.-H., 2016) on the degree of acceptance of internet by Taiwan's senior farmers, there have come to a conclusion that the senior farmer enjoyed and increased their knowledge using internet with great enthusiasm. Senior farmers can benefit from internet by using it for information, learning, training, and trading. As well, senior farmers are increasingly using applications of internet not only to acquire knowledge, but also to enrich lifestyle. Hence, age didn't mean a limiting factor in accepting internet by farmers in Taiwan. However, according to (Kaggere, N., 2015) youth in India is increasingly uses social media on the internet, while older people and women still make a smaller percentages of those who use internet and social media. Since the demographic factors are related to socio-cultural and geographic factors, it is expected that their impact is different in various cultures and geographical regions.

If we analyse an educational structure of a tested sample of agricultural manufacturers, we can see that people with SS prevail with 65.26%, then people with PS (15.57%), while people with college and university degree education together have 17.96%, and with higher educational level (master and PhD) have only 1.2%. This data shows a rather low educational level of agricultural manufacturers, which can be, to a certain extent, a limiting factor in their readiness to accept innovation. Therefore one of the

conclusions which impose its self, according to educational structure, is a need for additional education and trainings through informal education, in order to raise awareness of agricultural manufacturers on the need of continuous learning and accepting innovation, which also include ICT technologies. It is necessary to work on their gradual training through argumentation and reasoning of benefits which ICT can bring to farmers. There can be seen in a tested sample, by analysing the household structure, that prevail households in which live husband and wife with children (28.31%), households in which live husband, wife and one child (11.44%), households in which live husband and wife, with children and parents (5.42%). Thus, there are 45.17% households in which children live, which is less than total number of households in which children don't live. If we analyse those who live alone with their parents in a household (24.69%) and we compare this number with data that there is only 0.60% of people of age under 20, we got pretty disconcerting that people of age between 20 and 30 still live with their parents without a wife and children, which in long-term doesn't represent a favourable demographic trend for rural development. Also, the fact that even 9.03% people in a tested sample live alone, as well as that even 21.69% of examinees has a spouse but doesn't have children who live with them in a household, it is one more indicator of bad demographic trend when it comes to the household structure, which are engaged in agricultural production.

**Table 2** –Resources for using internet

Ordinal number	Question	Answer	Count	Percent
1	<b>Do you use computer, lap top or tablet at home?</b>	Yes	139	83.23%
		No	28	16.77%
2	<b>Do you use a mobile phone with the possibility to use internet?</b>	Yes	127	76.05%
		No	40	23.95%

*Source: Made by the authors according to the survey*

In order to come to know how objective are the obstacles in using the internet, and not related to the agricultural manufacturers characteristics, we have asked questions related to adequate resources, computers and mobile phones with the possibility to use internet. In accordance to presented results, we notice that 83.23% of examinees have a computer, lap top or tablet, while there is smaller percentage of people with mobile phones with the possibility of using internet and it amounts 76.05%. Thus, we can conclude that 16.77% of examinees don't have technical possibilities

to use internet on a computer, and 23.95% on a mobile phone. These indicators are pretty good, taking into consideration percentages of the internet use in Europe. Hence, if only technical factors would be a limiting factor, the current situation wouldn't be so bad, since it is obvious that there is a plenty room for improvement. However, as demographic factors also affect the level of internet use, of which some were already analysed, but also socio-cultural, economic, geographical and psychological factors of agricultural manufacturers, it is necessary to determine whether all of them have a computer or an appropriate mobile phone to use the internet, in which extent and for what purposes.

**Table 3** –*The level of internet use and the purpose of its use*

<b>Ordinal number</b>	<b>Question</b>	<b>Answer</b>	<b>Count</b>	<b>Percent</b>
1	<b>Do you use internet and, if yes, how often?</b>	Few hours per day	84	50.30%
		One hour per day	27	16.17%
		Few times a week	18	10.78%
		Once a week	6	3.59%
		Once a month	4	2.39%
		I don't use internet	28	16.77%
2	<b>What purposes do you use internet for, i.e. what information you look for on the internet?</b> *28 examinees, who responded to the previous question that they didn't use internet, were not included in this part, so a sample was reduced to 139 examinees	Information related to a job and agriculture	54	38.85%
		News	21	15.11%
		Entertainment venues (sport, fashion, travel, recipes)	14	10.07%
		Communication on social networks	36	25.90%
		No answer	17	12.23%

**Source:** *Made by the authors according to the survey*

Of total number of examinees 16.77% of them don't use internet at all, and this exactly is the percentage of examinees, which don't have a computer, lap top or tablet. All other examinees use the internet more or less. Namely, 2.39% uses the internet once a month, 3.59% once a week, and 10.78% several times a week. On daily basis, 16.17% of examinees use the internet one hour per day, while 50.30% of examinees use the internet several times per day. Therefore, 66.47% of examinees use the internet on daily basis.



If we compare these percentages with the percentages of using internet in Europe and USA, as well as with the research conducted in Serbia, Montenegro and Bosnia and Herzegovina in the year 2011, which was already mentioned in the literature, we could notice that situation related to the internet use among agricultural manufacturers in Serbia has rapidly and significantly changed in regard to 2011, as well as that although the percentage of internet use is not at the level of the one in USA, we can consider it satisfying because it is within those characteristic for Europe.

However, if analysing data which points out to the purpose of internet use, then the results are not so optimistic from the possibility of agricultural production improvement point of view. Namely, only 38.85% of examinees use internet in order to find information necessary for a job improvement, and generally for the improvement of their agricultural production. 15.11% of them use the internet in order to find out the news, 10.07% of examinees use the internet in order to find the entertainment venues, 12.23% of them didn't respond at all, while 25.90% pointed out that use internet due to the use of social networks. Hence, their insufficient use of internet for business purposes is something we can notice as the insufficient readiness of farmers for changes that ICT technologies bring. It is positive that one fourth of examinees points out the social networks as something they are interested in the most, and therefore the social networks could be one of the ways for informing and gradual adjustment and referring farmers to the oncoming ICT changes, which will reflect on the entire value chain in agriculture.

According to the research in China (Heang, J. F., Khan, H. U., 2015), it is noticed that agricultural producers in China encounter many issues in marketing their products to end customers. As a result, many have ended up selling their produce to middlemen, but many middlemen manipulate the situation and squeeze producers so that it has become difficult to realize profits. With the proliferation of Internet access and increasing computer literacy rates, that research showed that Internet marketing could play an important role in helping these agricultural producers. Since the middlemen situation is very similar in Serbia as well, exactly the internet marketing, the use of social networks and the creation of virtual markets could help in perspective also the agricultural manufacturers in Serbia to overcome the perceived problem. Possibilities for improvement are numerous, it is only inevitable to change the purpose of using internet by agricultural manufacturers and move it from entertainment to the exploitation of business opportunities.

It is interesting to point out to the authors' study (Taragola, N., Van Lierde, D., 2010), by which was determined that horticultural growers in Flanders make low use of the Internet. The Internet applications used most frequently are online banking, information on market prices and yields of outputs, and weather forecasts. However, a large variation of the Internet behaviour is observed among the growers, depending on personal characteristics (biographical and social characteristics, communication behaviour) and business size. According to the quotations of examinees in this study, there can be noticed a certain similarity with the mentioned research in Belgium. The examinees, who stated that they use internet only for business purposes, were stated that they use internet to find out weather forecast, prices on stock exchanges and markets, and they were also significantly interested in information related to plant protection and repair of machinery. Unlike the research in Belgium, in our study none of the examinees didn't state online banking as an option for which they use the internet.

According to data shown in Table 4, we can notice a surprising data that even 40.71% of examinees have never used e-mail for sending/receiving mail, while 22.16% of them use e-mail once a month. Contrary to this, a percentage of those who use e-mail on daily basis is 13.77%, 11.38% uses internet several times a week, and a percentage of those who use it once a week is approximate (11.98%). Since e-mail uses for sending/receiving mail, mostly for business purposes, these data although at first sight surprising are actually in accordance with the results obtained in the previous table, and point out that the internet is poorly used for the business purposes.

When examinees were asked if they were using some agricultural forum, even 49.70% of them were responded that they have never used an agricultural forum in order to get informed. Only 5.99% of them said that they do it every day, 12.57% several times a week, 8.98% once a week, and 22.75% once a month. The stated indicators speak in favour of a previous thesis that the internet doesn't use for business purposes, and that farmers don't use or use poorly agricultural forums for finding necessary information.

When it comes to the social network Facebook, we can notice that even 44.91% of examinees use it on daily basis, 14.97% several times a week, and there are small percentages of those who use Facebook once a week or once a month, and those who never had used this social network are

34.73% of a tested sample. If we compare this data with data that 16.77% of examinees don't use internet, it leads to those examinees which use the internet only 17.96% have never used Facebook. The obtained data are in accordance with the recent study, according to which 42% of farmers who use Facebook are using it every day. Farmers are making their presence on social media for sharing personal stories or using the sites as news sources online (Jijina C.K1, Raju G., 2016). This finding is significant for several reasons. Firstly, an extremely high percentage of Facebook use is in accordance with the previously set thesis that the internet has been mainly used for entertainment purposes, and obviously the Facebook network is a mean to get entertainment. Secondly, a habit in using Facebook on daily basis can be useful if Facebook would be used for informing, correlating and joining in order to improve agricultural production and overall business. Therefore, this social network should in particular take into consideration when designing strategies for the improvement of agricultural production in Serbia, with the help of social networks.

Unlike Facebook, Twitter is a network which is almost never used among agricultural manufacturers. Of total number of examinees, 93.41% of them were responded that they never used twitter, while only 0.5% was responded that they use twitter every day. Thus, twitter is definitively a social network that is not of importance and has no effect on agricultural manufacturers.

When analysing the level of YouTube use, we can see that 37.72% of examinees have never used YouTube, or approximately to the level of those who have never used Facebook, but significantly less than the ones who have never used an agricultural forum, and much less in regard to those who have never used Twitter. A number of examinees which use YouTube every day are only 5.39%, or only 0.6% less than the agricultural forum use, but a cumulative percentage of those who use YouTube several times a week, once a week and once a month, is higher than the agricultural forum use. Therefore, we can conclude that after Facebook, YouTube is the most common in use of farmers in Serbia. This is followed by the agricultural forum, and then Twitter, which is negligible.

**Table 4** – *Level of using e-mail and the social media*

<b>Ordinal number</b>	<b>Question</b>	<b>Answer</b>	<b>Count</b>	<b>Percent</b>
1.	<b>Do you use e-mail for sending/receiving e-mails and, if yes, how often?</b>	Every day	23	13.77%
		Few times a week	19	11.38%
		Once a week	20	11.98%
		Once a month	37	22.16%
		Never	68	40.71%
2.	<b>Do you use some agricultural forum and, if yes, how often?</b>	Every day	10	5.99%
		Few times a week	21	12.57%
		Once a week	15	8.98%
		Once a month	38	22.75%
		Never	83	49.70%
3.	<b>Do you use Facebook and, if yes, how often?</b>	Every day	75	44.91%
		Few times a week	25	14.97%
		Once a week	6	3.59%
		Once a month	3	1.80%
		Never	58	34.73%
4.	<b>Do you use twitter and, if yes, how often?</b>	Every day	1	0.59%
		Few times a week	2	1.20%
		Once a week	5	2.99%
		Once a month	3	1.80%
		Never	156	93.41%
5.	<b>Do you watch youtube and, if yes, how often?</b>	Every day	9	5.39%
		Few times a week	33	19.76%
		Once a week	36	21.56%
		Once a month	26	15,57%
		Never	63	37,72%

*Source: Made by the authors according to the survey*

## **Conclusion**

According to researches we have conducted on consumers sample, which although relatively modest in numbers, but can consider representative for Serbia by its demographic characteristics, we have received encouraging information that 83.20% of examines own computers. All of them who have computer also use internet and 66.47% of examinees use internet on daily basis. This parameter is in accordance with the level of the internet use by farmers in Europe. However, when analysing data which point out to the

purpose of internet use, then the results aren't so optimistic. Namely, only 38.85% of examinees use the internet in order to find information necessary for the improvement of a job and generally for the improvement of their agricultural production. Thus, what is noticed as insufficient preparedness of farmers for changes which ICT technologies bring is their insufficient use of internet for business purposes. Data that even 40.71% of examinees have never used e-mail for sending/receiving mails, as well as that 49.70% of examinees have never used the agricultural forum too, speaks in favour of the fact that, although agricultural manufacturers have been using the internet significantly, it hadn't been used enough for the business purposes. When it comes to the social network Facebook, we can notice that even 44.91% of examinees use it on daily basis, and 14.97% several times a week. Extremely high percentage of the Facebook use is in compliance with an established thesis that the internet is mostly used for the entertainment purposes. Unlike Facebook, Twitter is the network which is almost not used among farmers. Of total number of examinees, 93.41% of them were responded that they have never used Twitter. Hence, the most significant of all social media for farmers convincingly is Facebook, although YouTube and agricultural forums mustn't be neglected, although small groups of farmers use them, while Twitter isn't definitively the network of great significance for farmers in Serbia.

In accordance to obtained results, we can conclude that considering the intensity of Facebook network use among farmers in Serbia, the recommendation is to use this network for informing, correlation and association of farmers. It is necessary via this network to carry out informing, gradual adjusting and referring of farmers in oncoming ICT changes, which will reflect on the overall value chain in agriculture. Instead of using the social networks for the entertainment purposes, it is necessary to educate farmers to use the social networks for the purpose of their agro-business development. Conducting training programs, awareness campaigns, and workshops will help them to make understand the agricultural app and use social media better. Thus, we draw a conclusion that a significant percentage of farmers in Serbia has made a first step given that they own computers, smart phones and use the internet on daily basis, however, it is necessary to take a series of steps and measures for the purpose of their further education and exploring the possibility of using the internet, aiming to improve their agri-business and adopt changes and technological innovation which bring the years ahead.

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# INNOVATIONS IN AGRICULTURE IN DEVELOPING COUNTRIES

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## **Abstract**

*The aim of the paper is to present the status and innovation potential in the agriculture of developing countries.*

*The purpose of innovations in agriculture in developing countries is to increase food production, and recently, to produce safe food. Agricultural innovations should imply the transition from pure exploitation of natural resources to technological innovation, which would contribute to the production of quality products, while preserving resources for production (sustainable intensification).*

*The use of agricultural innovations in developing countries has low intensity, although it began about 4 decades ago. Bureaucratic barriers, start-up costs, lack of abilities, financing and wrong policies are the main barriers to innovation in developing countries. Developing countries have the potential to innovate their production technologies in agriculture, but they are mainly dependent on modern technologies from the developed countries.*

*Principally, developing countries should improve the performance of their educational systems, science and technology, institutions, increase financial and human investments for establishing local technological possibilities and learn from the experience of other innovative regions. Although the majority of developing countries have achieved significant progress in agricultural innovations, this is still not satisfactory.*

**Key words:** *innovations, agriculture, developing countries.*

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## **Introduction**

In the 21<sup>st</sup> century, agriculture faces multiple challenges: It has to produce more food and fiber for growing human population with less rural labor force, more raw materials for potential huge market of bioenergy, to contribute more significantly to country development, to adopt more efficient and sustainable production methods and to adapt itself to climate change. This challenge can be responded by introducing innovative technologies, especially in developing countries.

The development of agriculture depends to a large degree on how the knowledge is successfully generated and applied, on the intensity of the knowledge use and new technologies, respectively.

Agricultural innovations in developing countries have the aim to change the way of life of rural household and to increase their low earnings, which are often insufficient for basic living needs. In this context, the studies in many African countries have resulted in better possibility of using the knowledge in agricultural sector. There are needs for greater establishing of capacity of local advisory services and bigger budget support, in order to ensure the use of agricultural innovations. Agricultural production is at low level, as a result not only of the lack of appropriate technologies, but the lack of access to these technologies, credit and access to the market and rural infrastructure, but also because of omission to information and skills, which preclude the producers to use efficiently and adopt the technologies (Mapila et al., 2011).

Africa has a quarter of the world's arable land, but it generates only 10% of global agricultural production. In addition, more than 75% of total arable land is degraded, with the loss of nearly 3.3% of agricultural GDP per year due to disturbance of land and loss of nutrients (Juma et al., 2013).

Transgenic technologies and their potential affect the poor in undeveloped countries. Such researches are very disputable, and so polarized that credible alternative, which can meet some of the listed aims of food safety and environmental sustainability, are often ignored (Prasad, 2007).

## **The Aim of the Paper**

The aim of the paper is to explore to what extent agricultural innovations are applied in developing countries, to assess the potential for rural development, increasing food production and farmers' income, as well as reduction the poverty in developing countries.

This paper summarizes the results of researches about the application of agricultural innovations in developing countries and uses them to discuss key issues on the use of concept of innovation systems.

### **Agricultural Innovations**

It is accepted that agricultural growth depends on the availability and adoption of appropriate innovative technologies. Agricultural growth can reduce the poverty in developing countries, through stronger role of the research and generating the knowledge, which will result in innovation (Asenso-Okyere and Braun, 2009).

The process of innovation introduces new techniques in agriculture, designed to remove impediments of productivity growth and environmental sustainability. In agriculture, innovations include new knowledge or technologies related to primary production, processing and commercialization, which leads to the growth of productivity, competitiveness and living standards of farmers and other (Asenso-Okyere and Braun, 2009; Boskovic et al., 2010).

Agriculture innovations are new inputs, the machines and methods that are used in agriculture production processes in order to increase production, yield or quality (Akkoyunlu, 2013). Therefore, the purpose of innovations in agriculture in developing countries is increasing the food production, and in recent time, the production of safe food, too.

The innovations in developing countries mainly refer to the agricultural sector (finding insecticide, resistant varieties, irrigation pump, genetic programs, etc.) (Oyelaran-Oyeyinka and Sampath, 2007). In African countries, only small percentage of land is under irrigation, the use of fertilizers is at low level, which results in lower yields. Compared to Asia, where 37% of land is under irrigation system, in Sub-Saharan Africa, about 4% of the area is irrigated. If we omit the Madagascar, South Africa and Sudan, share of agricultural land under irrigation in the rest of the region would be only about 13.3% (Svendsen et al., 2009).

Social inequality and the need to improve the life of poor rural households in developing countries become a preoccupation of developmental policy of agriculture. Agriculture and agriculture science and technology are actual topics and focused on innovation and idea of innovation systems with aim of providing better standard for farmers and increasing the production possibilities. However, the history of agricultural research and innovation indicate that this process is very slow (Boskovic et al., 2012; Hall, 2007).

The main obstacles for agricultural innovation in developing countries are (Aerni et al., 2015):

- Absence of political dialogue between the government and private stakeholders;
- Lack of public/private partnership;
- Lack of incentives, high interest rates, property or land rights are not suitable for commercialization of agriculture;
- Lack of institutional and regulatory framework (especially in unstable political situations), the import economy at the expense of local products.

Plenty of land in some areas, weak property rights in other and lack of markets decrease motivation for the farmers to implement innovations and to invest in production that is more intensive. The farmers, simulated by subventions, implement innovations, and if there is no subvention, the innovations are absent (Elliott and Hoffman, 2010).

Rejecting the introduction of innovative technologies, result is (Johnsen et al., 2009):

- No benefits in adverse weather conditions (e.g. drought),
- Unavailability of technologies,
- High prices of inputs related with investments,
- Increased requirements for work are not in proportion with the benefits,
- Lack of access to electricity,
- Lack of available market with purchasing power, where the attractive prices of farmers' products can be realized.

Adopting the new technologies in agriculture requires the favorable policy framework and adequate investment in infrastructure, development of capacity among farmers, as well as the access to inputs, credit and markets (Alarcon and Bodouroglou, 2011).

Agricultural innovations can play significant role in decreasing rural poverty. Diversification of rural employment and yields can be achieved by introduction of technological innovations, which affects the food price and the connection with rest of the economy. Direct effects of technological innovations refer to realizing higher profit, while indirect effects refer to lower food price, due to higher agricultural productivity, the growth of employment and comprehensive economic growth through the production growth and consumption in non-farm sector (Berdegue and Escobar, 2002).

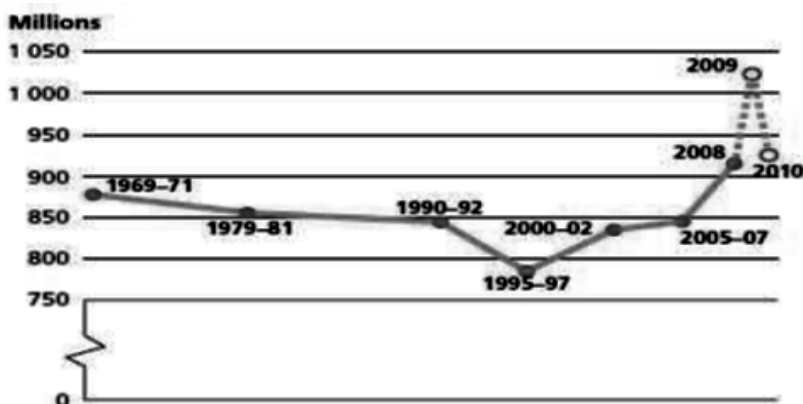
Those changes, together with better approach to the market, have led to the increasing in production, the stabilization of markets and increasing of income for poor farmers. Agricultural innovations have powerful positive impact on some, but not all aspects of life in rural areas. Innovations in poor countries have potential to influence positively on production, income and possibilities for training of rural households. The problem is sustainability of innovative policy, due to human and financial capacities for maintaining innovative strategies. In order to ensure the effects of innovation introduction in long-term, it is necessary for organizations to invest more in the research, as well as in the budget support of innovation.

Management implementation of rural innovations has six key components (Mapila et al., 2011):

- Development of agro-enterprises and participatory market research,
- Responsible management of natural resources,
- Social and human resource development,
- Gender equality and empowering of women,
- Participatory monitoring and evaluation in the community,
- Effective development and management of partnerships.

In order to alleviate the poverty and to induce economic transformation on the continent, The African Union attaches special attention to development of rural economy and agriculture. Statistics show that 239 million African do not have enough food to satisfy their basic nutritional needs, as well as that 30-40% of children under five years still suffer from chronic malnutrition (On the Wings of Innovation, 2014).

**Figure 1** *Malnourished population in the world 1969-2010*



Source: FAO, 2010

The fact that over 900 million people are malnourished, where the vast majority in developing countries (98%) show the significance of introduction of innovative technologies in agriculture of those countries. Of course, the assessments are that the climate changes (drought and other natural disasters) drastically will reduce the yield in agriculture and thus, it will further induce the actions about introducing new technologies in agriculture (Alarcon and Bodouroglou, 2011).

Governments in the least developed countries, especially in Africa, do not use sufficiently experiences of new economies, such as Brazil and China, institutional capacity of development, in order to provide the innovation and sustainable development in agriculture (Aerni et al., 2015).

Agricultural innovations result in increasing the production of almost all crops, as well as the growth of yield in livestock production. In the study by Mapila et al. (2011), after innovation the technology of production, significantly higher total income of examined crops for \$812.34 is achieved in 2008, comparing to 2007. In the 2008/09 season, the value of produced corn was statistically higher than for households, which did not innovate production and for \$287.09. Part of production increase is surely result of increase in the total property and reduction of the number of parcel. The prices were not significant in achieving higher total income, because they recorded slight oscillations. Mineral fertilizers, in combination with hybrid seeds and rainfall, play key role in ensuring high corn production and food safety in Malawi. In pig production, larger number of livestock is accomplished, after the improvement of housing conditions, hygiene, nutrition and veterinary services.

Agricultural innovation in poor tropical countries contributes to more effective and sustainable using of natural resources, decreases hunger and poverty, through economic development of rural areas (Aerni et al., 2015).

### **Agricultural Biotechnology**

Biotechnology includes biological scientific techniques for improving plants, animals and microorganisms, involving wide spectrum of solutions from genetically modified plants and animals, upgraded tools such as microbiological technology, bacteria, radically improved gene technique with great yield potential, ecology and protection (Konstantinovic and Boskovic, 2001; Boskovic et al., 2011).

Gene revolution (transgenic biotechnology)<sup>3</sup> contributed to reduction of production expenses, yield growth, and therefore net income, decreased use of pesticides and lower consumer prices. Most transgenic technologies include corn and soybean. ‘Monsanto’ is a company that developed platform in biotechnology (seeds, crop protection), which enable the increase of productivity and competitiveness in developing countries (Boskovic and Prodanovic, 2016; Asenso-Okyere et al., 2008).

Scientific organizations such as the National Research Council, American Association for the Advancement of Science and the American medical Association have published the studies and statements, which claim that there is no evidence that GMOs presents security risk compared to conventionally grown products. Despite the evidence, 93% of respondents in the survey (2013) favor obligatory marking, and three-quarters of Americans expressed concern regarding the GMO food (Kearney, 2016).

Genetically modified crops, which are sown in many developing countries, have potential for reduction of GHG<sup>4</sup> emissions, because demand for fossil fuels, which are generators of greenhouse gases, is decreased (Lybbert and Sumner, 2010). In 2007, when GM crops are cultivated on only 7% of arable land in the world, a total reduction of GHG emissions amounted over 14.200 million kg of CO<sub>2</sub>, equivalent to removing more than 6 million cars from the trade (Brookes and Barfoot, 2009).

New sorts can lead to lower intensity of using other inputs, such as fertilizers, pesticide and additional equipment. In addition to increasing productivity, farmers achieves greater flexibility in adapting to climate change (better tolerance to drought, extreme temperatures, salinity) (Lybbert and Sumner, 2010; Boskovic and Prodanovic, 2016).

Relatively little effort is devoted to biotechnological research in poor regions in developing countries, although agricultural biotechnology is imprinted in the seed, maybe very suitable for solving the agronomic and environmental problems in less developed areas (Graff et al., 2003; Boskovic et al., 2010).

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<sup>3</sup>In the United States and Europe, the production of genetically modified organisms (GMO) is followed by storm of media, consumers and political reaction.

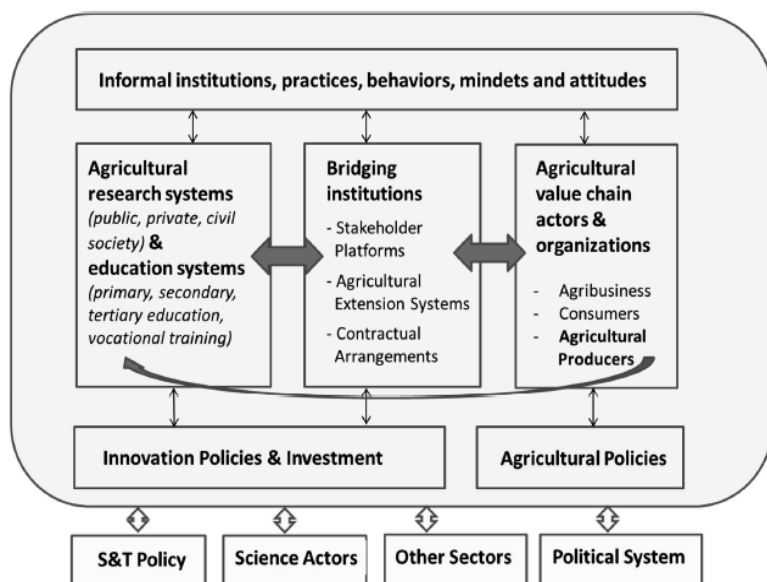
<sup>4</sup>Greenhouse gas emissions.

## The System of Agricultural Innovation in Developing Countries

Innovation system includes organizations, enterprises and individuals, which offer and seek knowledge and technology, as well as policy, rules and mechanisms, which affect the subjects to share, access, exchange and use the knowledge (World Bank, 2006).

Within the agricultural innovation system, agricultural producers must be considered as key actors in the value chain, but also the other actors in the value chain, such as suppliers of input and producers of seeds provide significant technical assistance, as well as traders and their requires, in order to get product in accordance with the standards of good agricultural practices. Consequently, innovation is not a one-way street from research to users. Actually, innovation system in agriculture should integrate agricultural education and research sector (Aerni et al., 2015).

**Figure 2** *The Conceptual Diagram of the Agricultural Innovation System (AIS)*



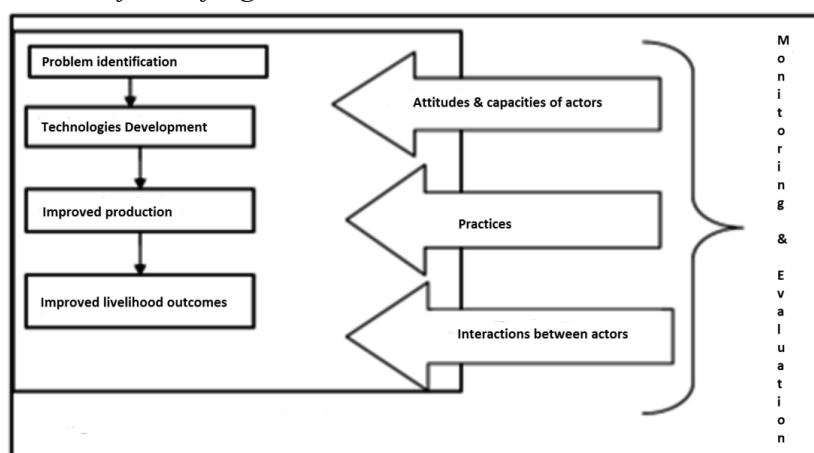
**Source:** *Aerni et al., 2015*

AIS presents a network of organizations, enterprises and individuals, which is focused on accomplishing economic benefits of the introduction of new productions, new processes and new forms of organizations, together with institutions and policies that affect the system, facilitate access to the finance and markets, provide training (Aerni et al., 2015).

Agricultural innovations in developing countries should be focused on areas with the biggest effects. Those areas are identified by the International Centre for Trade and Sustainable Development (ICTSD) and the International Food & Agricultural Trade Policy Council (Lybert and Sumner, 2010):

- New features, varieties, and crops which increase the productivity and are tolerant to climate change;
- Irrigation and water management systems, which are sensitive to higher variability of rainfall;
- Production, marketing and practice management, which increase soil fertility and decrease GHG emissions through efficient transport and cultivation of plants;
- Information and communication technologies (ICT) in agriculture, which provide greater flexibility at maker of decisions, through improving weather forecasts, using local and timely methods, such as SMS<sup>5</sup> (smart phones).
- Insurance – Innovations that can help offset risks, which provide greater variability, allowing farmer to enhance their productivity.

**Figure 3** *Platform of Agricultural Innovation*



**Source:** *Mapila et al., 2011*

The areas of agriculture where the innovation can be applied are: genetic improvements, either through conventional breeding or biotechnological practices, and improvement of input and agricultural techniques (Elliott and Hoffman, 2010).

<sup>5</sup>Short message system



Various actors, including interdisciplinary teams of scientists, end users, agents and farmers, are in interaction in order to identify the problems for which the innovation should be developed. When the problems are identified, actors work together to develop and adapt technologies in local environment and it leads to improvement of production and melioration of farmers' standard. During this process, there is constant feedback, which uses mechanisms, set at the beginning of the platform.

Despite number of recent public and private initiatives to develop capacity for agricultural innovations, such initiatives, often are not well matched with national efforts for reviving existing agricultural innovation system. Neither the institutional capacity often gets support, which is necessary to them to improve the conditions for investments in agriculture in whole (Aerni et al., 2015).

### **ICT in Agriculture in Developing Countries**

Telecommunications infrastructure, such as telephone, mobile phone, the Internet, is not well developed in developing countries, nor is able to respond the challenges and demands of innovation and technology management (Murad et al., 2009).

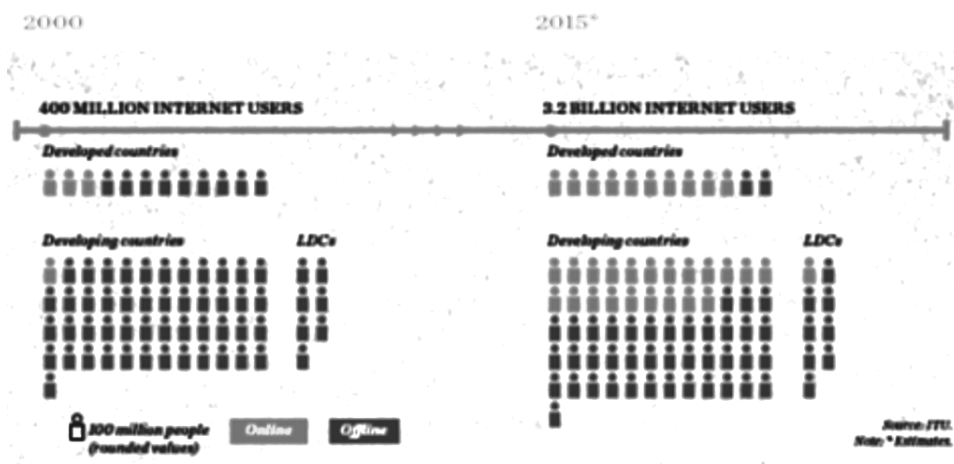
Expansion of mobile telephony network, in rural areas in developing countries, as well as arrival of banking services (SMS-based), contributes to faster integration of farmers in financial markets (Lybbert and Sumner, 2010). In Sub-Saharan Africa, mobile telephones help farmers to advance their productions. Wireless technology enables the farmers in Tanzania the access to information about weather, rainfall, market, demand and prices (Kearny, 2016). Mobile phone is primary way that individuals in undeveloped countries use the Internet. According to one study, over 60% of Kenyans accessed to the Internet from mobile phone. In Sub-Saharan Africa, for instance, there is eight times as much the Internet users with wireless comparing to wire connection (ACCESS, 2011). Availability of accessible mobile telephones to rural communities presents many opportunities for sending and receiving messages, innovation support for workers and improves the speed and coverage of reporting on emergencies. The Internet technologies are unauthorized expensive for most farmers in developing countries (Drury, 2011).

In developing countries, there is huge number of examples how mobile phones and wireless networks can afford significant advantages, where the

landlines are undeveloped or do not exist. Deducing that agriculture is basic support of the Kenyan economy, Mungai (2005) gave several examples referring to providing the farmers to get market prices in shopping malls through their mobile telephones. In this way, farmers can determine the most profitable market for their productions, and avoid unnecessary transport during seeking customers (Houghton, 2006).

Globally, 3.2 milliard people use the Internet, from which 2 milliard are from developing countries and less than 100 million in undeveloped countries (Sanou, 2015).

**Figure 4** *Number of Internet Subscribers – an overview of 2000/2015*



**Source:** *Sanou, 2015*

According to the ITO<sup>6</sup>, in 2015, about 83% of people in developed countries use the Internet, while in developing countries, the Internet access has only 34% of population. However, in the least developed countries, where 940 million of people live, only 89 million use the Internet (9.5%), which corresponds to less than 1 user of 9 residents (Sanou, 2015). Using ICT in developing countries has trend growth, which gives optimism when it comes to agriculture of those countries.

<sup>6</sup>International Telecommunication Union.

## **Sustainable Agriculture in Developing Countries**

Innovation policy in developing countries often neglects the principle of sustainable development, which can have both positive and huge negative effects on the environment, resources and entire economy.

While the expansion of food production is of vital significance for achieving food security and poverty reduction, it is connected also with negative consequence on the environment. Agricultural activities are recognized as major contribution to emissions of gases with greenhouse effect, water shortage and land pollution, degradation and biodiversity loss (Boskovic et al., 2013; Alarcon and Bodouroglou, 2011).

Technologies and innovations should accelerate the transition to sustainable agriculture, respectively (Alarcon and Bodouroglou, 2011):

- Improvement of management in pest control,
- To decrease pollution of water sources, soil erosion and human poisoning;
- Improvement of weed control with reducing the use of herbicides;
- Rational use of water in order to avoid depletion of water source and contamination;
- Protection of biodiversity and natural ecosystems.

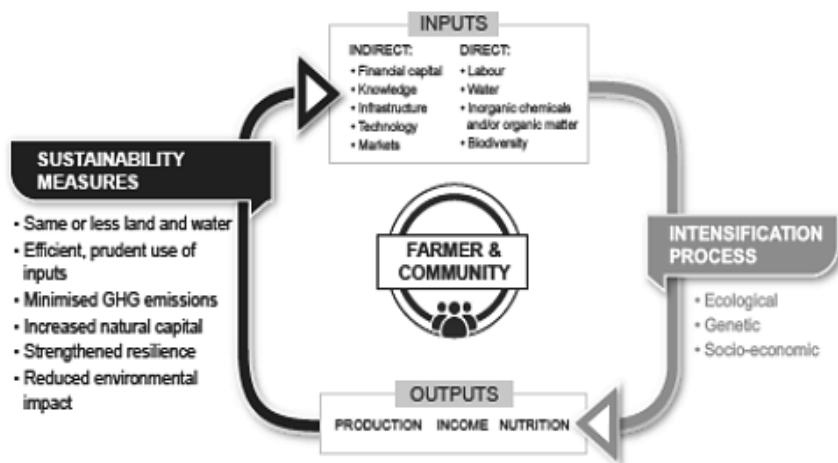
Production of safe food presents an innovation, which is being realized also in developing countries. This innovation is significant and results from intention to reduce the number from diseases, which can appear due to consumption of unsafe food.

Rural population, which is mainly in less developed countries, possesses huge resources in domain of primary food production, as well as mainly good inherited agricultural practice, which have been transferred for generations within the family and neighbors. However, the level of knowledge, which follows new technologies, modern trends and innovations in this area, is still weak, therefore, the utilization of resources is less than we should expect it realistically (Boskovic et al., 2013). Thus, every innovation, directed in the said direction, would be of great importance, especially those, which refer to innovation the knowledge, due to more efficient utilization of natural potential in the primary production sector.

A new paradigm is necessary for agriculture in developing countries, one that can support food security, stimulate the growth, decrease the poverty,

create wealth and protect natural resources. Sustainable intensification offers a solution. It is about production with several output and precise long-term use of input, with decreasing the environmental damage. Elementary innovation consists of more producing by small farmers with less negative impact on the environment, which includes enhancing the sustainability of agriculture with accomplishing higher earnings. The scientific achievements from agroecology, genetics and biotechnology establish this concept. Many can be accomplished by using existing knowledge, whether it originates from other regions or indigenous sources, but due to nature and faced challenges, the innovations are required. Form the intensification of Africa’s agriculture, it is expected that it will produce 80% required increase of food production (Juma et al., 2013).

**Figure 5** *A Theoretical Model of Sustainable Intensification*



**Source:** *Juma et al., 2013*

In new paradigm of agricultural development, demand is not just for higher yields and production, nutritious food, but selective use of input, decreasing the impact on the environment, reducing greenhouse gas emissions and improvement of natural capital.

Main technological advancement in agriculture should open the space for adopting sustainable technologies, practices, and land management in order to enhance the food production with sustainability of resources and environment (Alarcon and Bodourolou, 2011). In addition of efficient use of natural resources through innovation, the component of long-term economic sustainability is important (Akkoyunlu, 2013).

The content of agricultural policy is focused on “food safety”, a term that is used to cover key attributes as sufficiency, reliability, quality, safety, timeliness and other aspects, necessary for health and consumers’ satisfaction (The New Harvest, 2009).

Innovations such as sustainable intensification are applied to less than 2% of area. Because of implementation of listed innovation, improvements are necessary in full range of formal and informal agricultural educational institutions, connecting the farmers with institutes strategic financing etc. (Juma et al., 2013).

Africa faces two major opportunities, which can help it to transform and advance its agriculture. Firstly, advancement in science and technology offer African countries new necessary tools for promotion of sustainable agriculture. Secondly, efforts for creating regional markets will provide new incentives for agricultural production and market. This is the focus of project the Agricultural Innovations in Africa (AIA) (The New Harvest, 2009).

Organic food production brings the benefit for entire society through reduction of production expenses, through safer and better environment, as well as healthier individual. In contrast, conservation of agriculture can not be suitable for each environment and benefits can not be achieved for a while, which makes it less attractive for farmers, who require immediate gain. Compromise should be made, for example, to combine conservative agriculture, where it is possible, with crops of more genotypes, integrated pest management and with programs in order to facilitate small farmer access to herbicides (Juma et al., 2013).

Positioning sustainable agriculture, as sector with knowledge, will require fundamental reforms in existing scientific institutions, especially universities and research institutes (The New Harvest, 2009).

## **Conclusion**

Agricultural sectors of developing countries fall behind for those in developed countries. Main obstacles for agricultural development, respectively, enhancing its productivity, includes the lack of appropriate innovative technologies.

Developing countries have experienced many “successes” in terms of agricultural innovations, but hunger and poverty are still not eliminated.

Input and investment funds for application of innovation are unavailable for the vast majority of farmers. In addition, big innovations, which take place in many regions, are invisible, because the gains are overwhelmed by faster population growth and their demands for food, and climate changes, markets and ecosystem degradation have new annulling effect. Climate changes problems can be solved with appropriate technology, their negative impact on agricultural production, resources and environment is mitigated.

Innovations in agriculture are important regarding that the challenges are being multiplied, such as quality food production for growing population, reducing and degradation of resources for production, climate changes etc. Since that developing countries dispose of huge agricultural potentials, as necessary, implementation of new technologies is imposed, which will advance agricultural production, and in that way mitigate or solve poverty problems, hunger, and in perspective, provide achieving significant input from food production.

Despite number public and private initiatives to develop capacities for agricultural innovations, such innovations often are not in accordance with national efforts of reviving existing agricultural innovative systems.

Developing countries should improve performances of educational system, science and technology, institutions, enhance financial and human investments for establishing local technological opportunities and learn from the experiences of other innovative regions. Although most developing countries have achieved significant progresses in agricultural innovations, it is not satisfactory.

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**THEMATIC SECTION I**

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***INNOVATIONS IN BUSINESS  
– ACHIEVEMENTS AND  
PERSPECTIVES***



# ORGANISATIONAL CULTURE AND ITS IMPACT ON JOB SATISFACTION AND TURNOVER INTENTION – A STUDY OF HEIS IN MOHALI DISTRICT, INDIA

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## Abstract

*The purpose of the present study is to provide insight into the relationship between organizational culture, job satisfaction experienced by employees and turnover intention among employees. The study was conducted in institutes offering higher education in Mohali district in order to examine the dynamics of culture, job satisfaction and turnover intention. Data collected from academic and non academic employees was analysed using correlation and regression. The results have revealed that the organizational culture has a significant impact on job satisfaction and no significant impact on turnover intention, whereas turnover intention has a significant impact on job satisfaction. The findings of the study will be useful for college authorities to promote a healthy culture thus providing higher levels of job satisfaction while keeping turnover intention on the lower side.*

**Keywords:** *Higher Education, Organizational Culture, Correlation, Job Satisfaction*

## Introduction

Organisational culture comprises of an organisation's expectations, experiences, philosophy, and values that hold it together, and is expressed in its self-image, inner workings, interactions with the outside world, and future expectations. Boeyens (1985) and Hutcheson (1996) described organisational climate as the composition of the organisation's "objective" variables like structure, size, policies and leadership style by the employees.

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For employees on the other hand, it constitutes the organisation's context as they experience it.

Further, it is also known as corporate culture and is evident in the ways the organization conducts its business, treats its employees, customers, amount of liberty employees have in decision making, developing new ideas, and personal expression, the way power is put to use and information is disseminated and the level of commitment in employees. Job satisfaction is the pleasurable or positive emotional state arising from the appraisal of one's job or job experiences (Locke 1976, 1304).

Further, it refers to one's feeling towards one's job and can only be inferred but not seen. It is often determined by how well outcomes meet or exceed expectations. Further, satisfaction in one's job means increased commitment in the fulfilment of formal requirements along with greater willingness to invest personal energy and time in job performance. Organizations, these days are making continuous efforts to develop positive attitudes towards the job. Turnover intentions are defined as a conscious and deliberate willingness to leave an organization (Tett and Meyer 1993). Turnover is the process through which employees' part with the company or vice-versa. Turnover intention is a measurement of the extent to which employees plan to look for new job or organization plans to fire employees from their positions. This intention can be either voluntary or involuntary but in any case is a serious issue.

It have been proved by various studies that organization culture has a strong influence on job satisfaction levels and turnover intention. Job satisfaction is high if there is compatibility between individual values and that of organization. Consequently, turnover intention is low as job satisfaction is inversely related to turnover intention. In light of above facts, the present study was carried out with the following objectives:

- a. To establish the relationship between organizational culture and job satisfaction and study impact of organizational culture on job satisfaction.
- b. To establish the relationship between organizational culture and turnover intention and study impact of organizational culture on turnover intention.
- c. To establish relationship between job satisfaction and turnover intention and study the impact of on job satisfaction turnover intention.

## Literature Review

According to Gutkinecht and Miller (1990) culture represents the organization's soul, purpose and foundation.

Kerego and Muthupha (1997) describe that organization and people positively influence one another to achieve better results. He argues that employees in the organization are the role model and because of them organizations become more successful.

Schneider et al. (1975) define job satisfaction "as a personal evaluation of conditions present in the job or outcomes that arise as a result of having job". Further, they explain that job satisfaction has to do with individual's perceptions and evaluation of his job, and this perception is influenced by the person's unique circumstances like needs, values and expectations.

Lock (1976) defines job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experience".

Kerego and Muthupha (1997) describe job satisfaction as feelings of employees about the environmental factors. According to Hebb (1949) and Morse (1953) changes in the organizational culture affects the job satisfaction of the employees and it also changes their behaviours and attitudes.

Hellreigel et al. (1974) report the existence of relationships between organizational culture, climate and job satisfaction. Wallach (1983) reveals that job performance and job satisfaction are related to organizational culture. Further, he observes that job satisfaction and culture of the organization are interdependent on each other.

Zammuto and Krakower (1991) suggest that management of the organization with the positive culture can enhance the performance and satisfaction level of the workers.

Kline and Boyd (1994) determine the relationship between organizational structure and job satisfaction. They observe that employees at different levels are influenced by diverse work aspects and different facets of work environment. Kerego and Muthupha (1997) explain that working conditions and channels of communications highly affect the job satisfaction.

Sempane et al. (2002) find that there is a close relationship between job satisfaction and organizational culture where job satisfaction is the result of organizational culture. In their study, however, some facets prove positive relations and others negative relations. They argue that this varied relation depends on employees that how differently they perceive cultural perspective.

Huang and Chi (2004) opine that if the employees are satisfied with the culture of the organization it will motivate them to work hard and their obligations would be consistent which finally would raise organizational performance.

Tang (2006) suggests that supportive culture of the organization raises the job satisfaction of the employees.

Robbert and Reilly (1979), Kram (1985), Greenhaus (1990) and Gorris (2006) find that various forms of the communication in the organization and the relationship between the employee and the employer have positive impact on the job satisfaction of the employees.

McHugh et al. (1993) argue that bad and poor culture of the organization will lower the level of job satisfaction and lower productivity from the employees, and finally all these factors contribute to decrease the efficiency and performance of the organization.

Hansen et al. (1989) describe that the behaviour of the employees towards their mode of thinking whatever they think intentionally or unintentionally is strongly influenced by the culture of the organization. Jiang and Klein (2000) argue that supportive culture of the organization increases the satisfaction level of the employees and decreases the turnover ratios from the organization. Taber (1975), Johnson (2004) and Chang and Lee (2007) conclude that organizational culture has a positive impact on the job satisfaction of the employees.

Yousaf (1998), Mckinnon (2003), Arnold (2006) and Mansoor and Tayib (2010) observe strong positive impact of organizational culture on the job satisfaction. However, Johnson (2004) opines that some component of the organizational culture may not be positively associated with the job satisfaction. However, Navaie-Waliser et al. (2004) conclude that there is no single measure to find out the level of job satisfaction and the impact of the organizational culture on the job satisfaction of the employees.



Aoms and Weathington (2008) argue that the organization with strong and suitable culture positively affects not only the satisfaction of the employees but also the job commitment of the employees with the organization. Chang and Lee (2007) emphasize over the group oriented culture in the organization for raising the employees' job satisfaction. However, they find a positive relationship between the culture of the organization and job satisfaction.

Medina Elizabeth (2012) in her study made an effort to explore culture in the context of job satisfaction and employee turnover intention. The study concluded that job satisfaction is inversely associated with turnover intention and the relationship between job satisfaction and employee turnover intention is moderated by satisfaction with workplace culture. Further, each additional unit increase in job satisfaction is associated with a decrease in turnover intention; and, holding job satisfaction constant, employees with high workplace cultural satisfaction have lower turnover intention compared to employees with low workplace cultural satisfaction.

MdZabid and Abdul Rashid (2004) conducted a study in Malaysia on the influence of organizational culture on attitudes toward organizational change. The results showed that there is an association between organizational culture and the affective, cognitive, and behavioural tendency of attitudes toward organizational change. The findings also showed that different types of organizational culture have different levels of acceptance of attitudes toward organizational change. Farough Amin Mozaffari (2008) conducted a research on relationship between organizational culture and leadership. The study demonstrated that there is a relationship between organizational culture and leadership styles. Further, it was found that more is the congruence between organizational culture and leadership styles, the more effectiveness will be in managerial skills.

Furthermore, the significant relationships between managerial skills and effectiveness also suggest that culture may have important indirect effects on effectiveness.

Dong-Hwan Cho and Jung-Min Son (2012) conducted a study to investigate the effects of job embeddedness and work satisfaction on turnover intentions targeting small and medium construction IT workers. The results indicated that the higher work internal sacrifice the small and medium construction IT workers have, the lower turnover they will show had a negative influence. Secondly, the organization related links of the

small and medium construction IT workers had no meaningful influence on the turnover intention.

RandhawaGurpreet (2007) conducted a study on relationship between job satisfaction and turnover intentions. The results showed a significant negative correlation between job satisfaction and turnover intentions. Further, comparative analysis was also done in order to measure the significance of difference between the mean scores of two groups of scientists. The results revealed that the two groups of scientists do not differ significantly on the measures of job satisfaction and turnover intentions.

RahelehEmami et al. (2012) investigated the relationship between organizational learning culture, job satisfaction and turnover intention in IT SMEs. The results of the study indicated that, there was a significant and moderate positive correlation among the seven dimensions of organizational learning culture and job satisfaction. The correlations between the seven dimensions of organizational learning culture and turnover intention were all negative. Job satisfaction also had a strong negative relationship with turnover intention.

### **Research Methodology**

In order to fulfil the mentioned objectives, primary and secondary data was used. The study was carried out in colleges providing higher education in Mohali district. A structured questionnaire including statements on organizational culture, job satisfaction and turnover intention was distributed to 100 employees selected randomly from 10 colleges across Mohali district. The sample was a mix of academicians and administrators working in different departments. In spite of the best efforts, 95 filled questionnaires were found adequate for data analysis. Since the research involved exploring the relationship between job satisfaction and turnover intention along with the studying the impact of organizational culture on turnover intention and job satisfaction, correlation and regression analysis has been used. A Statistical Package for Social Science (SPSS) 20 version has been used as a tool to analyse the data collected though questionnaire.

Following hypothesis were formulated:

**Ho1:** There is no significant impact of organizational culture on job satisfaction among employees.

**Ho2:** There is no significant impact of organizational culture on turnover intention among employees.

**Ho3:** There is no significant impact of job satisfaction on turnover intention.

### Analysis and Interpretation

Demographic statistics covers the general information about the respondents that participated in the study. In particular, the section covers the respondent’s age distribution, department, and gender.

**Table 1** *Demographics of Respondents*

	<b>Demographics</b>	<b>Number of Respondents</b>	<b>% of Respondts</b>
<b>Age</b>	25-34 (1)	56	58.9%
	35-44 (2)	32	33.6%
	45-55 (3)	7	7.3%
	<b>Total</b>	95	
<b>Department</b>	Academics (1)	51	53.6%
	Administration(2)	44	46.3%
	<b>Total</b>	95	
<b>Gender</b>	Male (1)	41	43.1%
	Female (2)	54	56.8%
	<b>Total</b>	95	

**Source:** *Data collected from questionnaires*

Table 1 shows the frequency and percentage analysis of different demographic variables. Demographic variables are broadly categorized into four variables namely; Age (25-34/ 35-44/45-55), Department (Administration/ Academics), Gender (Male/ Female). Out of 95 respondents to whom questionnaire was distributed, 46% belonged to Administration department and 54% to Academics. Further, most of the respondents were female (54%) while 41% were male. Data shows that the maximum respondents were between 21-30 age group (56%) followed by 31-40 age group (32%) and the remaining in 41-50 group.

**Testing Hypothesis 1:** There is no significant impact of organizational culture on job satisfaction among employees.

It is clear from table 2 that organizational culture has a positive and weak correlation (0.260) with job satisfaction and p value is significant as it is less than 0.05.

**Table 2** *Correlation*

		OC	JS
OC	Pearson Correlation	1	.260*
	Sig. (2-tailed)		0.011
	N	95	95
JS	Pearson Correlation	.260*	1
	Sig. (2-tailed)	0.011	
	N	95	95
*. Correlation is significant at the 0.05 level (2-tailed)			

**Source:** *Data analyzed from questionnaires*

Table 3 shows the result of regression and its evident that organizational culture accounts for 7 % of the variation in job satisfaction and rest is accounted by other factors. The ANOVA tells us whether our regression model explains a statistically significant proportion of the variance. Specifically it uses a ratio to compare how well our linear regression model predicts the outcome to how accurate simply using the mean of the outcome data as an estimate is. Results show that p value is significant hence organizational culture can significantly predict and has impact on job satisfaction. Thus Ho1 is rejected.

**Table 3 Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.260 <sup>a</sup>	0.068	0.058	7.88086

**Source:** Data analyzed from questionnaires

Further, the coefficients table gives us the values for the regression line and the following equation is derived:

$$Y = 51.308 + 0.284b.$$

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	418.554	1	418.554	6.793	.011 <sup>b</sup>
	Residual	5776.036	93	62.108		
	Total	6194.589	94			
a. Dependent Variable: JS						
b. Predictors: (Constant), OC						

Coefficients <sup>a</sup>						
Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Stand. error	Beta		
1	(Constant)	51.308	4.724		10.862	0
	OC	0.284	0.109	0.26	2.596	0.011
a. Dependent Variable: JS						

**Testing of Hypothesis 2:** There is no significant impact of organizational culture on turnover intention among employees.

It is evident from table 4 that there is a weak correlation between organizational culture and turnover intention and the correlation is also not significant as p value > 0.05. Further, regression model (table 5) results show that organizational culture accounts for negligible (0.03 percent) variation in turnover intention. ANOVA table also states that organizational culture does not significantly predicts turnover intention. Hence Ho2 is accepted. The regression equation derived is as follows:

$$Y = 34.278 + 0.06 b$$

**Table 4** *Correlation*

		OC	TI
OC	Pearson Correlation	1	.055
	Sig. (2-tailed)		.596
	N	95	95
TI	Pearson Correlation	.055	1
	Sig. (2-tailed)	.596	
	N	95	95
*. Correlation is significant at the 0.05 level (2-tailed)			

**Source:** *Data analyzed from questionnaires*

**Table 5** *Regression Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.055a	.003	-.008	8.06172

<i>ANOVA<sup>a</sup></i>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18.390	1	18.390	.283	.596b
	Residual	6044.200	93	64.991		
	Total	6062.589	94			
a. Dependent Variable: TI						
b. Predictors: (Constant), OC						

<i>Coefficients<sup>a</sup></i>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	34.278	4.832		7.094	0
	OC	0.06	0.112	0.055	0.532	0.596
a. Dependent Variable: TI						

**Source:** *Data analyzed from questionnaires*

**Testing of Hypothesis 3:** There is no significant impact of job satisfaction on turnover intention

**Table 6 Correlation**

		JS	TI
JS	Pearson Correlation	1	.507**
	Sig. (2-tailed)		.000
	N	95	95
TI	Pearson Correlation	.507**	1
	Sig. (2-tailed)	.000	
	N	95	95
**. Correlation is significant at the 0.01 level (2-tailed).			

**Source:** Data analyzed from questionnaires

It is clear from table 9 that turnover intention and job satisfaction has a positive and significant relationship ( $p < 0.05$ ). Moreover job satisfaction accounts for 26% variation in turnover intention. Not only this, ANOVA results also show that job satisfaction can significantly predict turnover intention. As a result Ho3 is rejected meaning that there is significant impact of job satisfaction on turnover intention. Further, regression line values lead to the following regression equation:

$$Y = 44.506 + 0.513 b$$

**Table 7 Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. error of the Estimate
1	.507a	0.258	0.25	7.03234

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1595.385	1	1595.385	32.260	.000 <sup>b</sup>
	Residual	4599.204	93	49.454		
	Total	6194.589	94			
a. Dependent Variable: TI						
b. Predictors: (Constant), JS						

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.506	3.402		13.082	0
	TI	0.513	0.09	0.507	5.68	0
a. Dependent Variable: TI						

**Source:** Data analyzed from questionnaires

## **Conclusions and Recommendations**

Analysis and interpretation of data has shown that organizational culture has significant impact on job satisfaction and not on turnover intention. Job satisfaction on the other hand has significant impact on turnover intention. Hence it can be said with some confidence that employees working in colleges providing higher education in Mohali district Punjab can remain satisfied with their jobs if healthy organizational culture exists.

The authorities are recommended to encourage OCTAPACE culture in the colleges focusing on openness, confrontation, trust and trustworthiness, authenticity, proactivity, autonomy, collaboration and experimentation. Considering that organizational culture functions as a compass which monitors the direction in which the institution is growing hence providing to employees a sense of security and satisfaction, efforts should be exerted to develop a culture which is supportive to employee growth.

The study henceforth emphasizes the significance of various constituents of culture as job satisfaction can be not only influenced, but also predicted by employees' perceptions of organizational culture. If there happens to be a difference between an organizations' culture and the culture preferred by its employees, it may lead to reduced job performance and increased job dissatisfaction. In addition, differences between employees' preferred and current organizational culture are likely to affect job commitment and turnover intention. Further, results of study have supported the fact that satisfied employees will have less intention to leave the organization.

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# THE EFFECTS OF CORRUPTION ON INNOVATION AND COMPETITIVENESS THE CASE OF SEE COUNTRIES

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## Abstract

*The paper deals with the analysis of interdependence between innovation, corruption and global competitiveness in the selected countries in transition. In addition to gaining new knowledge on the competitive position of individual countries in the observed sample, the aim of the paper is to identify the key areas where reforms for raising the level of innovation and competitiveness are needed in the analyzed countries. The research included the following countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Macedonia, Montenegro, Romania, Slovenia and Serbia from 2007 to 2016. The examination of the direction and strength of the association was conducted by using Pearson linear correlation coefficient. The results indicate that corruption perception, innovation and competitiveness were in decline during the initial years of transition. Afterwards, there was an improvement in the observed indicators with the growth of openness and the degree of integration of these countries into institutionally and economically more developed Western Europe countries. Although the impact of corruption on innovation and competitiveness is of a different intensity among the countries, the results of the analysis confirm the expectations that the continued growth and openness and economic integrations could result in the reduction of corruption, increase in innovation and competitiveness, as well as in the convergence of the strength of interdependence of these variables among the countries.*

**Key words:** *innovation, competitiveness, corruption*

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## Introduction

Modern society is forced to maintain a certain level of competitiveness in an attempt to survive on the international stage. The challenges the modern economies face are numerous. Corruption is certainly the most negative phenomenon, even though it has existed in every society during every period; only its manifestations, intensity and consequences differ. There are many different definitions in literature, and authors agree that it is illegal, reciprocal, yet a voluntary phenomenon. According to Tanzi (1998), corruption represents the abuse of public power and he concludes that the abuse is sometimes not directly related to the private benefit “but but for the benefit of one’s party, class, tribe, friends, family, and so on” (p. 564). Vuković (2005) states that the scope, type and intensity of corruption depend on characteristics of state regulations, “state interference in the economy, scope of transactions under direct and indirect state control, efficiency of the penal system, socio-historic circumstances, material development of a society and state of social values” (p. 138). Esadze (2013) points out that “corruption is much more than a simple sum of so-called corruption offenses listed in the national criminal legislation” (p. 3). Đukić (2016) points out that corruption leads to the abuse of public and economic functions and official capacity in the public sector, whereas Prokopijević (2011) adds that a corrupted individual is dishonest, prone to nepotism, embezzlement, blackmails and moral depravity in mutual exchanges. As far as the negative influence on society is concerned, it first and foremost refers to the fact that it affects all countries, rich and poor – with a certain divergence in how much it is present and how much negative influence it has on aspects of social life (Vejnović, 2010). Vejnović (2010) concludes that the mentality of country residents plays an important part in the development of a corrupt society, and that in such society people have a difficult time in realizing their legal rights as well. A society becomes nontransparent, unattractive, and finally uncompetitive. The analysis of the factors responsible for the appearance of corruption points to countries that have issues in economic and human development. Firstly, it is necessary to indicate that countries with the issue of limited resources (food, energy, foreign currency, import-export limitations, etc.) have a higher rate of corruption. Poor state of public services, education and science as well, is indicated as the second factor. Low salaries or unprofessionalism of public servants can also be the reason for the intensification of corruption. The existence of tax evasion, as well as all other forms of avoiding obligations towards the state, represent the third cause of corruption.

Competitiveness of national economies depends on a number of factors, and education, research and development play a significant part. In the past, economic development relied on natural resources and cheap labor, whereas today developed countries invest significant funds into the development of human potential. According to Toffler (1975) education should “increase the individual’s “cope-ability” the speed and economy with which he can adapt to continual change. And the faster the rate of change, the more attention must be devoted to discerning the pattern of future events.” Being competitive on the global market implies “the improvement of all knowledge creation activities and its application in different areas. Such activities primarily imply innovations, research and development, education and workforce training” (Krstic et al, 2013, p. 142). According to Wickham (2001), a knowledge-based economy rests on “stimulating ambiance”. Such conditions should enable and reinforce creativity, develop gained and new knowledge. As Krstić et al. (2013) states innovations and R&D have a role to “connect companies, research centers, universities and other public organizations” (p. 142) so as to keep up with global trends. Prodanović and Milošević (2013) point out that innovations are a desirable and necessary means of global competitiveness, referring to them as “a dynamic category”, “a strategic factor” and “an essential part of the economic development model of every country” (p. 247). In the conditions of global market development, innovative economies and knowledge-based economies have preconditions for global competitiveness. Prodanović and Milošević (2013) point out that countries that “put an emphasis on knowledge, innovation, research and continuing education, have better chances not only for survival, but for further growth as well”. Nowadays, knowledge is everywhere around us, in products, services. Simply put, it is the subject of purchases and sales; it influences modernization of the manufacturing and organization process. The results of innovative processes are: increase in productivity, creation of new products, new manufacturing processes, which can be categorized as micro effects. On the other hand, we can discuss the macro effects, such as increase in GDI, manufacturing and price competitiveness, positive foreign trade balance, and other.

The relationship between competitiveness of national economies, innovation process and corruption in society arises as a logical question. Human capital is the key factor for economic growth as it influences its expansion and development. As Horvat Novak (2015) points out, the significance of human capital has been proven in all modern economic research. The author suggests that healthcare and education enable the

creation and usage of human potential, while criminal and corruption represent the limiting factors of its development. Thus it can be concluded that innovation has a positive influence, whereas corruption has a negative influence on the competitiveness of an economy. For this reason, the research deals with the analysis of interdependence between innovation, corruption and global competitiveness in selected countries in transition. Alongside with gaining new knowledge about the competitive position of individual countries in the observed sample, the aim of this paper is to identify key areas in the analyzed countries where reforms for raising the level of innovation and competitiveness are necessary.

### **Methodological basis and data sources**

The methodological basis of this paper is based on the application of Corruption Perception Index (CPI), Global Innovation Index (GII), and Global Competitiveness Index (GCI)<sup>3</sup>. The subject of correlation analysis is examination of the strength of interdependence between corruption perception, innovation and competitiveness. The selected variables are Corruption Perception Index, Global Innovation Index and Global Competitiveness Index. The examination of direction and strength of interdependence between these three indexes was conducted by correlation analysis. The observed sample consists of 10 countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Macedonia, Montenegro, Romania, Slovenia and Serbia. The reference period is from 2007 to 2016; for Global Innovation Index from 2008 to 2016. The examination of the strength of relationship was conducted by using Pearson's linear correlation coefficient. That is the covariance of the standardized variables X and Y. It is calculated with the following formula:

$$r = \frac{\sum_{i=1}^n x_i y_i - n \bar{x} \bar{y}}{n \sigma_x \sigma_y}$$

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<sup>3</sup>Method for the calculation and the interpretation of Corruption Perception Index (CPI), Global Innovation Index (GII) and Global Competitiveness Index (GCI) are presented in the analytical part of the paper (Chapter 3 - Indicators of corruption perception, innovation and competitiveness of the selected countries in transition).



Or alternatively:

$$r = \frac{\sum_{i=1}^n x_i y_i - n\bar{x}\bar{y}}{\sqrt{\left(\sum_{i=1}^n x_i^2 - n\bar{x}^2\right)\left(\sum_{i=1}^n y_i^2 - n\bar{y}^2\right)}}$$

The coefficient takes values from the closed interval between -1 and 1. A value of zero indicates that there is no linear correlation, a value of plus one indicates perfect positive fit, and minus one indicates perfect negative fit. The closer the value of coefficient is to 1, the stronger the linear relationship. Lesser coefficient value does not necessarily indicate the weak relationship between the variables, since there can be very strong correlation between the variables, but curvilinear, thus the application of linear correlation coefficient is not appropriate in such case. The data from Transparency International, The World Economic Forum and The World Bank were used as the sources of information for Corruption Perception Index, Global Innovation Index and Global Competitiveness Index.

### **Indicators of corruption perception, innovation and competitiveness of the selected countries in transition**

#### ***Corruption Perception Index (CPI)***

According to Transparency International (TI), corruption is the abuse of entrusted power for private gain that eventually hurts everyone who depends on the integrity of people in a position of authority. State chapters of Transparency International measure corruption in every sector in their countries. Therefore, CPI does not represent the assessment of the state of corruption, it rather represents the survey results on how business people perceive each area of business. The aim of creating CPI is to recognize the level of corruption in societies, enable comparative analysis by countries in a certain time frame, conduct a scientific analysis of the samples and offer specific suggestions for the improvement. The value of index is in the range from 0 to 100 index points. The value of 100 represents “clean” countries, that is countries with no corruption, and 0 represents extremely corrupt countries.

Transparency International data for 2015 are presented below. Countries with the lowest and the highest level of corruption perception are presented.

**Table 1** *The least and the most corrupt countries in the world in 2015*

	Country	Rank	Score (0-100)	Country	Rank	Score (0-100)
1	Denmark	1	91	Myanmar	147	22
2	Finland	2	90	Burundi	150	21
3	Sweden	3	89	Cambodia		21
4	New Zealand	4	88	Zimbabwe		21
5	The Netherlands	5	87	Uzbekistan	153	19
6	Norway		87	Eritrea	154	18
7	Switzerland	6	86	Syria		18
8	Singapore	7	85	Turkmenistan		18
9	Canada	8	83	Yemen		18
10	Germany	9	81	Haiti	158	17

**Source:** *Transparency International (2015)*

While a small number of countries has made progress, generally speaking, the region is still in stagnation. The governments want to make changes, but carrying them into effect is a different story. The fact that the situation is deteriorating in countries such as Hungary, Macedonia, Spain and Turkey is worrying. These are the countries where there was a hope for a positive change. Currently, it can be observed that corruption is increasing, while democracy is in decline. The Nordic countries are at the top – Denmark, Finland, and Sweden are in the top three, and Norway is not far below as well. Yet, we are witnesses to a great number of instances of corruption in the most developed countries and in the Balkan countries as well. The situation is significantly worse in Azerbaijan, Kazakhstan, Uzbekistan and other countries, where the governments restrict or eliminate public and media.

**Table 2** *CPI in former socialist countries in Europe in 2015*

Country	CPI	Country	CPI
Estonia	70	Montenegro	44
Poland	62	Macedonia	42
Lithuania	61	Bulgaria	41
Slovenia	60	Serbia	40
The Czech Republic	56	Bosnia and Herzegovina	38
Latvia	55	Albania	36
Georgia	52	Armenia	35
Hungary	51	Moldova	33
Slovakia	51	Russia	29
Croatia	51	Ukraine	27
Romania	46		

**Source:** *Transparency International (2015)*

Among the observed countries, most of the former socialist countries have a higher ranking than Serbia. Estonia and Poland are rated very high and they are at the very top. Data suggest that Russia, according to the CPI value, is a highly corrupt country, although some major reforms have been implemented and there has been an increase in GDI. The analysis of CPI in Serbia indicates that during the reference period, the value of index has slightly changed. From 2003 to 2015, in most of the countries a small symbolical progress was made, while in 2008, 2010, 2014 and 2015 there was no change whatsoever. Until 2011, CPI had ranged from 1 to 5, where the majority of countries had a score up to 3. Since 2011, the value of index has been in the range from 1 to 100. The lowest index value represents the highly corrupt countries, whereas the value 100 represents free countries.

**Table 3** *CPI of the countries in transition from 2007 to 2016*

CPI	RO	MNE	HR	HU	SL	SRB	BG	ALB	BIH	MK
2016	48	45	49	48	61	42	41	39	39	37
2015	46	44	51	51	60	40	41	36	38	42
2014	43	42	48	54	58	41	43	33	39	45
2013	43	44	48	54	57	42	41	31	42	44
2012	44	41	46	55	61	39	41	33	42	43
2011	3,6	4	4	4,6	5,9	3,3	3,3	3,1	3,2	3,9
2010	3,7	3,7	4,1	5	6,4	3,5	3,6	3,3	3,2	4,1
2009	3,8	3,9	4,1	5,1	6,6	3,5	3,8	3,2	3	3,8
2008	3,8	3,4	4,4	5,1	6,7	3,4	3,6	3,4	3,2	3,6
2007	3,7	3,3	4,1	5,3	6,6	4	4,1	2,9	3,3	3,3

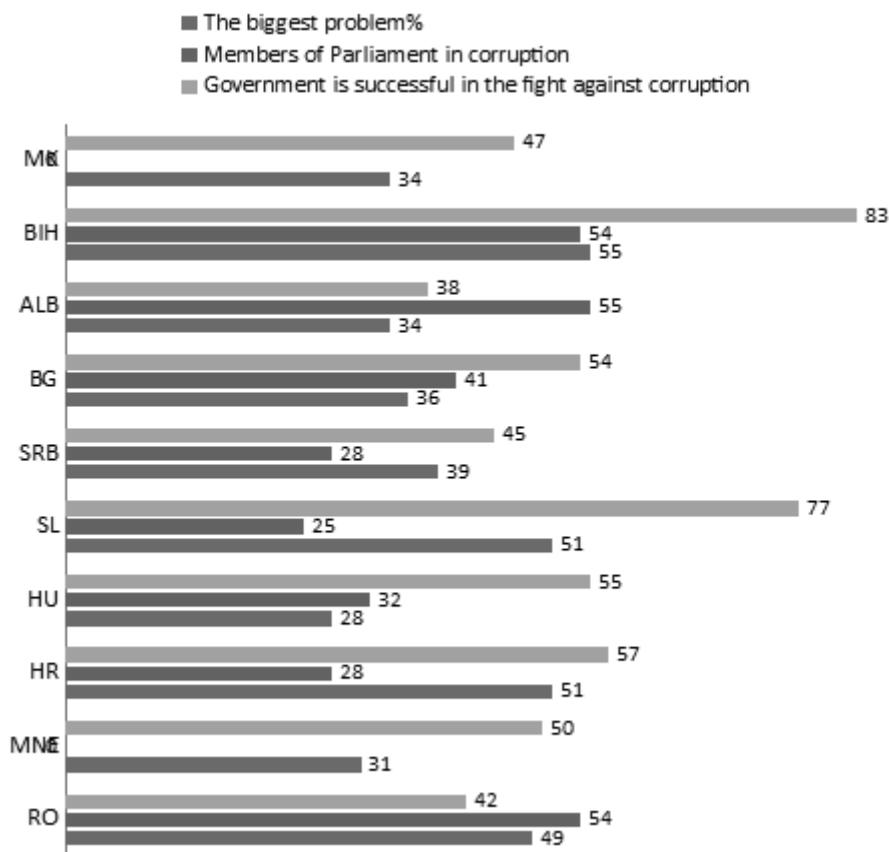
**Source:** *Transparency International (2015)*

There has been an insignificant change in the index in most of the countries (Romania, Montenegro, Slovenia, Serbia, Albania and Bosnia and Herzegovina). However, corruption perception has become worse in Croatia and Macedonia, whereas in Bulgaria, there has been a period of stagnation. Therefore, Serbia is still ranked as a country with widespread corruption. Transparency Serbia has been pointing out to the problems, accusations, disputes without judgment, and a number of vexed questions related to financing and control of political campaigns. The organization believes there have been no reforms of public administration, improvement of the work of inspection services – simply put, the analysis of Corruption Perception Index for 2015, leads to the conclusion that there has been no progress in the fight against corruption. To overcome the existing situation, laws have to be tightened. There is anticorruption legislation in books, i.e. in theory, but something is missing in application. Country governments have to control the political corruption and the reforms in the financial sector, and for that, a transparent system and free media are necessary.

Below are the results of the research conducted by Transparency International during 2016. The first question refers to the opinion of respondents whether corruption is one of the three biggest issues the government has to resolve in their country. The data show the percentage of respondents who said that “corruption” or “bribery” is one of the three biggest issues. The second question refers to corruption perception in the context of members of the parliament. The data show the percentage of respondents who said “the majority” or “all” members of the parliament are involved in corruption. The third question refers to the opinion of

respondents on how successfully the government is fighting corruption. The data show the percentage of respondents who said their government “is not doing well” in fight against corruption. The data obtained from the three survey questions are represented for each country.

**Figure 1** *The percentage of respondents who believe corruption is one of the three biggest issues in the country*

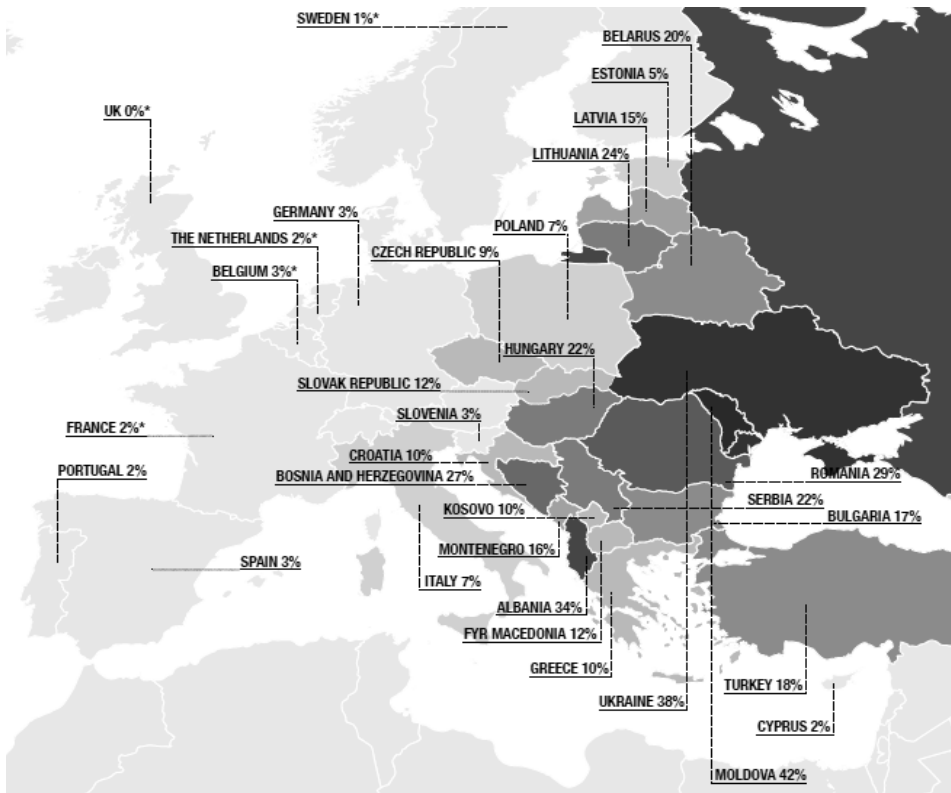


**Source:** *Authors’ interpretation based on Coralie Pring (2016). People and corruption: Europe and Central Asia: Global Corruption Barometer, Publisher: Transparency International*

The research suggests that people in Bosnia and Herzegovina and Slovenia have the most positive attitude, whereas in Albania, there is a widespread opinion that the government has not been successful in fighting against corruption. In other analyzed countries, the attitude is uniform, and it spans from 42-57% respondents. When it comes to the second indicator

(corruption is the biggest problem in the country), respondents' attitudes range from 28-55%. The lowest percentage is present in Hungary, which indicates that respondents believe corruption is not the predominant issue and that there are other problematic areas, that is, that the government is successful in fighting against corruption. In Romania, Bosnia and Herzegovina and Albania, respondents believe the highest percentage of members of the parliament are corrupt, whereas in Slovenia, Croatia and Serbia, that percentage is very low.

**Figure 2** *Bribery rates across Europe and Central Asia*



**Source:** Coralie Pring (2016). *People and corruption: Europe and Central Asia: Global Corruption Barometer*; Publisher: Transparency International

Figure 2 is showing countries according to the percentage of bribery, based on the Global Barometer data. It can be concluded that the highest bribery rate among the analyzed countries is present in Albania, Romania, Bosnia and Herzegovina, whereas Slovenia has the highest ranking, i.e. it has the lowest rate.

## Global Competitiveness Index – GCI

When talking about competition, we start with Porter’s attitude (2008) that national prosperity is created, not inherited. Ignjatijević et al (2016) pointed out that “national competitiveness has become one of the main preoccupations of governments and economies in every country, and that each country is different in the degree of competitiveness as well, and no country is competitive in every sector.” The question is, what makes one country and economy more competitive and how is competitiveness measured? Milojević, Cvijanović and Ignjatijević (2012) pointed out that the economics, that is macroeconomics, has developed a system of global indicators that describe economic activity in a certain country. The aim of so-called macroeconomic aggregates is the quantitative analysis of economic development and the possibility of comparing global indicators of multiple countries. Global Competitiveness Index (GCI) is defined by World Economic Forum. GCI is a composite index composed of twelve “pillars of competitiveness”, divided into three groups. The first group includes the following pillars: (1) Institutions (2) Infrastructure (3) Macroeconomic environment (4) Health and Primary Education. The second group includes: (5) Higher Education and Training (6) Goods Market Efficiency (7) Labor Market Efficiency (8) Financial Market Development (9) Technological Readiness and (10) Market Size. The third group includes two pillars: (11) Business Sophistication and (12) Innovation. As WEF points out, these pillars include microeconomic and macroeconomic factors of the development of institutions, that is factors of competitiveness of a national economy.

**Table 4** *GCI of countries in transition from 2007 to 2016*

GCI	RO	MNE	HR	HU	SL	SRB	BG	ALB	BIH	MK
2016	4,3	4,1	4,1	4,2	4,4	4	4,4	4,1	3,8	4,2
2015	4,3	4,2	4,1	4,2	4,3	3,9	4,3	3,9	3,7	4,3
2014	4,3	4,2	4,1	4,3	4,2	3,9	4,4	3,8		4,3
2013	4,1	4,2	4,1	4,2	4,3	3,8	4,3	3,8	4	4,1
2012	4,1	4,1	4	4,3	4,3	3,9	4,3	3,9	3,9	4
2011	4,08	4,27	4,08	4,36	4,3	3,88	4,16	4,06	3,83	4,05
2010	4,16	4,36	4,04	4,33	4,42	3,84	4,13	3,94	3,7	4,02
2009	4,11	4,16	4,03	4,22	4,55	3,77	4,02	3,72	3,53	3,95
2008	4,1	4,11	4,22	4,22	4,5	3,9	4,03	3,55	3,56	3,87
2007	4	3,9	4,2	4,4	4,5	3,8	3,9	3,5	3,6	3,7

**Source:** *WEF (2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016.)*

One common characteristic of the majority of the observed countries is the improvement in Global Competitiveness Index ranking from 2007 to 2016. However, the index values indicate that the growth dynamic is relatively slow. Moreover, it is interesting to note that the economically developed countries in the observed group, such as Hungary or Slovenia record the drop in the index ranking. Looking at Serbia separately based on the World Economic Forum 2015 report, it is ranked at the 94<sup>th</sup> place on the list that includes 140 countries, with Global Competitiveness Index (GCI) value of 3.89, which is 0.01 lower compared to the previous year.

### **Global Innovation Index (GII)**

Global Innovation Index (GII) is an evolving project that builds on its previous editions while incorporating newly available data and that is inspired by the latest research on the measurement of innovation. GII is monitored for EU members and two former SFRY countries: Serbia and Macedonia. GII relies on input and output sub-index. The input sub-index consists of: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication, and the output sub-index consists of: (6) Knowledge and technology outputs and (7) Creative outputs.

The Innovation Index should enable the evaluation of areas which require an effort for improving innovative performances. As the index creators point out: “To achieve a high level of performance, countries and regions need a balanced innovation system performing well across all dimensions. They need an appropriate level of public and private investment, effective innovation partnerships among companies and with academia, as well as a strong educational basis and excellent research. Also, the economic impact of innovation needs to manifest itself in terms of sales and exports of innovative products as well as in employment”. According to EIS 2016 Report, EU countries are divided into: *Innovation Leaders*: Denmark, Finland, Germany, the Netherlands and Sweden; *Strong Innovators* - Austria, Belgium, France, Ireland, Luxembourg, Slovenia, and the United Kingdom; *Moderate Innovators* - Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, and Spain; *Modest Innovators* - Bulgaria and Romania.

In-depth analysis by countries shows that the leaders are: in quality of academic research – Sweden; in financial framework conditions – Finland; Companies that invest a lot in innovation – Germany; in innovation



networks and collaboration - Belgium and in innovation in small and medium-sized companies (SMEs) – Ireland.

**Table 5** *GII of countries in transition from 2011 to 2016*

GII	RO	MNE	HR	HU	SL	SRB	BG	ALB	BIH	MK
2016	37,9	37,36	38,29	44,71	45,97	33,75	41,42	28,38	29,62	35,4
2015	38,2	41,23	41,7	43	48,49	36,47	42,16	30,74	32,31	38,03
2014	38,08	37,01	40,75	44,61	47,23	35,89	40,74	30,47	32,43	36,9
2013	40,3	41	41,9	46,9	47,3	37,9	41,3	30,9	36,2	38,2
2012	37,8	40,1	40,7	46,5	49,9	40	40,7	30,4	34,2	36,2
2011	36,83	/	37,98	48,12	45,07	36,31	38,42	30,45	30,84	33,47

**Source:** <https://www.globalinnovationindex.org/home>

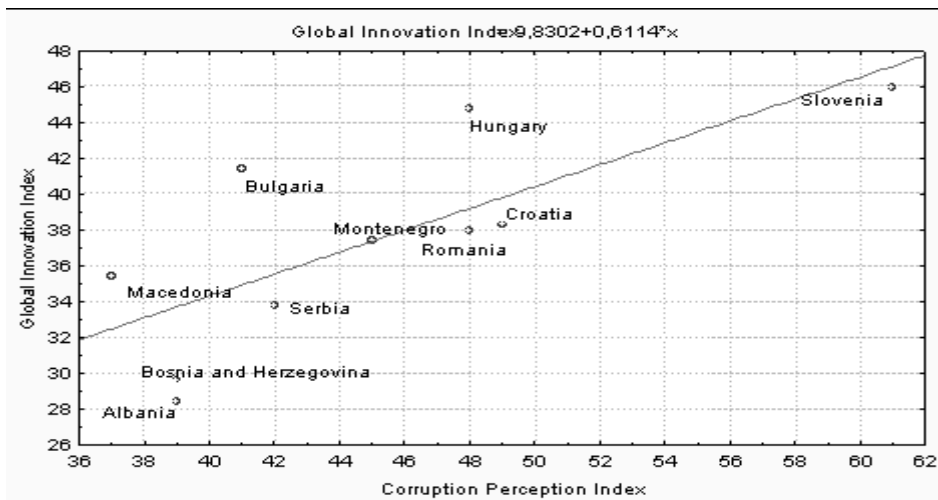
The values of Global Innovation Index presented in the table 5 confirm that in the observed group of countries, EU members display a higher degree of innovation. As expected, the greatest degree of innovation in 2016 is present in Slovenia, economically most developed country. At the same time, the lowest degree of innovation is present in Albania. Dynamic of Global Innovation Index from 2011 to 2016, suggests that in the observed countries, the index has declined (Hungary, Serbia, Montenegro, Bosnia and Herzegovina and Albania) or is improving relatively slowly (Romania, Croatia, Slovenia, Bulgaria and Macedonia).

## Results

The results of the analysis from the previous chapters, where the horizontal analysis of the corruption level, innovation and competitiveness in the selected countries was carried out, confirm the existence of structural changes in institutional and innovation capacities building, and changes in the level of competitiveness. Considering the fact that the results are heterogeneous across countries, the difference in the strength of interdependence of the three observed variables in each analyzed country is something to be expected. A common characteristic for all countries is a noticeable degradation in corruption perception, decline in innovation and competitiveness during the first years of transition. Yet, during the years afterwards, with the growth of openness and the degree of integration of these countries into the institutionally and economically more developed space of western European countries, there was an improvement in the observed indicators.

At the very beginning of the correlation analysis, the strength of the reducing corruption effect on the innovation development in the observed countries was examined. Correlation coefficient between the corruption perception index and global innovation index was calculated.

**Figure 3** *Correlation between corruption perception and innovation in the analyzed countries*



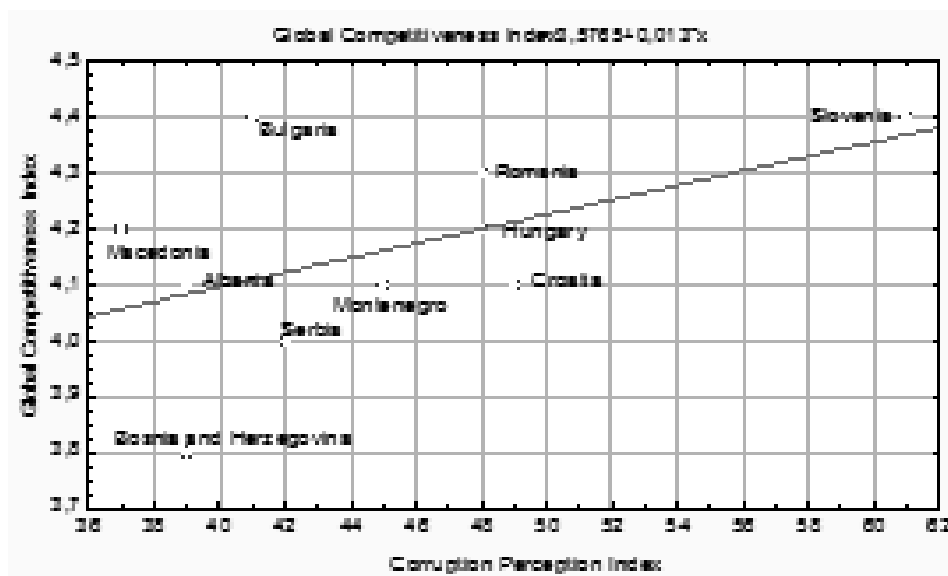
**Source:** Authors' interpretation based on the data base

Correlation coefficient is 0.75. The relationship is positive. Correlation is of medium strength. As expected, the data confirms that the countries with lower level of corruption are at the same time with higher level of innovation. In the group of the observed countries, Slovenia stands out. This country displays the lowest level of corruption and, at the same time, the highest Global Innovation Index as measured by Corruption Perception Index. The EU members group follows: Hungary, Croatia, Bulgaria and Romania. It is interesting that Montenegro, still not an EU member, is in this group. After Montenegro, Serbia is in the leading position in the group of non-EU members. Finally, it is interesting to point out that the intensity of the impact of corruption on the level of innovation is weaker in economically less developed countries (Albania, Bosnia and Herzegovina). That is expected considering the fact that parallel with the decline in economic growth, alongside with corruption, the intensity of other obstacles for innovation development increases.

The level of corruption in countries is reflected in their competitiveness, in addition to innovation. Since a number of other variables, besides corruption, influence competitiveness, the correlation coefficient for the

observed group of countries is somewhat weaker and is 0.50. Bosnia and Herzegovina and Bulgaria have atypical values in the group of analyzed countries. Bulgaria's atypical values stem from the fact that it managed to improve its global competitiveness level, even though it has not made a significant progress on the scale of Corruption Perception Index. This can be explained with its significant step forward in the development of the business environment, administrative infrastructure and ease of doing business. For example, according to ease of doing business, Bulgaria has moved from 62<sup>nd</sup> to 39<sup>th</sup> place from the total of 190 ranked countries, in the period from 2006 to 2016 (World Bank, 2017).

**Figure 4** *Correlation between corruption perception and Global Competitiveness Index*



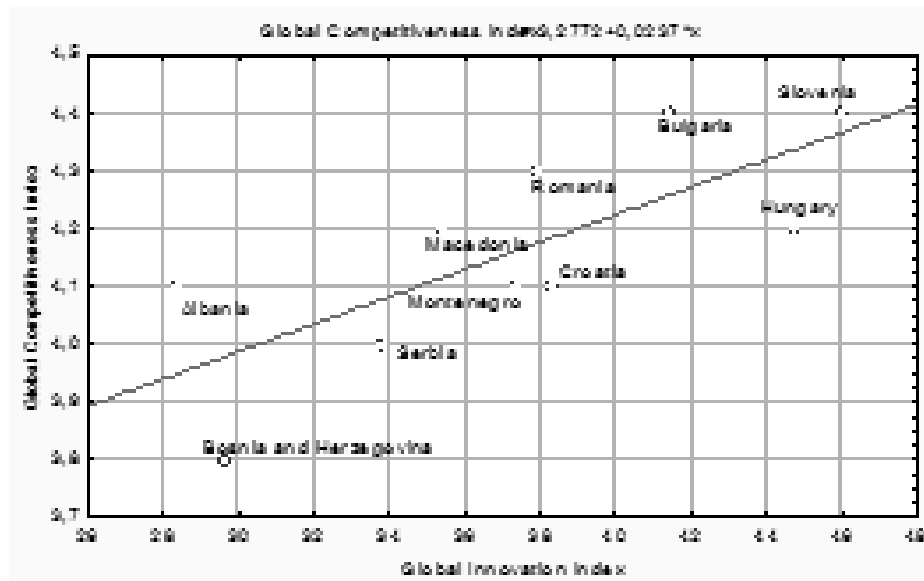
**Source:** *Authors' interpretation based on the data base*

At the same time, Bosnia and Herzegovina has the lowest Global Competitiveness Index value, and after Macedonia, the lowest Corruption Perception Index.

Slovenia stands out with the high value of Global Competitiveness Index and Corruption Perception Index (GCI=4.4; CPI=61). After Slovenia, the EU members group follows: Hungary, Romania and Croatia. After Montenegro, Serbia has the best ranking among the non-EU members.

As expected, when examining the strength of interdependence between corruption perception, innovation and competitiveness, the strongest relationship is present in correlation between innovation and competitiveness. Correlation coefficient is 0.79.

**Figure 5** *Correlation between innovation and competitiveness*



**Source:** *Authors' interpretation based on the data base*

Following the previous results, this correlation analysis confirms the positive effect of EU integrations on the development of innovation and competitiveness. Slovenia is again at the top of “the pyramid”. Hungary, Bulgaria, Croatia and Romania come after. In this part of the analysis, Albania has atypical values. Even though this country has the lowest Global Innovation Index (GII=28.38), it has a relatively high position in the group of non-EU members considering Global Competitiveness Index (GCI=4.1). The legacy of relative isolation of this country has left a mark on it. Although it is a smaller country, according to the indicators of the openness<sup>4</sup> and integration, Albania is less open and integrated country, which, by looking at the results of analysis, slows down its innovation

<sup>4</sup> One of the most commonly used indicators of the openness of the economy is the share of export and import in GDI because of the simplicity of calculation, the availability and international comparability. According to the World Bank data, the share of import and export in GDI in 2015 in Albania was 27.2%. For comparison, in Croatia this indicator was 49.4%, in Montenegro 42.8%, in Macedonia 48.4%, in Hungary 90.7%, in Romania 41.1%, in Serbia 46.7%, and in Slovenia 77.9%.

and economic progress. On the other hand, the prevailing Albanian economic structure where primary manufacturing and labor-intensive activities prevail, with predominant *lohn* businesses where manufacturing is performed for a known customer by the given technology of that same customer can account for the weaker innovation performance. Thereby, the faster innovation development and products manufacturing with higher added value is thus being limited.

### **Conclusion**

The results suggest that during the initial years of transition, corruption perception was in decline, which had a negative influence on the level of competitiveness and innovation. Further market liberalization and integration processes have improved the analyzed indicators. The results suggest there is medium strong, positive correlation between corruption and innovation perception in the analyzed countries. The results presented confirm that countries which have the lower level of corruption also have a higher level of innovation. Slovenia has the lowest level of corruption and the highest Global Innovation Index out of all analyzed countries. The strength of the influence of corruption on innovation is weaker in economically less developed countries (Albania, Bosnia and Herzegovina) due to the presence of other limiting factors. The results show there is a weak positive relationship between corruption perception and Global Competitiveness Index. Large discrepancies are present in Bosnia and Herzegovina and Bulgaria. Bulgaria has not made any progress regarding corruption, but it reached a higher level of competitiveness by improving business conditions. In examination of correlation influences, the strongest positive relationship is present in Slovenia, followed by Hungary, Bulgaria, Croatia and Romania. When analyzing this influence, Albania stands out with the lowest level of competitiveness, as a consequence of long-term isolation and unfavorable manufacturing structure.

The results indicate that corruption is a negative and limiting phenomenon, and one of the most serious problems, right after unemployment. The results further confirm the need to take decisive measures so as to monitor and prevent the analyzed phenomena. Building the trust in public sector as well as the unity of all participants, while strictly following their legal jurisdictions, is of the utmost importance when building a democratic society and the rule of law.

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# THE EFFECT OF PRODUCT DEVELOPMENT AND INNOVATION ON SMES EXPORT PERFORMANCE

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## Abstract

*The largest trading partner of the Republic of Serbia is the European Union and in the last years a constant trade growth has been recorded. Further implementation of economic reforms and gradual free trade of industrial products with European Union are directed towards achieving better export performance. The industry of export-oriented value-added products must be supported by direct and indirect economic policy measures adequately targeting innovation and product development. In the European framework it has been proven that innovations have a direct influence on the export performance. The empirical investigation in Serbia reveals that product innovation has a significant impact on export performance. The objective of the paper is to explore the relationship between product development and SMEs export performance by using data collected by a questionnaire from a sample of Serbian exporters. Statistical methods that shall be used are Pearson Chi-square test, correlation and regression analysis. Consistently with the predictions of the theoretical findings, the research results suggest a positive effect of product quality on export performance, as SMEs that invest in product quality are more likely to reach satisfactory export results.*

**Key words:** *product development, innovation, export performance, small and medium enterprises, Republic of Serbia, European Union*

## Introduction

In today's economy the survival and development of the economy is dependent on its integration with world markets and trends in the international economic environment, and in our particular case, the necessary links with European countries and Western Balkan countries which are the main foreign trade partners of Serbia. The foreign trade is for the Republic of Serbia, one of the

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most important economic activity for enhancing the competitiveness, directed towards a greater integration into the Single Market of the European Union.

SMEs have a significant role in accelerating the process of economic growth and development, GDP growth and reduction of unemployment rate in the Western Balkans. Especially in developing economies, SMEs are important source for the overall economic development having a direct impact on the employment, economic welfare, investment attraction and social stability. SMEs represent the vast majority of productive activities in the Western Balkans. According to Irwin (2007) economies with high proportion of SMEs will be more resilient to external shocks and will be more likely to have more firms which grow into larger business. Many SMEs in Serbia still do not have a clearly defined strategy of internationalization, nor the knowledge and ability to identify potential partners and assess the market potential.

SMEs in Serbia providing 65,1% of total employment have a share of 65,4% in total revenue and 55,8% of GDP (Report on SMEs and entrepreneurship in Serbia, 2013). In the EU, 80% of all export companies are exactly SMEs which exported about 600,000 different goods (Cernat, Norman-Lopez and T-Figueras, 2014). The participation of these companies in the total export of the EU amounted to 34%, which is lower than in Serbia, where SMEs make 48.9% of export revenues (Ministry of Economy, Ministry of Regional Development and Local Government, National Agency for Regional Development, 2013). Although the export of Serbian companies began to improve in recent years the obstacles to the export are still the costs, time and number of required documents. Western Balkan exporters are currently concentrated on the markets of the EU and CEFTA countries that receive the largest part of region exports (Vapa-Tankosić, Carić and Jevtić, 2011).

**Table 1** *Participation of SMEs in total income, employment and export in Serbia*

	TYPE OF SME	SERBIA (% participation)
<b>Total income</b>	Micro	39,3
	Small	31,1
	Medium-sized	29,6
<b>Employment</b>	Micro	45,2
	Small	25,1
	Medium-sized	28,7
<b>Export</b>	Micro	23,0
	Small	28,6
	Medium-sized	48,4

**Source:** *Extrapolation of data from Report on SMEs and entrepreneurship in Serbia (2013)*

The paper highlights the importance of the SMEs sector in the Republic of Serbia and analyzes the relation between innovation and exports. The link between innovation and exports performance has been much discussed in literature attempting to answer the question whether more innovative firms are more likely to export. This paper defines innovation activities in three different ways: a new product innovation, a new production process and a modification of existing products. The authors by using data collected by a questionnaire from Serbian exporters shall investigate a direct influence of product quality on export performance.

### **Determinants of export performance**

Since the 1960s determinants of export performance have been attracting attention from international scholars as one of the most investigated issues. Many theoretical frameworks of export performance have been formulated in the past period by Zou and Stan (1998), Leonidou, Katsikeas and Piercy (1998), Katsikeas et al.(2000), Leonidou, Katsikeas, and Samiee (2002), Shosham (2002), Sousa (2004), Ruppenthal and Bausch (2009).

Katsikeas, Leonidou and Morgan (2000) have analyzed more than 100 empirical studies on export performance with different conclusion caused by differences in methodology, context, external environmental factors, and statistical analysis. Shoham (1998) identified 29 measures of export performance, while Sousa (2004) reviewed 43 empirical studies and noted 50 different operational aspects of export performance. In the qualitatively review of existing research of 91 studies Ruppenthal and Bausch (2009) conclude that the company, industry and institutional and/or market factors are major causes for variations in export performance.

Mariotti and Piscitello (2009) reveal that that firms' export performance depends on their international experience and network structure. By comparative analysis of samples from Germany, Finland, Japan, South Africa and South Korea, Dichtl et al (1990) identified that export market orientation of decision makers constitutes an important determinant of export performance. A lot of studies have used a countless number of independent variables to assess export performance. The model of Abby and Slater (1989) is still the most cited simplified model in international literature. Aaby and Slater (1989), Leonidou, et al. (1998) and Zou and Stan (1998) grouped the explanatory variables as external (industry, domestic and foreign market characteristics) and internal (managerial and firm characteristics). On the other hand, export performance of firms has been measured by different indicators, such as sales,

market growth, market share, profitability, return on investment, perceived satisfaction and fulfillment of export goals (Julian, 2003).

### **Innovation as an export performance stimulus or vice versa?**

Innovation is conceived as a quality improvement strategy that allows firms to increase the presence on the market. The key proposition is that firms that invest in better quality products are more likely to export.

**Table 2** *Strategic advantages through innovation*

Mechanism	Strategic advantage
Novelty in product or service offering	Offering something no one can
Novelty in process	Offering it in ways others cannot match (faster, lower cost, more customized)
Complexity	Offering something which others find it difficult to master
Legal protection of intellectual property	Offering something which others cannot do unless they pay a license or other fee
Add/extend range of competitive factors	Move basis of competition -from price of product to price and quality, or price, quality, choice
Timing	First-mover advantage - being first can be worth significant market in new product fields
Robust platform design	Offering something on which other variations can be built
Rewriting the rules	Offering something which represents a new product or process concept– a different way of doing things – and makes the old ones redundant
Reconfiguring the parts of process	Rethinking the way in which bits of the system work together -building more effective networks, outsourcing
Transferring across different application contexts	Recombining established elements for different markets
Others	Innovation is all about finding new ways to do things and to obtain strategic advantage so there will be room for new ways of gaining and retaining advantage

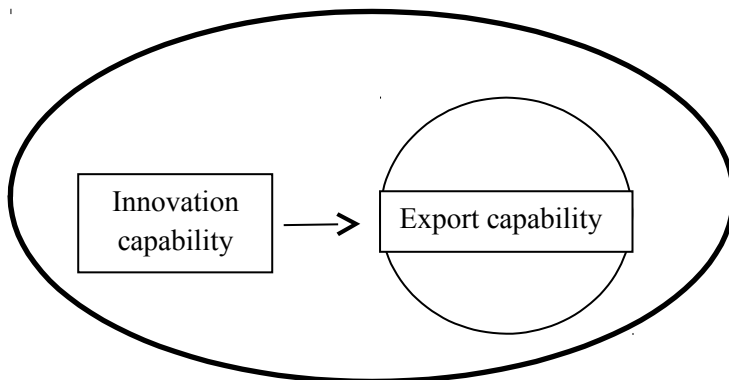
**Source:** *Tidd, J., Bessant. J. and Pavitt, K. (2005, p. 8,9)*

Whether innovation causes exports (theory of self-selection) or exports stimulate innovation (theory of “learning by exporting”) is an ongoing question posed by many researchers in recent literature.

- *Theory of self-selection*

The first theory states that innovative firms self-select to operate in international markets, whereas less innovative firms are unable or unwilling to penetrate foreign markets. This theory relies on the hypothesis that only those firms who are efficient enough and can incur entry costs and strong competition of the export market will start exporting. SMEs may offer low-quality goods in domestic markets, but they must invest in technologies that produce high-quality goods if they wish to enter foreign markets. „Innovation is thus a precondition for export. Entry into the export market is also costly, but the firm’s decision to export occurs after it gains knowledge of its productivity“ (Meliz, 2003, p. 1695).

**Figure 1** Graphical representation of the self-selection theory



**Source:** *authors' elaboration*

From the perspective of product innovation, Roper and Love (2002) have performed a research on the impact of innovation on the international performance of German and English manufacturing companies concluding that the nature of the impact of innovation on export depends on the context of the company (country of origin, size, and business sector) as differences in the abilities of innovators and non-innovators to absorb the effects of spill-overs are not consistent across countries, and may be a function of the international competitive position of the country. “The exporting behaviour of German plants becomes less affected by spill-over effects when they

innovate as the act of innovating seems to make the resource endowments, internal capabilities and internal organisation of the individual plant more important in the decision to export, while these factors become relatively less important for the UK plants' exporting decisions after innovation occurs" (p.1100).

According to Imbriani, Morone and Testa (2008) "firms introducing either process, product, organisational or marketing innovations are, on average, between 4 to 8 percentage points more likely to export than firms that do not innovate, as producing quality products increases, ceteris paribus, future export's decisions by almost 4 percentages points" (p.19).

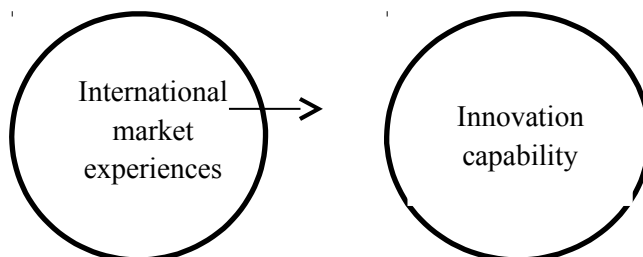
Morone, Renna and Testa (2013) conducted an investigation of Italian SMEs in manufacturing sector and divided their innovative activities into technological (product and process innovation) and non-technological (organisational and marketing innovation). A strong complementarity between these two classes of innovating activities has been observed as for the decision of penetrating new foreign markets, confirming the general view that product and process innovations request organizational and marketing changes in order to effectively stimulate productivity and international competitiveness. For example, the authors point out that non-technological innovations increase the probability of looking for new markets abroad by 12.5 percentage points while technological innovations increase such probability by 8.7 percentage points. However, a firm that incurs both forms of innovation at the same time will increase the odds of reporting plans to increase its export by 18.2 percentage points.

- *Theory of Learning by exporting (LBE)*

Learning by exporting represents a hypothesis that assumes that an improvement of firms' performance (productivity) shall occur only after entering export markets, as a consequence of an exploitation of the experience acquired on foreign markets. Learning from exporting is connected to knowledge and efficiencies gained from participation in international markets which may be applied to companies in poor countries that are in a position of learning from their foreign partners (Blalock and Gertler, 2004). External knowledge via exporting can push companies to innovate (Salomon, 2006). "The case study evidence points to the importance of learning from foreign markets both directly, through buyer-seller relationships, and indirectly, through increased competition from foreign producers. In particular, exporters can learn from foreign

customers and rivals by improving product quality, shipment size, or, even more directly, by undertaking specific investments” (De Loecker, p.1). The author by using micro data from Slovenia also finds evidence of substantial productivity gains from entering export markets.

**Figure 2** *Graphical representation of the learning-by-exporting theory*



**Source:** *authors' elaboration*

Permanent exporters engage in product innovation in greater intensity than do sporadic exporters but this difference is not so significant. However, significant differences exist for process and organizational innovation. The results (Alvarez, 2004) show that permanent exporters innovate more than sporadic exporters in outsourcing and the computer-based modernization of productive processes. As for organizational innovation, permanent exporters are more innovative in terms of introducing re-engineering into administrative processes and in total quality development.

Wu (2013) has analyzed Chilean manufacturing plants from 2001 to 2007 to conclude that higher export ratio or longer exporting experience significantly raises the productivity ONLY among those plants with asset innovation investment (over 100 million pesos). For other plants' exporting cannot effectively improve their productivity, so in this context “learning-by-exporting” hypothesis has not been confirmed in case of low-innovation circumstance. He also states that “the learning-by-exporting hypothesis is neither absolutely right, nor absolutely wrong. In the real world, we need to consider other specific, micro-level details, for example, innovation behavior, before we can decide the likelihood of the existence of the learning effect” (p.79).

The study of Love and Roper (2015) the link between innovation and export in the context of SMEs indicates clear synergies between innovation and exporting with outlining that more research is required to be certain

that the *innovation–exporting–performance* nexus operates as clearly for SMEs as it does for larger firms. They also stress the need of coordinated policy support, with either a single agency responsible for both innovation and export support or at least a close alignment between policy on both areas.

The research work by Enjolras, Camargo and Schmitt (2016) does not analyze innovation and export in terms of impact of the one on the other but gives an impetus to considering them as two complementary activities mobilizing common capabilities (resources, skills, knowledge) which an SME has to mobilize primarily to create simultaneously value in terms of innovation and export.

Liu and Rammer (2016) have analyzed the importance of public financial support as they find evidence in Germany that European Union and national technology programs contributes to a higher innovation output from both product and process innovations of SMEs. Alternatively, funding programs supporting innovations that copy or adapt products of other firms, or that help SMEs to implement more cost-efficient processes, do not contribute to higher export success. The positive relation between a program's support to new-to-market innovations and an SME's export performance is particularly strong for national technology programs and European funding.

### **Metodology**

The key research objective of the paper is the relationship between product features and export performance. The survey instrument has been designed using three point Likert categorical scale. The survey was conducted by means of an unstandardized questionnaire that has been created for this research. The method of data collection was telephone and via e-mail. For the enhanced representativeness of the sample, the survey covers SMEs from a diverse spectrum, from the production and export of alcoholic beverages, agricultural machines, cables and generators, electrical appliances, furniture, clothing, telecommunications equipment, which contributes to the the quality of research. The survey was conducted over a period of six-months, from January to June 2016. Although we had sent 120 questionnaires, 50 replies were returned and they constituted an effective response rate of 42%. As the share of export of the analyzed companies in total export of the Republic of Serbia is rather significant, we came to a conclusion that the group constitutes a representative sample for the

research. The majority of respondents were male managers. Consequently the data was analyzed using SPSS for Windows 20.0. Descriptive statistics were used to describe the characteristics of the study sample and Pearson Chi-square test, as well as correlation analysis and regression analysis. The survey was modelled on Leonidou, Katsikeas, and Samiee (2002).

### Discussion and research results

In the context of a comprehensive presentation of the results, the impact of the independent variable (product) on the SMEs export performance (sales volume on foreign markets, the share of the foreign market and the profitability of exports) has been analyzed. In this way, the authors were able to gain precise information as to whether the impact is present, and if so - to what extent the individual impact of each element of product features, or of all the elements of export performance of the company, is relevant. Also, the relation analysis of the independent variable (product features) and the SMEs export performance by correlation analysis.

**Table 3** *Descriptive indicator of the variable – product*

Product	Not present		Moderately present		Fully present	
	Frequ-ency	Percen-tage	Frequ-ency	Percen-tage	Frequ-ency	Percen-tage
Capacity to meet foreign customers' product quality	1	2%	15	30%	34	68%
Capacity to meet foreign customer' design/packing preferences	3	6%	22	44%	25	50%
Recognized brand on foreign markets	16	32%	23	46%	11	22%
Capacity to meet warranty/service requirements of foreign customers	5	10%	13	26%	32	64%

**Source:** *authors' calculation*

Based on the results in Table 3 it can be seen that the majority of companies (68%) consider that they have the capacity to meet the necessary quality of foreign customers' product quality. In addition, to a great extent, (64%) the questionned SMEs estimate that their companies able to meet the requirements of foreign customers related to the warranty/service



requirements of foreign customers. Half of the companies (50%) consider to have the capacity to meet foreign customer' design/packing preferences, but only 22% of companies have built a brand on the international market, while 32% of companies reported that they have no interest to built a brand in foreign markets.

**Table 4** *Regression analysis: product – the criterion of the export sales volume*

	Sum of squares	Degrees of freedom	Average square	F	Significance level	R	R2	Adjusted R-squared
Regression	6.953	4	1.738	4.693	.003	.543	.294	.232

**Source:** *authors' calculation*

The results of regression analysis which have included export sales volume as a criterion variable, and the characteristics of the product constitute a set of predictor variables, show that the model has proved as significant ( $F = 4.693$ ,  $p \leq .005$ ) having explained 23% of the variance (adjusted  $R^2 = .232$ ) of the dependent variable (export sales volume) as shown in Table 4.

**Table 5** *The characteristics of the product as a predictor of the export sales volume*

Predictors	Non-standardized coefficients		Standardized coefficients	t	Significance level
	B	Standard error	Beta		
Constant	.347	.498		.697	.489
Capacity to meet foreign customers' product quality	.556	.190	.416	2.925	.005
Capacity to meet foreign customer' design/packing preferences	-.131	.176	-.115	-.742	.462
Recognized brand on foreign markets	.199	.133	.211	1.501	.140
Capacity to meet warranty/ service requirements of foreign customers	.148	.167	.144	.885	.381

**Source:** *authors' calculation*

The capacity to meet foreign customers' product quality was found to be the only significant predictor ( $\beta = .416$ ,  $p \leq .005$ ). On the basis of the obtained

results (Table 5) we can conclude product quality greatly contributes to the export sales volume, while design, brand and warranty have not proved to be significant predictors of sales volume. SMEs consider that they have the capacity to meet the necessary quality of foreign customers' product quality which corresponds to results from findings (Žunić-Kovačević, Vapa-Tankosić, and Lazić, 2015; Zou, Fang and Zhao, 2003).

**Table 6** *Regression analysis: product – the criterion of the export market share*

	Sum of squares	Degrees of freedom	Average square	F	Significance level	R	R <sup>2</sup>	Adjusted R-squared
Regression	6.828	4	1.707	3.315	.018	.477	.228	.159

**Source:** *authors' calculation*

The results (Table 6) of regression analysis which have included export market share as a criterion variable, and the characteristics of the product constitute a set of predictor variables, show that the model has proved as significant ( $F=3.315$ ,  $p \leq .05$ ) having explained 15% of the variance (adjusted  $R^2 = .159$ ) of the dependent variable (export market share).

**Table 7** *The characteristics of the product as a predictor of the export market share*

Predictors	Non-standardized coefficients		Standardized coefficients	t	Significance level
	B	Standard error	Beta		
Constant	.528	.587		.900	.373
<b>Capacity to meet foreign customers' product quality</b>	<b>.656</b>	<b>.224</b>	<b>.436</b>	<b>2.927</b>	<b>.005</b>
Capacity to meet foreign customer' design/packing preferences	-.391	.208	-.306	-1.879	.067
Recognized brand on foreign markets	.061	.156	.057	.390	.698
Capacity to meet warranty/service requirements of foreign customers	.222	.197	.192	1.128	.265

**Source:** *authors' calculation*

The capacity to meet foreign customers' product quality was found to be the only significant predictor ( $\beta=.436$ ,  $p\leq.005$ ). On the basis of the obtained results (Table 7) we can conclude product quality contributes to the export market share, while design, brand and warranty have not proved to be significant predictors of the export market share which corresponds to the findings that empirically proved positive link between the firm's relative superiority in cost, product, or service considerations and export performance (Murray, Gao and Kotabe, 2010; Piercy, Kaleka and Katsikeas, 1998).

**Table 8** *Regression analysis: product – the criterion of export profitability*

	Sum of squares	Degrees of freedom	Average square	F	Significance level	R	R <sup>2</sup>	Adjusted R-squared
Regression	3.707	4	.927	2.661	.045	.437	.191	.119

**Source:** authors' calculation

The results of regression analysis which have included export profitability as a criterion variable, and the characteristics of the product have constituted a set of predictor variables, show that the model has proved as significant ( $F=2.661$ ,  $p\leq.05$ ) having explained 11.9% of the variance (adjusted  $R^2 = .119$ ) of the dependent variable (export profitability).

**Table 9** *The characteristics of the product as a predictor of the export profitability*

Predictors	Non-standardized coefficients		Standardized coefficients	t	Significance level
	B	Standard error	Beta		
Constant	1.048	.483		2.172	.035
Capacity to meet foreign customers' product quality	.289	.184	.239	1.567	.124
Capacity to meet foreign customer' design/packing preferences	-.080	.171	-.078	-4.68	.642
Recognized brand on foreign markets	-.169	.128	-.197	-1.313	.196
<b>Capacity to meet warranty/service requirements of foreign customers</b>	<b>.346</b>	<b>.162</b>	<b>.372</b>	<b>2.136</b>	<b>.038</b>

**Source:** authors' calculation

The capacity to meet warranty/service requirements of foreign customers was found to be the only significant predictor ( $\beta=.372$ ,  $p\leq.05$ ). On the basis of the obtained results (Table 9) we can conclude that the capacity to meet warranty/service requirements of foreign customers contributes to the export profitability, while capacity to meet foreign customers' product quality, design/packing preferences and brand have not proved to be significant predictors of the export profitability. That can be explained by an established relationship with the best distributors, prompt distribution process, an excellent follow up relationship and after sale support which corresponds with the findings that providing high levels of support are found to be positively related to export performance (Zou and Stan, 1998; Zou, Fang and Zhao, 2003).

**Table 10** *Correlation between the product and the export performance*

	Export performance	
	Pearson correlation coefficient r	Significance level (p value)
<b>Product</b>	<b>.381</b>	<b>.006</b>

**Source:** *authors' calculation*

In the end, the results of correlation analysis indicate that there is a significant, moderate and positive link between the product and the export performance of companies ( $r=.381$ ,  $p< .05$ ).

### **Conclusion**

The questioned SMEs estimate that they possess the necessary quality of export products, as they are able to meet the requirements of foreign customers related to the warranty/service, and capacity to meet foreign customer' design/packing preferences, but only a small percentage of SMEs have built a brand on the international markets, or intends to do it.

The research results indicate that the capacity to meet foreign customers' product quality influences export performance. This research generally confirms the literature but comes to some original conclusions, based on current problems of the Serbian SMEs. Although the SMEs from transition countries consider having good quality and competitively priced products they undoubtedly still have a lower presence on the international markets. Research findings (Vapa, Ignjatijević and Gardašević, 2015) indicate that Serbian enterprises that have the personnel qualified for export into foreign markets have the most effective impact on improving export performance, and that the most important problems in entering the foreign market,

especially the EU market, for the Serbian exporters are the complexity of export documentation, poor organization of the firm's export department, poor product design, high transportation costs, and inadequate promotion of enterprises on export markets.

This paper supports the previous literature findings which outline the need of further investigation of the determinants of firm export performance in order to develop appropriate SMEs export promotion policies for better positioning on international markets. Economies of Western Balkans countries, on the pathway to European integration shall depend on enhancing their efficiency and performances in industry, service and know-how. Modernizing production and raising efficiency and competitiveness, accelerating structural changes toward knowledge based services, are the major generators of value added, exports and new jobs (Vapa-Tankosić, Redžepagić and Stojsavljević, 2013).

In order to respond adequately to the demands of consumers, SMEs constantly need to innovate its products and services. However, new products and services are not only a result of technological innovation process, but also the impact of intangible resources of the company, as the basic factors for the application and transfer of knowledge. Exporters that continue to obtain productive effects by using knowledge to continuously improve the competitiveness and business performance as well as to adequately respond to the changing demands of consumers can introduce greater number of innovations in all segments. Innovation is one of the most important sources of export competitive advantage as innovative companies have been an important driver of international business.

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# THE BUSINESS INNOVATION OF SMALL WINERIES IN SERBIA AIMED AT IMPROVING BUSINESS PERFORMANCE

*Ivana Erić<sup>1</sup>, Nemanja Lekić<sup>2</sup>*

## Abstract

*Innovations have always been regarded as the “conditio sine qua non” for the advancement, growth, development and maintenance of high profitability of organizations. Unfortunately, researches on innovation in small organizations are relatively limited, especially in the traditional sectors, to which wine industry belongs. The main aim of this paper is to present ways in which small wineries can improve their business position. As a result, this paper will highlight the sectoral system of innovation, which does not only deal with manufacturing companies, but also with relevant institutions fostering different types of interactions and with constant encouragement of learning and gaining practical knowledge. The paper promotes the paradigm of open innovation, which is based on the free flow of ideas, knowledge and resources between organizations, as the only way for organizations to survive in conditions of ruthless competition. Empirical research was conducted by using primary and secondary sources of information, in order to demonstrate how innovation affects business performance of small wineries in Serbia. The main implication of this research is that the only way for better business performance of small wineries lays in permanent innovation by applying the sectoral system of innovation and paradigm of open innovation.*

**Keywords:** *innovations, small wineries, sectoral system of innovation, improving business performance of small wineries in Serbia.*

## Introduction

Modern organizations are faced with the ruthless competition due to globalization and significant technological improvements. As a result,

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the survival, growth and development of the organizations in a dynamic and hypercompetitive market, depends on their respective innovative capabilities. Moreover, the innovations provide a competitive advantage of national economies in international trade, and the growth of national wealth. On the occasion of the European Year of Creativity and Innovation (2009) was adopted the document which emphasizes the necessity of strengthening the creative and innovative competences, in order to effectively meet the challenges of globalization and increased competition in all fields of economic activity (Official Journal of the European Union, 2009).

The subject of the research are small wineries which operating in the Republic of Serbia. The first reason for this research is that the year 2015 was declared as the year of entrepreneurship, and moreover last decade is marked as a decade of entrepreneurship. Second reason is that researches of innovation in small organizations are relatively limited, especially in the traditional sectors, to which belongs and wine industry. Thirdly, small wineries have great potential for increasing production, revenue, employees and affirmation of the areas where they are located. Unfortunately, they rely on the advantages such as inexpensive labour, fertile land, climate, tradition, rather than they are trying to invest in innovation of technology, management system, marketing and other (Ivanišević, Jakšić and Korać, 2015, p. 5). According to their opinion, the main reasons for the absence of a higher degree of innovations are the lack of financial resources.

In the remainder of this paper will be presented the theoretical basis of innovation, sectoral system of innovation, the paradigm of open innovation, empirical research, discussion of results and conclusions.

### **Theoretical background about innovation**

Innovations has been the main research topic of management researchers, practitioners of management, social science researchers, financial analysts, engineers of technology, marketing experts and others. As a result, it was created a number of definitions by which authors tried to explain innovation from their own point of view. All definitions have been classified on the basis of used key criteria. Those are (Медынский, 2005, p. 10):

1. Process
2. System
3. Change
4. Result

The definitions of innovation *as a processes* underlines the dynamic nature of innovations. One of the widely accepted definition is that „innovation it began to be understood uniform process of interconnected actions with economic contents and result” (Safiullin, Shigabieva, Mazitov and Saipullaev, 2014, p. 389). Kimberly (1981) defines innovation like, „there are three stages of innovation: innovation as a process, innovation as a discrete item including, products, programs or services; and innovation as an attribute of organizations” (p. 108).

Another group of definitions which observe innovation from a *systemic* perspective looks at them as a unique system. Van de Ven (1986) referred to innovation as „the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order“ (p. 509). The second definition emphasizes that „innovation has been denned as the introduction and application, within a group, organization, or wider society, of processes, products, or procedures new to the relevant unit of adoption and intended to benefit the group, individual, or wider society“ (West and Anderson, 1996, p. 681).

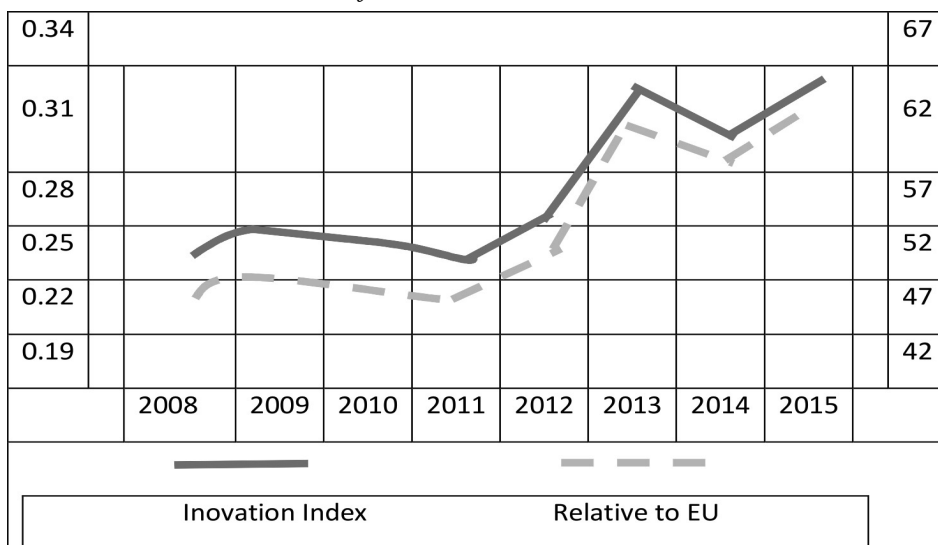
The third group of definitions looks at innovations through the prism of *changes*. This is the second biggest group of definitions which try to define innovations. Bessant et al. (Bessant, Lamming, Noke and Phillips, 2005) on the role of innovation in renewal and growth emphasise „innovation represents the core renewal process in any organization. Unless it changes what it offers the world and the way in which it creates and delivers those offerings it risks its survival and growth prospects” (p. 1366). On the other side, the most famous management researcher Peter Drucker (2002) believes that „most innovations, however, especially the successful ones, result from a conscious, purposeful search for innovation opportunities, which are found only in a few situations. Areas of opportunity comes from unexpected occurrences, incongruities, process needs, industry and/or market changes, demographic changes, changes in perception, and new knowledge“ (p. 96).

Finally, the largest number of definitions of innovations observes them through the *results* which they are created. According to Kim and Mauborgne (1999), „value innovation makes the competition irrelevant by offering fundamentally new and superior buyer value in existing markets and by enabling a quantum leap in buyer value to create a new market” (p. 43). As Plessis (2007) notes: „innovation as the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal

business processes and structures and to create market driven products and services. Innovation encompasses both radical and incremental innovation“ (p. 21).

Observation of a national economy in regard to the innovations may be a very important indicator, considering that has been proven that more innovative countries are economic wealthier. Main indicator for comparing countries is Summary Innovation Index (SII), which one includes 25 indicators for every country. Based on it is calculated European Innovation Scoreboard (European Commission, 2016, p. 8).

**Picture 1** *Innovation Index for Serbia and relative to EU*



**Source:** *Adapted from European Commission, 2016, p. 79.*

The annual European Innovation Scoreboard (EIS) provides a comparative assessment of the research and innovation performance of the EU Member States and the relative strengths and weaknesses of their research and innovation systems (European Commission, 2016, p. 8). Our country is in the group of moderate innovators with constant growth of innovation results. Relative performance to the EU has improved from 45% in 2008 to almost 62% in 2015 with highest growth in Non-R&D innovation expenditures (20%) and new doctorate graduates (14%) (European Commission, 2016, p. 79). Maybe it will be better if our country has higher growth in R&D innovation expenditures. It would be very encouraging if Serbia continues with such good trends and has improvement in other sectors of innovation.

## Sectoral system of innovation and the paradigm of open innovation

The main reasons for the relatively small investments into innovations for wineries in Serbia are the lack of financial resources and the absence of information sharing due to the fear of competition. This thinking is very wrong because the world experiences have shown that sectoral collaboration and open innovation have a contributions to the improvements of the business performances of all involved parties.

Sectoral system approach tries to identify all relevant actors in wine industry which are important in terms of innovation dynamics and opportunities for latecomers to catch up and leap - frog. It brings together the national and regional perspectives by enabling the analysis of international linkages and transmission mechanisms of innovation results. According to Malerba (2002), „a sectoral system of innovation and production is a set of new and established products for specific uses and the set of agents carrying out market and non-market interactions for the creation, production and sale of those products. A sectoral system has a knowledge base, technologies, inputs and an existing, emergent and potential demand“ (p. 249).

The four dimensions of the wine sectoral system are (Cusmano and Morrison, 2010, p. 1593):

1. ***Demand*** – in the wine sector are present quantitative and qualitative changes in the market. The famous wine producers cannot longer count on the brand as a guarantee of quality, because beyond any internal characteristics of wine, the basic criterion of quality is the value perceived by the market. On the other side, changing consumer tastes, habits and emergence of new producers were increase a supply. This trends are stimulus for change. Firstly, changes of technology of organization, processes, products, services and after that changing a marketing orientation.
2. ***Knowledge base and innovation*** – include the scientific and technological knowledge that organizations use for their improvements. Knowledge base directly has influence on the paths of exploration and learning dynamics, organization of production and innovation, the roles and interactivity of the main actor, and the sequences of variety generation and selection. Main knowledge base is in the organization, but it must always find new sources of invention.
3. ***Actors and networks*** – those are producers, suppliers, customers, different kind of associations, government, trade unions, universities and institutes, as well as technical, training, and financial organizations,

government agencies, domestic and international knowledge networks, and other.

4. ***The institutional framework*** – include the laws, standards, subventions, norms, regulation of all standards necessary for innovations, conformation of National innovation system, and creating of institutional conditions for ease of doing business. Good institutional framework is precondition for attracting foreign investments which can bring new technologies, knowledge, processes and other.

Those four dimensions are the main pillars of sectoral system of innovation. This means that if organizations do not carefully analyze each one of these pillars may come to the absence of development of sectoral system of innovation. So, in that case, organizations can not acquire all the benefits from different kind of cooperation.

In today's economic conditions organizations must adopt a paradigm of open innovation and with it replaced the previous „closed model“. This is the only way to take advantages of all the innovative features. The essence of the open innovation model did not just erasing the boundaries between organizations, but also between regions and countries.

The open innovation model states that firms can enhance their innovative performance by acquiring knowledge and competences from other businesses and organizations. It also emphasizes the importance of inter-organizational cooperation, which means that the open innovation model is relevant at the firm and regional levels (Doloreux and Lord-Tarte, 2013, p. 171). One of the most used definitions of open innovation is: „the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markers for external use of innovation, respectively“ (Huizingh, 2011, p. 2). The main differences between open and closed principles are summarizing in *Table 1*.

**Table 1** *Contrasting „closed innovation” principles and „open innovation” principles*

<i>Closed innovation principles</i>	<i>Open innovation principles</i>
The smart people in our field work for us.	Not all of the smart people work for us so we must find and tap into the knowledge and expertise of bright individuals outside our company.
To profit from R&D, we must discover, develop, produce and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research in order to profit from it.
If we are the first to commercialize an innovation, we will win.	Building a better business model is better than getting to market first.
If we create the most and best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our intellectual property (IP) so that our competitors do not profit from our ideas.	We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model.

**Source:** Chesbrough, H., 2003, pp. 6-7.

Widely accepted opinion is that exist four types of openness (Dahlander and Gann, 2010, p. 702): 1. Acquiring; 2. Sourcing; 3. Selling; and 4. Revealing.

**Acquiring** means that the organization ensure license – in and acquire expertise from outside, which are used as an input for the innovation process. **Sourcing** implies that the organization very carefully analyze the external environment before starting an internal research and development. It strives to maximum integrate external ideas and mechanisms as far as possible with internal processes. **Selling** implies that companies commercialize their inventions and technologies through selling or licensing out innovative resources developed to the other organizations. **Revealing** means that organizations reveal internal innovation resources, without direct financial rewards, but it can expecting indirect benefits. Thus, the company can attract on the cooperation other organizations and by this way are greater chances for cumulative improvements.

Just with this short review of literature it is evident how much SSI, and open innovation are important for wine production in Serbia. Open mutual



cooperation between wineries in Serbia is especially important due to the lack of financial resources for innovation.

### **Wine production in Serbia and hypothesis**

At the beginning of the twentieth century, precisely in year 1903 founded the first viticultural cooperative named „Vencacka” in the place Banja near Arandjelovac. During the First and Second World War, Serbian wine production was regressed. A large state farms were established and constructed a large wineries („*Navip*”, „*Rubin*” and others). Crucial influence on the current status of the representation varieties of grapevine in the territory of the Republic of Serbia, had a large wine systems of the former Yugoslavia which were raised a large areas under wine in the seventies of the twentieth century, with a tendencies to making system that will massive produce a wine. Considering that these systems were in cooperative relationships with individual wine producers, it is clear that they have had an impact on the structure of their product assortment. In those years, came into force a law that is for farmers, and family farms forbidden to alone produced and sold wine on the market. At the same time, farms have had to give all production of grapes to large wineries. In that way, large wine systems have gained a monopoly on the market and determined the purchase price of grapes what had resulted in smaller area under the grapevine (Ivanišević, Jakšić and Korać, 2015, p. 9).

More intensive dissemination of the highly quality vine varieties gaining in importance at last few years. On the changes in the structure of cultivars have been influenced by the adoption of the new Law on planting material in year 2005, the introduction of easier registration of a large number of new sorts, as well as the subsidies of Ministry of Agriculture for new plantations of vineyards. Production was increased and due to the positive provincial and municipal activities. Also, the development of small private wineries and the tendency of their founders toward producing quality of wines have had an impact on positive changes in the assortment of grapes (Ivanišević et al., 2015, p. 11).

According to currently available data, Serbia was produced in year 2014, 198.183.000 liters of wine. This is for 71.783 million liters more than in 2012 when it produced the least, and 39.863.000 liters less than in 2009 when it produced the most wine in the observed period from 2009 to 2014 (Jakšić, Ivanišević, Đokić and Brbaklić-Tepavac, 2015, p. 13).

According to data, in Serbia are only two large wineries with more than 250 employees. Medium-sized winery is just one and has 50 to 249 employees. Small wineries, with the number of employees from 10 to 49 have 23. Micro-wineries, represent the largest group of wine producers in Serbia with less than 10 employees and there are 191 thereof (Jakšić et al, 2015, p. 33). The largest producer of wine in year 2015 in the world is Italy, which produced 49.5 million hl, while Serbia is on the 18th place with production of 2.3 million hectoliters (OIV, 2016, p. 7).

Pursuant to the objectives of this paper, we proposed the following hypotheses:

H1: Enterprises with a higher financial strength have a higher possibilities for innovation.

H2: Dimensions of innovativeness organizations influence business success.

### **Sample and methodology of research**

Research was conducted on the sample of twelve wineries for period from November 2016 to the February 2017. For the observed companies were used both primary and secondary sources of data. The Balance Sheet and Income Statement are analyzed when calculated Altman Z score for proving the first hypothesis. Altman Z score is useful for assessment a financial strength of enterprises. First version of this model was published in year 1968 (Altman, 1968, p. 594) and after that it was revised two times.

Another hypothesis is estimated by using both primary and secondary data sources. Dimensions of innovativeness of organizations were evaluated by the survey of Likert type, where 1 means strongly disagree and 5 - completely agree. Anonymity for respondents was guaranteed. Business success was measured by using of Total assets index, Revenue index and Profit index. The main data about wineries are presented in *Table 2*.

**Table 2** *The main data about wineries*

Name of winery	Founded	Region	Employees	Surface [ha]	Production of wine [l]
„PIK Oplenac“ LLC Topola	1956. *	Sumadijski	16	47.00	700.000
„Podrum RADOVANOVIC“ LLC Krnjevo	1996.	Sumadijski	11	25.00	280.000
„PTK Ključ“ INC Kladovo	2007.	Negotinska Krajina	31	40.07	30.000
„Status“ LLC Svrlijig	1997.	Niski	36	15.36	1.000.000
Radisa Mladenovic entrepreneur „MATALJ“ Negotin	2008.	Negotinska Krajina	43	17.00	55.000
„TOPLICKI vineyards“ LLC Gojinovac	2008.	Toplicki	12	35.00	93.000
„WINERY ALEKSANDROVIC“ LLC Vinca	2004.	Sumadijski	19	69.26	300.000
„WINERY ALEKSIC“ LLC Vranje	2006.	Vranjski	12	2.50***	150.000
„Bogunovic“ LLC Beograd (Zemun)	2010.	VIVR**	28	2.20	60.000
LLC „WINERY KOVACEVIC“ Irig	2003.	Sremski	23	84.00	1.000.000
„WINERY ZVONKO BOGDAN“ LLC Subotica	1989.	Suboticki	18	50.00	133.000
„VINEX GROZD“ LLC Belusic	2008.	Tri Morave	37	35.00	-

\* The winery was privatized, 2015. opened renewed Winery

\*\* Winery vineyard outside the regions; location of the vineyard: Juznbanatski rejon, Vrsacko vinogorje

\*\*\* in cooperation

**Source:** Adapted from Jakšić et al, 2015.

Very important thing is that in proving first hypothesis was used adaptation of Altman Z score. Companies that are the subject of the analysis operate in emerging markets and thus the methodology for assessing financial solvency is the Altman Z<sup>“</sup> score customized model (Altman and Hotchkiss, 2006, p. 228)

$$Z^{\text{score}}_{\text{customized}} = 3.25 + 6.56 \times X_1 + 3.26 \times X_2 + 6.72 \times X_3 + 1.05 \times X_4$$

where is:

$X_1$  – net working capital / total assets = (Long-term sources - non-current assets) / (Operating assets - Reported capital unpaid);

$X_2$  – retained earnings/total assets = (Net income - Loss - Loss above equity) / (Operating assets - Reported capital unpaid);

$X_3$  – earnings before interest and taxes (EBIT) / total assets = (Operating income - Operating loss) / (Operating assets - Reported capital unpaid);

$X_4$  – book value of equity / total debt (liabilities) = (Capital - Loss above equity - Unpaid capital) / (Non-current liabilities + Current liabilities).

### Research and findings

Research for the first hypothesis was started by calculating Altman Z<sup>-</sup> score customized. Based on the data in Balance Sheet and Income Statement of wineries (The Serbian Business Registers Agency), the value of indicators ( $X_1$ ,  $X_2$ ,  $X_3$  and  $X_4$ ) were calculated and the discrimination functions of Z<sup>score</sup><sub>customized</sub>. The results shown in *Table 3*.

Good financial performance (especially credit performance) permanently have “PODRUM RADOVANOVIC” LLC Krnjevo, “STATUS” LLC Svrlijig, Radisha Mladenovic entrepreneur “MATALJ” Negotin, LLC “WINERY KOVACEVIC” Irig and “VINEX GROZD” LLC Belusic.

The value of Z<sup>score</sup><sub>customized</sub> is explained as follows and it was used to identify financial strength (Altman, 2005, p. 314):

- $Z \leq 4.50$  – the company’s operation is critical, it is threatened by the bankruptcy;
- $4.50 < Z < 5.85$  – (gray zone) financially threatened companies,
- $Z \geq 5.85$  – safe (white zone) companies that have good credit performances.

**Table 3** Values of indicators and discrimination functions of Z'score customized for 2014 and 2015

	X <sub>1</sub>		X <sub>2</sub>		X <sub>3</sub>		X <sub>4</sub>		Z'' <sub>customized</sub>	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
1.	-0.37	-0.35	-0.16	-0.06	-0.08	-0.03	-0.08	0.32	-0.37	0.89
2.	0.89	0.82	0.95	0.97	0.09	0.03	18.29	33.38	32.01	47.02
3.	-0.51	-0.15	-0.26	-0.21	-0.03	-0.01	0.51	0.42	-0.60	2.14
4.	0.34	0.41	0.37	0.44	0.14	0.04	0.77	1.06	8.42	8.79
5.	0.41	0.17	0.52	0.33	0.09	0.04	1.08	0.49	9.36	6.25
6.	-0.72	-0.74	-0.32	-0.32	-0.06	0.02	-0.13	-0.13	-2.87	-2.64
7.	-0.14	-0.04	0.33	0.46	0.09	0.15	0.49	0.84	<b>4.55</b>	6.36
8.	-0.09	0.17	0.12	0.12	0.08	0.02	0.13	0.70	3.72	<b>5.60</b>
9.	0.41	0.17	0.48	0.17	0.04	0.02	2.75	11.13	3.31	16.76
10.	0.31	0.41	0.65	0.79	0.15	0.18	2.43	5.98	10.93	16.00
11.	-0.31	-0.07	0.44	0.55	0.02	0.01	0.96	1.70	3.76	6.51
12.	0.15	0.17	0.67	0.70	0.09	0.14	4.09	5.08	11.33	12.87

Note: 1. „PIK Oplenac“ LLC Topola; 2. „PODRUM RADOVANOVIC“ LLC Krnjevo; 3. „PTK KLJUC“ INC Kladovo; 4. „STATUS“ LLC Svrlijig; 5. Radisa Mladenovic entrepreneur „MATALJ“ Negotin; 6. „TOPLICKI vineyards“ LLC Gojnovac; 7. „WINERY ALEKSANDROVIC“ LLC Vinca; 8. „WINERY ALEKSIC“ LLC Vranje; 9. „Bogunovic“ LLC Beograd (Zemun); 10. LLC „WINERY KOVACEVIC“ Irig; 11. „WINERY ZVONKO BOGDAN“ LLC Subotica; 12. „VINEX GROZD“ LLC Belusic

Source: Calculation of authors

**Table 4** Descriptive statistics for the values of Altman's Z'' indicator

Statistics	2014			2015			Average value (2014-2015)
	Frequency	Percentage	Cumulative percentage	Frequency	Percentage	Cumulative percentage	
$Z'' \leq 0.45$	6	50.00%	50.00%	3	25.00%	0.33%	37.5
$0.45 < Z'' < 5.60$	1	8.33%	58.88%	1	8.33%	0.66%	8.33
$Z'' \geq 5.85$	5	41.67%	100.00%	8	66.67%	1.00%	54.14

Source: Calculation of authors

The rating of financial strengths of wineries for two consecutive years is shown in Table 3. The companies analysed in the highest percentage in the reporting period, over 54%, operate in the safe zone. This means that they are successful and financially healthy companies. Operating in the

gray zone on average are 8. 33% of the analysed wineries characterized as financially threatened companies. Of the total number of analysed wineries in the troubled zone operate on average 37. 50%. Anticipated to those wineries is discontinuance of operations in the future. It is noticeable after analysis of the data that in year 2015, 2 wineries from the troubled and 1 winery from the gray turned into a safe zone, and one into the gray zone. Further, one of the wineries from financially threatened companies moved into the group of financially healthy companies. A tendency of credit rating growth is noticeable for the given period.

This analyse shows that reason for not investing in innovation because of lack of financial resources is not totally true averment. Most of these wineries maybe take just incremental innovation and are satisfy with follower's position. So, the first hypothesis is partly proven. Sectoral system of innovation is very applicable here because of that. Knowledge sharing, subsidies, using experts from outside, adequate assessment of demand and other be able to help this wineries in permanent growing and evolving.

Hypothesis 2 is researched with calculating correlation between indicators of innovativeness organization and business success which is shown in Table 5.

**Table 5** *Correlation between dimensions of innovativeness organization and indexes of business success (base year 2013)*

		<i>Total assets</i>	<i>Revenue</i>	<i>Profit</i>
Management process was innovated in last 3 years	$\rho$	0.32	-0.78	0.13
	p	0.39	0.61	0.42
	N	44	44	44
Products and services were innovated in last 3 years	$\rho$	0.07	<b>0.423**</b>	0.25
	p	0.69	<b>0.004</b>	0.11
	N	44	44	44
Processes in organization were innovated in last 3 years	$\rho$	0.20	0.19	0.08
	p	0.19	0.21	0.62
	N	44	44	44

**Source:** *Calculation of authors*

The only statistically significant correlation is between innovation of products and services and revenue (p value < 0. 01; Spearman coefficient of correlation is 0. 423). This means that the second hypothesis is also partly proven. That is a very interesting finding because for some companies were 324% and 207% Total assets index. The same situation is with one winery which had 371% Profit index.

Maybe one of the reasons for these results is small number of respondents included in the research. During the survey most respondents were unsatisfied with management process. They think that the only matter for some organization is just profit, but they were confessed about big efforts in innovations of products and services as well as innovations of some processes in organizations. Even more, most of respondents believe in future of their organization seeing self as it's an integral part. This means that the second hypothesis is also partly proven.

### **Conclusion**

Most of analyzed small wineries in Serbia have a great chance to improve their business performance. First of all, over 56% of them are operating in the safe zone which means that they have financial strengths needed for investing in innovations. Many of them really invest in innovation. One of them has production of organic wine. It uses organic fertilizer, tillage with horses, grape processing without modern machinery and the natural ripening of grape juice. As a result, it shows the highest score of all twelve wineries in super efficiency. Others were invested in new production lines with modern equipment due to which were reduces production costs, increased production and consequently reduces the price of wine. They try to be cost leaders on the market. At the end, some of them think only about quality of wine and counts on the customers with “good taste”.

All of twelve small wineries in Serbia have an own marketing strategy. They use websites, online adverts, promotional letters and targeted television, as well as newspaper and magazine advertisements. Likewise it promote their products on fairs, stores, thoughts Chamber of Commerce, lecturing on Business Schools, by developing the wine tourism and other. All of innovation efforts have an impact on the market positioning since they doing business on domestic as well as foreign market.

These small wineries in Serbia have a great potential for change and development. It will be possible if they totally accept sectoral system

of innovation and open innovation model. They must work on inter-organizational cooperation both at the Serbian and at the world level. Partly, they try to hide some important things, because of fear from competition. That is not so good, because they must working on own business model, regardless using acquiring, sourcing, selling or revealing kind of openness. So, wineries have to cooperate with all relevant actors in wine industry, without fear because it can be only useful for them. Especially, they must work on harmonization of strategy and structure during the growth. It is *the conditio sine quo non* for sustainable growth of companies. Majority of them have proven their strength by innovating in periods of general crisis. Some future researches can be oriented toward analysis of position of these wineries on the foreign market and chances for bigger profit. Similarly, it will be interesting to see and research a chances for developing a wine tourism in Serbia and estimate a demand for this on the foreign market. Maybe, it is our chance for developing national economy.

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# ALTMAN'S Z-SCORE MODEL OF ANALYSIS

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## **Abstract**

*Every year in the United States approximately 1% of all companies declare bankruptcy. As a result of an attempt to define the factors that lead to a company's bankruptcy, there have been a large number of scientific papers dealing with this problem over the last few decades. A number of techniques and models for business failure prediction have also been developed in order to implement preventive measures to avoid the negative consequences of failure at the level of companies and the economy as a whole. In this context, Altman's Z-score model is the most popular model in this area in the world. It has served as the inspiration and basis for a number of authors to develop their own models of analysis using the same statistical techniques. This paper presents the most popular model for the prediction of business failures of companies, the so-called Z-score model of analysis.*

**Key words:** *Z-score, business failure, bankruptcy, ratio indicators, multipliers.*

## **Introduction**

The interests for empirical research of business failure date back to 1980s. Up to that time, the research had mostly been focused on continuity and development of companies. However, it should be borne in mind that empirical research on business failure is far more complex than research on successful companies. Accordingly, it should also be pointed out that business failure and liquidation are not synonymous, which means that these two terms cannot be considered the same. Namely, the approach to defining business failure depends on the point of view. In terms of the

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economical aspect, failure represents a situation where the return rate relative to the invested capital is on the continuous decrease. From the legal perspective, failure is equal to formal bankruptcy. However, the company can be relatively unsuccessful compared to the competition, but this does not mean that it will be liquidated. For example, small private companies whose shares are not ranked on the market achieve limited profit and growth which is smaller than the average for its respective branch, but the owners of such companies are satisfied and they conduct business for as long as the company is solvent. Accordingly, there is no widely accepted definition of business failure, but the span certainly starts from the inability to achieve revenue from the invested capital and it ends with legal bankruptcy followed by the liquidation of the company.

The research in the area of predicting business failure has constantly attracted attention of many theorists and empiricists for the past few decades. Consequently, a vast number of different techniques and models for business failure prediction of a company have been developed. However, the most famous of all is the Altman's Z-score model of analysis. Namely, Edward I. Altman, the professor of finance from the Stern School of Business on the New York University was the first to successfully apply one statistical model for predicting company bankruptcy. His so-called Z-score model represents the most worldwide famous model in this area. His methodology of determining bankruptcy probability for companies is the methodology which is highly applicable in practice today owing to its simplicity (Knežević, Staničić, Mizdraković, p. 245). Respectively, the initial assumption of Altman's model was that a limited number of economic categories predominantly affect the financial state of the company, so their analysis and putting into logical relationships using ratio numbers can lead to information on whether and to what extent a certain company is in financial problems. Since his model had a primary objective to determine risks of bankruptcy of companies, mostly those ratio numbers which show solvency, liquidity and rentability of business are taken into account (Kontić, 2006, p. 26-27).

In the model definition itself, Altman tested 22 ratio numbers using statistical techniques. Accordingly, the tests were performed on a sample of 66 companies, 33 of which were bankrupt and 33 of them were successful. The tests were repeated successively and the indicator which was least effective in predicting bankruptcy was omitted for every repetition. The application of such "multiple discriminate" technique aimed at assigning proper weighting factors to ratio indicators which were most contributory

in making distinction between successful companies and those companies which declared bankruptcy. Such Altman's testing helped define five relevant ratios (indicators) and calculate the index known as the Z-score which is used for predicting company's potential failure. In other words, from the initial 22 financial ratios, in the end Altman chose 5 ratios i.e. indicators (Vukasović, Vojinović, p. 203).

### **Z-Score Model - the Form**

In accordance with the aforementioned, it should be pointed out that the Z-score model of analysis is actually based on a weighted sum of multiple individual indicators. Namely, company's financial health is determined according to the weighted sum of multiple individual indicators, where a bigger sum means company's higher financial stability and vice versa - smaller sum represents a warning of possible financial problems. The results of the Z-score model of analysis are worthy of special attention since the information this model uses has a high efficiency and analytical value. This model is based on the definition of five indicators i.e. discriminant function variables. The original Altman's Z-score index can be calculated respectively by applying a function which has the following basic components (Nikolić, 2009, p. 204):

$$Z = 1,2 * X_1 + 1,4 * X_2 + 3,3 * X_3 + 0,6 * X_4 + 1,0 * X_5$$

where:

$X_1$  = the ratio of working capital and total assets;

$X_2$  = the ratio of accumulated retained earnings and total assets;

$X_3$  = the ratio of earnings before interest and tax deduction and total assets;

$X_4$  = the ratio of market value of equity and total liabilities;

$X_5$  = the ratio of sales revenue and total assets.

$X_1 = \text{working capital} / \text{total assets}$ .

Working capital is more often called net working capital and it represents an accounting value which is often used for estimating company's credit rating. Positive or high value of working capital is preferred in this case since it implies that a higher amount of working capital is financed from long-term financial sources. This relatively rarely used ratio has proven to be an excellent indicator of company's financial problems. It is sorted among indicators of company's liquidity. During the analysis of financial

reports, the short-term debt entry is deducted from working assets entry in the balance sheet form which means that this indicator can be derived according to the following formula:

$$X_1 = \frac{\text{Current assets} - \text{Current liabilities}}{\text{Total assets}}$$

$X_2 = \text{Accumulated retained earnings} / \text{total assets}$ .

Accumulated retained earnings are actually undistributed revenue. However, if the balance sheet also indicates loss, the difference between undistributed revenue and loss is taken. This difference can also be negative, which occurs when the undistributed revenue is smaller than the loss. Therefore, higher value of this ratio requires positive business. This ratio is sorted among indicators of a company's profitability, while the age of the company needs to be taken into account, because if the company is newly established, the value of the denominator can reduce precision of this ratio. This indicator can be derived according to the following formula during the analysis of financial reports:

$$X_2 = \frac{\text{Undistributed revenue}}{\text{Total assets}}$$

$X_3 = \text{Earnings before interests and taxes} / \text{total liabilities}$ .

Earnings before interests and taxes represent a category which provides a good insight into company's profit capability. It is derived by adding entry of revenue before taxes to financial expenses in the balance sheet, which means that this category actually represents gross revenue increased by expenses of financing. However, if loss occurs instead of gross revenue, the loss is deducted from financing expenses. In that case, this result can also be negative which occurs if the loss is bigger than the financing expenses. This ratio is one of the most commonly used indicators. It is sorted among indicators of company's profitability. This indicator can be derived according to the following formula during the analysis of financial reports:

$$X_3 = \frac{\text{Net revenue} + \text{Interest expenses} + \text{tax expenses}}{\text{Total assets}}$$

$X_4 = \text{Market value of equity} / \text{book value of total liabilities.}$

In the case of corporate companies whose shares are sold on the market, the market value of equity equals the result of multiplying the market value of their shares obtained on the market on the day of the balance with the number of shares held by the shareholders. In the case of corporate companies whose shares are not sold on the market as well as in the case of all other companies, the booking value of equity is used instead of the market value. Accordingly, the total liabilities include all liabilities of the company on the day of the balance. This ratio indicator is sorted among solvency indicators because the ratio of market value of equity and the booking value of liabilities provides an insight into the structure of company's financial sources. In the analysis of financial reports, this indicator can be derived according to the following formula:

$$X_4 = \frac{\text{Market value of ordinary and preference shares}}{\text{Current liabilities and long-term debts}}$$

$X_5 = \text{Sales revenue} / \text{total assets.}$

The revenue from sales includes revenue from selling goods, products and services, while the total assets represent a sum of assets deducted by the loss above the equity shown in the asset. This ratio indicates the company's capability to place its products and services on the market. The ratio of sales revenue and the total assets shows a real state of company's efficiency, so this indicator is sorted among the efficiency indicators. In the analysis of financial reports, this indicator can be derived according to the following formula:

$$X_5 = \frac{\text{Sales revenue}}{\text{Total assets}}$$

### **Evaluation of indicators in the Z-score model**

According to evaluation of X1 to X5, it is worth considering the importance given to individual ratios in the Z-score model i.e. individual indicators. Table 1 provides an overview of the aforementioned indicators.

**Table 1.** *Evaluation of indicators in the Z-score model*

Ratio indicators	Weighting factor used to evaluate X	%
$X_1 = \text{Working capital} / \text{Total assets}$	1,2	16,00
$X_2 = \text{Retained earnings} / \text{Total assets}$	1,4	18,67
$X_3 = \text{Earnings before interests and taxes} / \text{Total assets}$	3,3	44,00
$X_4 = \text{Market value of equity} / \text{Total liabilities}$	0,6	8,00
$X_5 = \text{Sales revenue} / \text{Total assets}$	1,0	13,33
Total $X_1$ to $X_5$	7,5	100,00

**Source:** *Arranged and modified according to Vranković, 2009, p. 134*

According to the table, X3 (44%) has the biggest importance in the model. This actually represents the gross return to total assets (capital). Therefore, this indicator is important for the rentability of the total capital. However, according to some authors, the information about the net return rate to own capital is much more important because it indicates the increase (compounding) of own capital. In addition, it should be taken into account that the rate of gross return to own capital may be high while the net return rate to own capital can be insignificant or even negative. This occurs when the gross return is insignificant or negative and the interest expenses are prominently high (Vranković, 2009, p. 135).

In the order of importance, the indicator X2 (18.67%) comes second. However, the importance of this indicator can be very disputable for at least two important reasons. Firstly, if the company distributed the revenue to capital or converted it to dividend shares, the capital is also increased along with the creditor's protection. In these circumstances, the accumulated revenue can be extremely low, perhaps even equal to 0. Secondly, if the company has paid up the revenue to the owners, the X2 indicator is plausible because it encourages the owners to refrain from distributing profit to shareholders (owners) for the better future of the company.

The third indicator in the order of importance is X1 (16%). When the working capital is positive, this ratio provides no insight into the financial state i.e.



company's financial stability whatsoever. In the course of evaluation of financial stability, working capital is compared to stock. In that case, it is important to determine whether the working capital is equal to, bigger or smaller than the stock. If the working capital is negative, the ratio of negative working capital and total assets also provides no information about company's financial stability because the financial stability in that case requires quantifying the lack of working capital, which is determined according to the following model (Vranković, 2009, p. 135):

1. Lasting and long-term capital
2. Long-term assets (the sum of permanent assets and stock)
3. Lacking capital (1-2) in the case that  $2 > 1$ .

The fourth indicator in the order of importance is X5 (13.33%). This ratio de facto represents the quotient of turnover of the total assets, so it analogously represents an extremely important efficiency indicator of using company's assets.

The last indicator in the order of importance is X4 (8.00%). This ratio indicates the extent of debt service coverage by capital. The analytical interpretation of this indicator is that the higher the value of this ratio, the more protected the creditors. The reason for this lies in the fact that the capital of debtors represents the guarantee substance for the creditor because as long as the loss of a debtor is lower than his capital, the creditors are protected because they can charge their debts at some point, even from the bankruptcy estate. However, when the loss of a debtor is higher than his capital, the difference between the loss and capital is actually the loss of the creditors, so the creditors will be able to collect their debts at the amount which is lower by the amount of loss above the capital. According to this logic, it is very surprising that the ratio of market value of equity and the liabilities has a very low grade in the Z-score model of analysis (Rodić, Filipović, 2011, p. 294-295).

### **Application of the Z-score model**

The financial state of a given company is estimated according to the weighted sum of indicators which we explained previously. The bigger sum means higher financial stability of the company, while on the other hand the smaller sum warns about potential financial problems. According to empirical research i.e. results obtained in the original Z-score model, the companies are classified according to the following (Ivaniš, 2012, p. 390):

- a) If  $Z \geq 3.0$ , the company's financial situation is stable and the company is not under risk of bankruptcy i.e. it has good credit performance.
- b) If  $Z \geq 1.8$ , the company's financial situation is unstable and the company is under risk of bankruptcy.
- c) If  $1.8 \leq Z \leq 3.0$ , or  $Z$  is between 1.8 and 3.0, the company is in the so-called 'gray zone' (risk zone) and there are indicators that the financial situation is unfavorable i.e. it has minimal credit performance.

As it is evident, Altman considers the lower limit value to be 1.8 which means that companies whose Z-score index is below that value are to become bankrupt, while at the same time the upper limit value is 3.0 which means that companies which have the Z-score above that value will not become bankrupt. Therefore, it is worth mentioning that according to Altman's formula, the companies with strong asset base will have a high Z-score although business may be on the decline. Altman's Z-score represents a multivariable model for predicting company's bankruptcy. From the aspect of capability to sustain company's competitiveness, as a model it can be used to identify company's financial health in relation to its profitability, productivity, market value and managerial capabilities. According to empirical estimation by analysts, the application of the Z-score model has proven to be accurate in predicting business failure in about 85% cases in the first year and about 70% cases in the second year prior to declaring bankruptcy. However, Z-score is most applicable in the first two years before company's bankruptcy when experienced financial analysts can clearly recognize companies dealing with significant difficulties and problems with declining business (Kontić, 2006, p. 27). Respectively, it should be pointed out that the accuracy of predicting using Altman's model decreases as the number of years increases. Consequently, when a company is being evaluated, it is necessary to apply this model for a period of at least three years because this will provide a more accurate picture of company's business performance tendency (Žager, Mamić-Sačer, Sever, Žager, 2008, p. 272).

The Z-score model can find its practical use in every analysis of company's financial state, from the credit risk analysis and the request for protection in case of approving funds, the investment risk when purchasing a share or the entire company, credit rating of the company to levels of fulfillment of the so-called 'going concern' assumption. Therefore, potential users of the Z-score model results can include: banks, investment funds, potential buyers of company's shares, company's suppliers, its strategic partners, agencies for estimating credit rating, revising companies etc. Certainly,

there is also a group of internal users of the results such as: employees, company owners, company's management board and others. All these examples lead to the conclusion that the list of potential users of the Z-score model cannot be completed easily. It should be pointed out that the fate of bankruptcy does not spare even the biggest companies as well as the systems of special importance for the entire economy. Therefore, potential parties interested in Z-score results can include representatives of the national authority as well as wider public (Stanišić, 2006, p. 24).

### **Calculation of the Z-score index**

According to the aforementioned, it is evident that Edward Altman used the so-called multiple discriminant analysis to predict company's bankruptcy. Of 22 financial indicators, he chose 5 which were representative according to his estimate i.e. the best for predicting bankruptcy. Based on 5 chosen indicators, Altman formulated the Z-score model which could predict company's bankruptcy (insolvency) for a period of 1-5 years with a certain degree of likelihood. The research included companies in the same area which became bankrupt as well as those which did not. Accordingly, the balance sheets of these companies were taken for the same years- the years prior to bankruptcy of those companies which became bankrupt. As a result, some authors and analysts often refer to the Z-model as "the predictor of bankruptcy" because this test estimates company's financial state i.e. the probability of its liquidation. However, considering the fact that the Z-score model is used not only to estimate business failure of private companies but it can be applied to public companies as well, we believe that the popular name "the predictor of bankruptcy" is still not the most appropriate since in our domicile conditions bankruptcy of public companies is not very likely, no matter what their financial state is. In any case, the calculation of the Z-score index itself is performed through the following four steps:

1. The five ratios are calculated;
2. The given ratios are multiplied by predetermined multipliers;
3. The multiplied ratios are added together;
4. The given sum of multiplied ratios is compared to the predetermined standard.

With respect to the aforementioned, it is possible to present the practical use of the Z-score model of analysis using the hypothetical example of two companies (A and B). Accordingly, the previously mentioned Z-score model indicator values must be considered on the one hand, as well as

the information from the balance sheet and the information from the success sheet of the hypothetical companies on the other hand. Therefore, Z-score index values can be calculated for both companies (A and B). Consequently, application of Altman's Z-score model to the hypothetical example is given in table 2.

**Table 2.** *Z-score model of analysis*

Ratio indicators	A company	B company
$X_1 = \text{Working capital} / \text{Total assets}$	$8.573 / 290.078 = 0,0296$	$37.039 / 269.213 = 0,1376$
$X_2 = \text{Retained earnings} / \text{Total assets}$	$120.586 / 290.078 = 0,4157$	$45.132 / 269.213 = 0,1676$
$X_3 = \text{Earnings before interests and taxes} / \text{Total assets}$	$28.037 / 290.078 = 0,0967$	$9.432 / 269.213 = 0,0350$
$X_4 = \text{Market value of equity} / \text{Total liabilities}$	$239.494 / 50.584 = 4,7346$	$204.263 / 64.629 = 3,1605$
$X_5 = \text{Sales revenue} / \text{Total assets}$	$297.069 / 290.078 = 1,0241$	$223.393 / 269.213 = 0,8298$

**Source:** *Rodić, Filipović, 2011, p. 295*

*A Company:*

$$Z = 1,2 \times 0,0296 + 1,4 \times 0,4157 + 3,3 \times 0,0967 + 0,6 \times 4,7346 + 1,0 \times 1,0241$$

$$Z = 0,0355 + 0,5820 + 0,3191 + 2,8408 + 1,0241$$

$$Z = 4,8015$$

*B Company:*

$$Z = 1,2 \times 0,1376 + 1,4 \times 0,1676 + 3,3 \times 0,0350 + 0,6 \times 3,1605 + 0,0 \times 0,8298$$

$$Z = 0,1651 + 0,2346 + 0,1155 + 1,8963 + 0,8298$$

$$Z = 2,9111$$

According to the results of the Z-score model of analysis, certain conclusions can be drawn about the financial stability of the companies A and B. These results reflect in the following:

A company has a Z-score of 4.8015, which is more than 3.0- the lowest score by which a company can be considered to be financially stable.

Therefore, this company is considered to have good credit performance i.e. good credit solvency.

B company has a Z-score of 2.9111, which is less than 3.0 but still higher than 1.8. This means that B company conducts business in the ‘‘gray’’ (risk) zone, so it has minimal credit performance i.e. minimal credit solvency.

If the implementation of the Z-score model of analysis results in the company’s credit solvency being graded as unfavorable, it is necessary to perform projections of the balance sheet and the success sheet for the following five years in order to obtain relatively reliable information related to the question: will the company have relatively good business performance and when? Accordingly, practice has shown that some companies were able to improve their business performance if they managed to fulfill the projections of the balance sheet and the success sheet and if they did not pay up dividends from the net revenue for the following period. According to some authors, implementation of the Z-score model of analysis can help predict bankruptcy for a period of one year with the probability of 96%, and for a period of 5 years with the probability of 70% (Rodić, Vukelić, Andrić, 2011, p. 231).

### **Disadvantages of the Z-score model**

Limitations of Altman’s Z-score model arise from the initial assumptions of the linear discriminant analysis. Although the model has shown good results in predicting business failure, it still has certain key drawbacks which we will analyze in brief.

*The first* limitation for the implementation of the Z-score model is the difference in legislation between some countries and their definition of conditions whose fulfillment leads to initiating the bankruptcy procedure. Namely, legislation which was valid at the time of designing the Z-score model determined its structure to a large extent, and we may conclude that the bigger the difference between the conditions of that period and the conditions in which the model is being tested, the smaller its applicability. It should be pointed out that there is no universal legal code for bankruptcy. Every law on bankruptcy attempts to balance a number of objectives including protection of creditor’s rights on the onehand and prevention of company’s premature liquidity on the other. Most countries have changed laws on bankruptcy in accordance with balancing different political interests and structural transformations of the economy along with the overall historical development of the society.

The second limitation which questions the universality of the Z-score model reflects itself in the diversity of business activities and the fact that companies tested in the model belong to different branches, as well as the diversity of their ownership structure. Companies with different business activities have different characteristics in terms of financial sources and the asset structure, so any generalization in that aspect would be subject to risk. With that in mind, Altman also designed two subvarieties of the Z-score model which are applicable to private production and non-production companies unlike the basic model which is applicable to public (national) production companies. Accordingly, the structure of the discriminant formula is the same for both varieties, which means that the ratios used in the model are identical, but the multipliers are different as shown in table 3.

**Table 3.** Ratio indicators and multipliers in the Z-score model

Ratio indicators	Multipliers for Private Companies	Multipliers for Public Companies
$X_1 = \text{Working capital} / \text{Total assets}$	0,71	1,20
$X_2 = \text{Retained earnings} / \text{Total assets}$	0,84	1,40
$X_3 = \text{Earnings before interests and taxes} / \text{Total assets}$	3,10	3,30
$X_4 = \text{Market value of equity} / \text{Total liabilities}$	0,42	0,60
$X_5 = \text{Sales revenue} / \text{Total assets}$	1,00	1,00

**Source:** Paunović, Zipovski, 2005, p. 253

The third limitation which also questions the implementation of the Z-score model is the complexity and unpredictability of factors which affect insolvency of companies. Although vast number of these factors are included in the statistical optimization of the model, some factors still remain unregistered whether because of their absence from the tested sample which served for designing the Z-score model, or because of the potential dominant effect of special circumstances which are difficult to predict such as: political events, unexpected administrative measures as well as sudden short-term disturbances on the market. To illustrate, company's survival can be threatened even due to failure of a single business venture, especially if the company is newly-established, and the nature of the venture is risky in terms of realization.

*The fourth* limitation of the Z-score model is related to the fact that the model uses only bookkeeping information, except for the X4 element which includes the market value of equity if available. Accordingly, it is known that the information given by the bookkeeping often does not match the real state, and since the model uses categories such as profit, business assets etc. there is no doubt that the applicability of the model highly depends on objectivity of these bookkeeping categories. It should be pointed out that these elements are often prone to subjective estimation of the human factor. Where there is no alternative to the methods of evaluation and recognition of bookkeeping entries, there is a possibility of exercising bookkeeping policy which itself questions the validity of its information. Neglect of deviation of cash and value flows as well as use of revenue and profit entries as results of value flows only de facto cause risk of unrealistic estimation of liquidity which is crucial for initiation of company's bankruptcy procedure. In conclusion, the model is rather focused on the capability to create value and it almost excludes the subject of cash flows.

According to the aforementioned disadvantages, as well as numerous possibilities of implementation of the Z-score model of analysis, it could be said that Altman's model of prediction of company's bankruptcy should be used as a supplementary technique in estimating the company's financial state. The best application of this model would probably be as some sort of a "filter" before undergoing a more thorough analysis and more detailed estimation of company's business performance. In its time, Altman's model sparked great attention and it was given significant credibility. However, today it is considered as much less reliable and it is applied with great caution because of the limitations stated above, which are inherent. Therefore, Altman's Z-score model of analysis offers a great insight and synthetic overview of the company's financial state, but it cannot be considered to be a reliable instrument for estimation. The Z-score model points to problems but only in the indicative manner, so for the more reliable diagnosis it is necessary to perform a series of additional tests of company's business performance (Milojević, 2012, p. 115).

In the context of the aforementioned, a reasonable question arises: was it possible to predict some of the biggest cases of companies becoming bankrupt in the recent history using Altman's test of bankruptcy likelihood? Table 4 provides an overview of bankruptcy examples of a few companies from around the world. The value of business assets of these companies prior to bankruptcy provides sufficient evidence about their importance for the economy of the country where they conducted business.

**Table 4.** *Cases of biggest company bankruptcies*

RB.	Company name	Bankruptcy date	Total assets of the Company before to bankruptcy
1.	Worldcom, Inc.	07/21/2002	\$ 103.914.000.000
2.	Enron Corp.	12/2/2001	\$ 63.392.000.000
3.	Conseco, Inc.	12/18/2002	\$ 61.392.000.000
4.	Texaco, Inc.	4/12/1987	\$ 35.892.000.000
5.	Financial Corp. of America	9/9/1988	\$ 33.864.000.000
6.	Global Crossing Ltd.	1/28/2002	\$ 30.185.000.000
7.	UAL Corp.	12/9/2002	\$ 25.197.000.000
8.	Adelphia Communications	6/25/2002	\$ 21.499.000.000
9.	Pacific Gas and Electric Co.	4/6/2001	\$ 21.470.000.000
10.	MCorp.	3/31/1989	\$ 20.228.000.000
11.	Mirant Corporation	7/14/2003	\$ 19.415.000.000
12.	First Executive Corp.	5/13/1991	\$ 15.193.000.000
13.	Gibraltar Financial Corp.	2/8/1990	\$ 15.011.000.000
14.	Kmart Corp.	1/22/2002	\$ 14.600.000.000
15.	FINOVA Group, Inc.	3/7/2001	\$ 14.050.000.000

**Source:** *Stanišić, 2006, p. 25*

Without needless assumptions about whether it was possible to avoid some of the aforementioned bankruptcies as well as their wider consequences, we will briefly review the collapse of the Worldcom Co. (entry No. 1 in the table) which caused a loss of more than \$100 billion for the investors after the company's management board reported the capital expenses instead of operative expenses. According to financial reports submitted within three years prior to bankruptcy, the information showed a steep drop of the company's business performance, and the Z-score test showed Worldcom's unstoppable rush into the abyss. In 1999, Worldcom was already in the so-called "gray" zone since its Z-score was 2.9. In the following year (2000), the score dropped drastically and the company entered the red zone only to reach even lower level in 2001, when the company hopelessly awaited measures which were definitely on the way with the declaration of bankruptcy in 2002 (Milojević, 2012, p. 115). Consequently, a question arises how many shareholders reacted to early warning signs (1999), how many did so when Worldcom Co. entered the red zone (2000) and how many reacted when the ship had already sunk financially. However, without the intent to get involved into more detailed analysis, it should be emphasized that the panic reactions were triggered as late as in 2002, when it was completely clear that everything was irreversibly lost (Milojević, 2012, p. 115).



## Conclusion

Considering the fact that more than 30 years passed from the design of the Z-score model until its testing, the Z-score model of predicting company's bankruptcy can be considered to deserve special attention since it has confirmed a significant applicable and analytical value of bookkeeping information which it uses. It is worth mentioning that although the ratio analysis which this model uses is an already known method of analysis, the applied multidisciplinary approach to designing the Z-score model has proven to be very successful which de facto predicts wider possibilities of applying this kind of approach to many other areas of economic and financial analysis.

The Z-score model of predicting company's business failure analyses all important aspects of company's financial situation: liquidity, rentability, activity and financial structure. Respectively, it provides an estimation of company's current and future financial health. However, the Z-model also has certain disadvantages, above all, the fact that it is not immune to bookkeeping mistakes and that it does not include indicators from the cash flow. Furthermore, it is not the most appropriate method for the analysis of newly established companies since they usually do not have undistributed revenue. Consequently, the Z-score model of analysis for predicting business failure i.e. company's bankruptcy should not be taken as a substitute for detailed financial analysis. This model is best used for quick evaluation of company's financial state, so if the Z-test detects presence of potential difficulties in company's business activities, it would be advisable to perform a detailed financial analysis of the company. This practically means that the results of the Z-score model of analysis should be taken with caution, above all, bearing in mind the important limitations of the application of this model. In conclusion, the Z-score presents an excellent technique for the synthetic insight into company's financial health, but in modern conditions the Z-score still cannot be considered as a reliable instrument for predicting company's business failure. The model detects problems in company's business, but only in the indicative manner, so for the more reliable diagnosis of the company's financial health i.e. its financial position, it is necessary to perform a series of additional tests. Therefore, an accurate and reliable method for predicting company's business failure has not been found yet. The aim of finding a reliable model for predicting company's business failure is to take preventive and correctional actions.

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# THE STUDY OF INTERNATIONAL BUSINESS AS PART OF ECONOMIC STUDIES IN SERBIA

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## Abstract

*The scientific approach to the study of international business as part of economic studies in Serbia, has two complementary goals in this paper. The first goal is scientific, with the intention of deepening the economic theory with new scientific insights, particularly in terms of explaining the growing impact of multinational companies on the world economic globalisation. The second goal is of a social nature, aimed at exploring the actual practices in the ways national businesses relate to international business using Serbia as an example.*

*In the preparation of the paper a suitable research project has been used (problem definition, aims, hypotheses, methods and research techniques), with the addition of research instruments used for collecting theoretical and empirical data on the actual state and the possibilities of improving the study of international business.*

*Research results obtained in this scientific paper comprise: the observation of a merely casual study of international business in economic studies in Serbia and the design of an approach to improve this situation urgently.*

*The main implications of these research findings relate to the prospects that their use may contribute to a more convenient approach of the Republic of Serbia to the functioning of multinational companies in order to accelerate its economic development.*

*The obtained scientific results are related to the identification of an intensive implementation of new scientific knowledge in the development of multinational companies, by means of which they may effectively maintain and strengthen their competitive advantage compared to national companies.*

**Key words:** *international business, national business, economic sciences, globalisation, economic effects.*

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## **Introduction**

According to economic theory international business is based on operating activities of business entities in their sites and their foreign branches. This criterion is primarily fulfilled by multinational companies whose business has a decisive influence on the current world economic globalization. They have such a role because of the involvement of big business and essential support the developing science, dealing with mass production of the frequent products and providing common services whose quality and price cannot follow the economic operators of the national pattern. International business philosophy is simple because it is only interested in profit, and not any other policy, tradition, belief and so on. The penetration of international business in recent decades in the world is impressive and it is now the world's GDP accounts for about 75% and about 40% in total employment (Unctad, World Investment Report 2015). For the methodological precision, for the phrase "products and services" the term "product" will be used in this paper since services constitute a group of intangible and tangible products. For these reasons, the scientific research has been done with the aim to identify the situation in the study of international business in Serbia and on that basis to project the harmonization of that field as this would contribute to the streamlining of our economy and its effective integration into current and further international division of work.

Thus treated research material was presented through the texts of the following chapters:

- flows and the effects of international business, where was exposed the character of the business and its results in the world;
- the status in studying of international business, within which were analyzed the results of the survey of selected sample and examinees;
- improving the study of international business, inside which have also been analyzed the results of realized survey;
- main conclusions, summarizing the main findings and realized new scientific findings regarding the status and improvement of study of international business at economic studies in Serbia.

## **Methodology**

The purpose of this work is that it contributes arguing weakness in the study of international business at economic studies in Serbia and that it is therefore designed methods whose implementation will improve this study in favor of more efficient economic development of this country and

other countries with identical or similar problem. To achieve the goal, for the purpose of this work is prepared and implemented an internal short research project, which is used as an ideological basis for the collection and interpretation of the required theoretical and empirical data (Radovanovic, T., 2008, pp 47-58). In addition, the conceptual framework of projects' factors was consisted of:

- the research problem, which was based on the question of how to improve the study of international business at economic studies in Serbia and the design of ways how to raise this quality as a function of rational and rapid economic development of that country;
- research objectives, within which are identified the adequate scientific and social objective. The scientific goal was based on contribution to scientific knowledge of international business, and social objective included the use of these new scientific findings in the management of Serbian economy and its similar countries;
- research hypotheses, where was identified the main hypothesis stated in the assumption that the situation in the study of international business at economic studies are basically bad and that it should be improved fundamentally for economic prosperity of the country;
- research methods, a part of which were selected for this study dialectical method as a general studies and methods of documentation and testing methods as separate.

### **The flows and effects of international business**

International business has grown from a long application of trade to certain products that are transferred from one area and sold in other areas, where the former traders worried about achieving personal profits by cheaper procurement of certain products and then selling them at higher prices. With the advent of the industrial revolution, some factory owners have started with the placement of their products in other countries, first by selling them to foreign retailers, and then by the construction of its branches abroad. Such business practice multiplied by the time, and its protagonists were workers with big business and highly capable management team (Zecevic, M, 2015. p.126). Shortly thereafter both developed international business spread not only in production, but also on providing a wide variety of necessary services. From all of this, arose the definition of international business at which he represents the business of the undertaking which is realized at its headquarters and in its foreign subsidiaries, in which the owners have invested their capital with the intention of making a profit (Djurovic, Dj, 2006. p. 54-61).

Strong impulse of spreading and multiplication of international business, whose main representatives make up the so-called multinational companies, in recent decades has enabled intensive development of applied sciences through the transformation of its new scientific knowledge in the professional creation (Ristic, D, 2005. p. 111-114). These are the first used by multinational companies and thus began to maintaining its competitive advantages in the markets selling the product in relation to the competitive economic organization of national character. This combination of science and supporting applied arts, supported by large capital and strong management of multinational companies consistently more effective than national companies, which base its development on several technologies used mainly in multinational companies (Koster, K, 2010, p. 67-70). Prognosis of maintaining such advantages is difficult to implement and it probably refers to the fact that multinational companies increasingly meet the massive needs for products and services, while national companies remain to meet the local and lower frequency of such needs (Luthans, F, Doh, J, 2015. p.76-78).

When it comes to the current international business i.e.functioning of multinational companies, it should be noted that they are virtually inundated with all countries and their participation in world gross domestic product is mentioned about 75% and about 25% of total world employment. Hence arises their crucial economic and even political force that increasingly restricts state sovereignty of almost all the countries in which today's increasing volume of necessary products (material and services) meet the world's most well-known multinational companies. This situation implicitly narrows commercial companies and forces the national government in developing countries to apply economies examples of this reality.

That's an average the most interesting high vitality of international business, which, as mentioned above, stems from the close relationship between science and applied arts to the development of multinational companies and high business competence of their management (Bayars, R, 2006, p. 44-47). In fact, particularly in recent decades, the observed management very closely cooperates with the adequate development of science and engineering as it provides all kinds of new business more efficient technologies that it incorporates the operations of their company, and their former technology used for a fee transferred to interested national companies. In this complementary role has an applied art that essentially takes care of the aesthetic and ethical product. And

here lies the international comparative advantage in relation to the national businesses that are very difficult to overcome. Figuratively speaking, this refers to the world practice according to which the greatest number of multinational companies have their own strong developing units connected with the appropriate institutions of applied science and art involved in promotion of the production process and its output product. Multinational companies, as holders of international business, practically already penetrated into all countries of the world today. Their business philosophy boils down to earning profits, which is why they strive to continually meet the most frequent human needs for specific products (food, clothing, footwear, household appliances, means of work, means of entertainment, means of transport, etc.). That is why the companies, using the transformed scientific achievements in production systems (managerial, organizational, technological, etc.) and applied arts continuously reproduce new products with lower production costs and higher essential characteristics (in terms of quality, functionality, aesthetics and ethics), on the basis of which legally realize a comparative advantage in world sales markets. (Morschett, D. et al., 2015, p. 53-56).

In all this, the key factors of business success make the unity of the international business development and management of the business. The first factor makes use of new scientific knowledge are transformed into technical solutions to develop their businesses, provided that these technical solutions are generally more efficient than their predecessors. The second factor of complementary character refers to the use of new creations of applied art that are incorporated into products which they get on the side of aesthetics and ethics. Finally, the third factor is the high level of business competence in international business management, which is aware of the above impacts of science and art of their business, but this influence is financed and used in the development of their own business (Peters, T., 2004).

### **The situation in the study of international business**

Considering the short exposed theory of international business based on the use of adequate theoretical data in order to determine the status of the study of these fields on economic studies in Serbia as a topic of this study, it is necessary to obtain and use adequate empirical data about it. The expectations that the collected empirical data related to the study of international business on economic studies in Serbia will be predominantly unfavorable because of the very difficult legacy of Serbia because of the

resulting weakness in the sphere of applied sciences and arts. Consequently, the survey was carried out with three professors from all higher education institutions in Serbia dealing with the economics. Response rate was acceptable, because of the planned 54 examinees (three examinees from 18 higher education institutions) in the survey participated 42 examinees (or about 80%). Regarding the observed status they were asked 6 questions, which will be presented below with an emphasis on obtained survey results.

**Table 1** *The extent of study of international business at our economic studies*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) the full extent	0	0
	b) the medium extent	6	33
	c) the small extent	12	67
	Σ	18	100
2. From higher education institutions of scientific studies	a) to the full extent	0	0
	b) the medium extent	7	29
	c) the small extent	17	71
	Σ	24	100
3. Total	a) to the full extent	0	0
	b) the medium extent	13	32
	c) the small extent	29	68
	Σ	42	100

**Source:** *Questionnaire – Question no. 1*

*The correlation coefficient response group of examinees  $r = 0.928$ .*

Pole question relates to the case of the study of international business on our economic studies, in view of its increasing influence on the world today and every national economy (Rahimić, Z., et al, 2005, p. 74-78). On this issue a significant majority of examinees (68%) considered that the study of this field in Serbia is realized on a small scale and the students do not get the complete view of the substance and implications of the functioning of international business (Table 1).

The next question went to the fact to establish what is given emphasis in the study of international business on our economic studies. Regarding this, with a high correlation, the majority of examinees pointed out that in this emphasis on the study of the forms of action of international business (64%), which means that less attention is paid to the study of its essence, and in particular its complex treatment (Table 2) . Practically, this means



that with such approach most students acquire idea about the various forms of economic operation of international business, and not on the implications of such economic and other activities.

**Table 2** *What is given emphasis in the study of international business at our economic studies?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) form of its functioning	12	67
	b) essence of its functioning	4	22
	c) its complex processing	2	11
	Σ	18	100
2. From higher education institutions of scientific studies	a) form of its functioning	15	62
	b) essence of its functioning	7	29
	c) its complex processing	2	9
	Σ	24	100
3. Total	a) form of its functioning	27	64
	b) essence of its functioning	11	26
	c) its complex processing	4	10
	Σ	42	100

**Source:** *Questionnaire – question no. 2.*

*The correlation coefficient response group of examinees  $r = 0.924$ .*

The next question came down to form of study of international business, about what the majority of examinees agreed that this study is most often realized in the form of parts in other subjects (66%). It also refers to the fact that to the study of international business at our economic studies is not paid great attention (Table 3), and that it is in a very small scope taught at our economic studies. Other survey results also show this according to which a very small number of examinees (10%) points out that the study of international business is done through specific subjects, a greater number (24%) indicates that it is implemented in the form of casual teaching. All this essentially indicates inappropriate treatment of study of international business at our economic studies.

**Table 3** *In what form is international business studied at our economic studies?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) in the form of special subject	2	11
	b) in the form of parts of other subjects	11	61
	c) in the form of casual teaching	5	28
	Σ	18	100
2. From higher education institutions of scientific studies	a) in the form of special subject	2	8
	b) in the form of parts of other subjects	17	71
	c) in the form of casual teaching	5	21
	Σ	24	100
3. Total	a) in the form of special subject	4	10
	b) in the form of parts of other subjects	28	66
	c) in the form of casual teaching	10	24
	Σ	42	100

**Source:** *Questionnaire - Question No. 3.*

*The correlation coefficient response group of examinees  $r = 0.944$ .*

The next question concerned the quality of accompanying textbooks at the surveyed studies, and the majority of examinees stated that the quality of these textbooks is mostly low (76%). Such declaration of the examinees is logical, since in our country exist a very small number of publications related to international business which is essentially lacking talks about the business (Table 4).

**Table 4.** *The quality of the accompanying textbooks in the study of international business on our economic studies*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) the quality of the textbooks is high	0	0
	b) the quality of the textbooks is mediocre	4	22
	c) the quality of the textbooks is low	14	78
	Σ	18	100
2. From higher education institutions of scientific studies	a) the quality of the textbooks is high	0	0
	b) the quality of the textbooks is mediocre	6	25
	c) the quality of the textbooks is low	18	75
	Σ	24	100
3. Total	a) the quality of the textbooks is high	0	0
	b) the quality of the textbooks is mediocre	10	24
	c) the quality of the textbooks is low	32	76
	Σ	42	100

**Source:** *Questionnaire - Question no. 4*

*The correlation coefficient  $r$  response group of examinees  $r = 0,938$ .*

The next question was about the level of competence of lecturers of international business at observed studies, where majority of examinees stated that it is mostly low (60%). An interesting fact is none of the participants in the survey did not describe the competence of the lecturers as high while the average mark was got by 39% of examinees. Of course, such a statement is logical, since that business on the studies was not adequately treated and for these reasons that accompanies modest literature (Table 5) - which indicates a weak overall new treatment and the quality of teaching process (Brzakovic, P, Vujanic, I, 2016).

**Table 5** *What is the level of competence of the lecturers of international business at our economic studies?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) have a high competence	0	0
	b) have a mediocre competence	7	39
	c) have a low competence	11	61
	Σ	18	100
2. From higher education institutions of scientific studies	a) have a high competence	0	0
	b) have a mediocre competence	10	42
	c) have a low competence	14	58
	Σ	24	100
3. Total	a) have a high competence	0	0
	b) have a mediocre competence	17	40
	c) have a low competence	25	60
	Σ	42	100

**Source:** *Questionnaire - question No.5.*

*The correlation coefficient r response group of examinees  $r = 0,942$ .*

The last question of the situation in the field of the study of international business at the higher education institutions of economic studies in Serbia referred to the assessment of effects that can be achieved on the basis of this study at our economic studies. In view of the given answers to the previous questions, there is the fact that the majority of examinees assessed the effects as predominantly poor (62%), and no one believed that the effects of this study are good, not surprising (Table 6).

**Table 6** *What are the ultimate effects in the present study of international business at our economic studies?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) effects of the studies are good	0	0
	b) effects of the studies are mediocre	6	33
	c) effects of the studies are low	12	67
	Σ	18	100
2. From higher education institutions of scientific studies	a) effects of the studies are good	0	0
	b) effects of the studies are mediocre	10	42
	c) effects of the studies are low	14	58
	Σ	24	100
3. Total	a) effects of the studies are good	0	0
	b) effects of the studies are mediocre	16	38
	c) effects of the studies are low	26	62
	Σ	42	100

**Source:** *Questionnaire – question no. 6.*

*The correlation coefficient response group of examinees  $r = 0.957$ .*

Exposed empirical data convincingly show that the situation in the study of international business at economic studies in Serbia is basically unsatisfactory. This happened due to the difficult past recent decades through which the country was undergoing economic transition and which, with effort, striving to economic recovery, which is largely based precisely on intensifying the introduction of international business. However, such a developing concept, due to its inertia, is badly accompanied by the development of higher education, which led to exhibited problems and to the studying of that business at economic studies in Serbia.

The negative consequences of such practices are multiple and in particular include: the absence of selectivity in the introduction of international business and undeveloped relationship between the national and international business. When it comes to the absence of selectivity in the introduction of international business in our economy should be said that insufficient care dedicated to the sustainable protection of our natural resources, especially non-renewable, and it arises from weaknesses in the knowledge and study of the essence and aim of international business. On the other hand, when it comes to the relationship between the national and international business, it is set by inertia instead of the

system, in which negative consequences borne by the national as well as economically weaker than the international business. Of course, this negative consequence would be avoided by better knowledge of the nature of international business, and its efficient studying in higher education, which is now dominated by these weaknesses.

These major negative consequences, with the addition of some other, suggest that the current weaknesses in our present study of international business produce many grave economic difficulties in Serbia, which could be overcome with adequate improvement.

### **Improvement of study of international business**

In accordance with the confirmed largely disadvantaged state in the study of international business at our economic studies, and taking into account the achieved findings presented in contemporary theoretical developments in this area, the task of this paper was to identify factors which implementation is possible to improve this area of study in Serbia and allied countries. This identification will be carried out in the following text of this paper with combined use of the theory of the area and to the results of the survey conducted. For the main factors of observed studies are taken the adequate textbooks, then hiring competent lecturers, as well as the drafting of an adequate study program.

In the analysis of these factors, similar to the previous, the same sample, i.e. lecturers of higher education institutions of economic profile in Serbia are also set at 6 questions. Consequently, the structure and the results of answers to questions would be exposed.

In the very next question, examinees were asked to give their opinion on how, in their opinion, should be changed measure, or the amount of previous study of international business at our economic studies. Answers to this question are expected, as the majority of examinees stated that the study of such business should be much more increased (79%), which means that they are aware of the need and importance of this study (Table 7).

**Table 7** Compared to the previous study among international business at our economic studies, whether that something should be changed?

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) nothing should be changed	0	0
	b) should increase the study	5	28
	c) should significantly increase the study	13	72
	Σ	18	100
2. From higher education institutions of scientific studies	a) nothing should be changed	0	0
	b) should increase the study	4	17
	c) should significantly increase the study	20	83
	Σ	24	100
3. Total	a) nothing should be changed	0	0
	b) should increase the study	9	21
	c) should significantly increase the study	33	79
	Σ	42	100

**Source:** Questionnaire - question. No.7

The correlation coefficient  $r$  response group of examinees  $r = 0,936$ .

Next question included the definition of the essential elements that need to be accentuated in the study of international business at our economic studies. And on this point there was no surprise, as the majority of examinees identified the need to strengthen the integrated impact of science and art on the one hand, and the importance of competence management in business, on the other (76%) - (Table 8).

**Table 8** What should be given emphasis in the study of international business at our economic studies?

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) the importance of the application of science and art	2	11
	b) the importance of management competence	4	22
	c) consolidated importance of these factors	12	67
	Σ	18	100
2. From higher education institutions of scientific studies	a) the importance of the application of science and art	2	8
	b) the importance of management competence	2	8
	c) consolidated importance of these factors	20	84
	Σ	24	100
3. Total	a) the importance of the application of science and art	4	10
	b) the importance of management competence	6	14
	c) consolidated importance of these factors	32	76
	Σ	42	100

**Source:** Questionnaire - Question. No. 8

The correlation coefficient  $r$  response group of examinees  $r = 0.932$ .

Then followed the question of the form the program should have in the study of international business. Regarding this, preference is dominated by which this study should be organized in the form of special subject (78%), which also means that the observed study is treated as very serious (Table 9).

**Table 9** *In which form international business should be studied at our economic studies?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) in the form of special subject	15	83
	b) in the form of parts of similar subjects	3	17
	c) in casual form	0	0
	Σ	18	100
2. From higher education institutions of scientific studies	a) in the form of special subject	18	75
	b) in the form of parts of similar subjects	6	25
	c) in casual form	0	0
	Σ	24	100
3. Total	a) in the form of special subject	33	78
	b) in the form of parts of similar subjects	9	22
	c) in casual form	0	0
	Σ	42	100

**Source:** *Questionnaire – Question no. 9*

*The correlation coefficient response group of examinees  $r = 0.951$ .*

In the next question the examinees were asked to identify the aspects in which textbooks of international business should be improved. The reply of the majority of examinees to this question (81%) were related to the preference that observed textbooks should be prepared in terms of description and essence of international business (Table 10). This also points out the quick maturation of awareness of examinees about the need for accompanying textbooks from the study of international business to be more frequent and better than it used to be.

**Table 10** *From which aspects textbooks from international business at our economic studies should be improved?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) in terms of international business description	1	6
	b) in terms of international business essence	2	11
	c) in terms of description and the essence of the business	15	83
	Σ	18	100
2. From higher education institutions of scientific studies	a) in terms of international business description	1	4
	b) in terms of international business essence	4	17
	c) in terms of description and the essence of the business	19	79
	Σ	24	100
3. Total	a) in terms of international business description	2	5
	b) in terms of international business essence	6	14
	c) in terms of description and the essence of the business	34	81
	Σ	42	100

**Source:** *Questionnaire – Question no. 10*

*The correlation coefficient response group of examinees  $r = 0.952$ .*

After that, a question was asked about how to raise the competence of lecturers of international business in observed studies. Answers given by examinees to this question were logical since the significant majority (84%) identified that observed competence should be raised by selective choice and continuous training of lecturers (Table 11). This also means the need to intensify doctoral studies in the field of international business, which will be producing new educational and scientific workers in that area as a base from which will be chosen the future lecturers of the study segment.



**Table 11** *How the competence of lecturers of international business at our economic studies should be raised?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) by their selective choice	1	6
	b) by their systematic improvement	2	11
	c) using both measures	15	83
	Σ	18	100
2. From higher education institutions of scientific studies	a) by their selective choice	2	8
	b) by their systematic improvement	2	8
	c) using both measures	20	84
	Σ	24	100
3. Total	a) by their selective choice	3	6
	b) by their systematic improvement	4	10
	c) using both measures	35	84
	Σ	42	100

**Source:** *Questionnaire – Question no. 11*

*The correlation coefficient response group of examinees  $r = 0.952$ .*

Last question is covered by the estimate of ultimate effects that would be achieved if the planned improvement of international business studies would be introduced into practice at our economic studies. The answer of the examinees to this question was the most convincing since they estimate that this would achieve high results (88%), which is logical and expected, bearing in mind the critical responses of examinees on the current situation in this area (Table 12).

**Table 12.** *What would be the ultimate effects achieved if applied your commitment to improving the study of international business on our economic studies?*

Examinees	Answers	Number of answers	% of answers
1. From higher education institutions of applied studies	a) emphasized the positive	16	90
	b) definitely positive	1	5
	c) mainly positive	1	5
	Σ	18	100
2. From higher education institutions of scientific studies	a) emphasized the positive	21	88
	b) definitely positive	2	8
	c) mainly positive	1	4
	Σ	24	100
3. Total	a) emphasized the positive	37	88
	b) definitely positive	3	7
	c) mainly positive	2	5
	Σ	42	100

**Source:** *Questionnaire - question 12*

*The correlation coefficient response group of examinees  $r = 0.957$*

The resulting overall survey results regarding the improvement of studying international business at our economic studies clearly show that this should be achieved by introducing more frequent subjects of study in that area, then tightening the selectivity in the choice of the lecturer of that subject, as well as raising the quality of appropriate textbooks. In this way, the effects of such application would primarily be reflected to increase students' knowledge of this type of business, which would lead to more regular state-level economic policy regarding bringing multinational companies in Serbia, which would ultimately contribute to a more efficient calculation of a sustainable economic development in that Republic, as in each similar country.

### **Conclusion**

Presented considerations of the field of international business at economic studies in Serbia allow performing of the following basic conclusions.

a) International business, as an expression of the business operation of multinational companies in several countries with its growing economic power apparently overwhelmed the world economy. The essential objective is to achieve a profit, which is all about. Due to its economic strength, international business has become the main cause and the holder of the world economic globalization. The business, in relation to the national, originally is more vital since for its development uses the results of new achievements in applied science and art, which confers significant advantages in global markets. Therefore, it has a stronger influence on the developing policy of every country, and today is therefore systematically studied, particularly at economic studies in developed countries.

b) From the aspect of Serbia (and its similar countries) insufficient attention is paid to the studying of international business to the reasons of awkward past, which negatively affects its economic development, which increasingly includes incoming branches of foreign multinational companies. It was achieved by a combined analysis of the theory of international business and adequate interviewing related to the situation in the field of study of international business at economic studies in Serbia. More specifically speaking, the observed weaknesses in the study of this business in Serbia are reduced to the underrepresentation of this study, then to the undue accompanying textbooks, as well as the lack of competent lecturers in that field.

c) In order to improve this unfavorable situation, with the help of modern theories of international business and the results of the performed survey, measures were designed that in the application would raise the level of study and in that way would contribute the fact that multinational companies in Serbia would be treated in more regular and more effective way. In this context, the main dimensions of efficient studying of international business are: raising the frequency of the study of the business, the introduction of adequate programs of study, improving the quality of textbooks and the performance of more selective choice of lecturers in this area. All this is valid not only for Serbia, but for all similar countries in the world.

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# THE BANKING SECTOR LIQUIDITY AS A FOUNDATION FOR INTRODUCING INNOVATIONS IN BUSINESS

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## Abstract

*Throughout history, banks have shown the precondition for illiquidity and transferring this risk to the overall economy. Taking into account this fact, we can say that the subject of this study is the analysis of impact of macroeconomic factors on the banking sector liquidity in Serbia together with the ability to introduce innovations in business. The aim of the study is based on the assessment of whether and how the variations in macroeconomic factors affect the banking sector exposure to liquidity risk, which at the same time determines the readiness of the banking sector to respond to contemporary challenges in business. By applying the appropriate statistical methods such as correlation analysis, significant results in terms of the impact of macroeconomic factors have been obtained. More importantly, these results can be used as the basis for monitoring and measuring illiquidity of the banking sector. The study results show that by monitoring factors which have the biggest influence on the banking sector liquidity, the allocation of funds for innovation in the banking business can be planned.*

**Keywords:** *the banking sector liquidity, innovation.*

## Introduction

Liquidity represents the ability of banks to provide enough liquid funds for payment of overdue and withdrawn deposits, to fund asset growth of the business itself, as well as to settle other foreseen and unforeseen financial obligations. Since the illiquidity of banks has significant consequences on its operations and business clients, both those who have invested funds in the bank and those who use loans and a variety of services. For banks, the need to be liquid is nothing special and new but something normal and usual, and as Cates says “Liquidity is always a primary concern, no bank opens the door without it, but with it the

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bank may have time to solve the biggest problems”. Liquidity risk is the risk of insufficient liquid funds available to fulfill aforementioned needs at any given time. Liquidity risk also contains the aspect of market risk within itself. This aspect is reflected in the bank’s inability to carry out transactions in the financial market due to systemic disorders in the country or due to insufficient market depth.

The importance of the banking sector liquidity for the development of the financial market in Serbia, and therefore the economy, encouraged the study of this very topic, more precisely, to investigate which macroeconomic has the highest dependency in relation to the dependent variable (the liquidity of the banking sector). It also emphasizes the importance and great potential of statistical methods such as correlation analysis in measuring the effects of variables on the dependent variable. Using correlation analysis as a statistical instrument, the obtained results confirm inflation, the index of industrial production and unemployment rate as indirect determinants of liquidity in the banking sector. It is expected that this research will be of practical use for economic policy makers, especially in monitoring and measuring the most influential factors on the banking sector liquidity and the possibility of timely response to the given movements of determinants.

Numerous authors have studied the liquidity of banks, i.e. changes in the level of liquidity due to the effect of different factors. Some of them are: Trenca, Petria, Mutu & Corovei, (2012), Vodová (2011, 2013), Basel Committee on Banking Supervision Working Group on Liquidity (2000), Alihodžić (2015), Račić (2014) and many others. The conclusions that they came to by thorough research relate to the identification of relevant and significant macroeconomic factors which affect the level of liquidity in the banking sector. For example, Račić identified the factors influencing the liquidity of banks in the period from 2008-2012 in his study. The research results go in favor to the assumption that the movement of the underlying macroeconomic factors contributed to the high liquidity of the banking sector in Serbia. The increase in the unemployment rate, inflation rate determine at a statistically significant level the exposure of the banking sector to liquidity risk. Also, in his study, Račić examines the correlation between the banking sector liquidity and the phases of the business cycle.

### **The Definition of Research Objectives**

The aim of this study is based on the assessment of whether and how the variation of macroeconomic factors (the GDP - expressed through the industrial production index, inflation, unemployment rate) affects

the exposure of the banking sector of the Republic of Serbia to liquidity risk during the period from 2008 to 2015 - which further determines the readiness of banking sector to respond to contemporary challenges in the business. 96 observations were carried out for the reference period.

The following table provides an overview of observed variables that are used in the model as determinants of the banking sector liquidity. Column *Impact on the liquidity of the banking sector* assumes a positive or negative effect of observed independent variables on the dependent variable - the banking sector liquidity. The selection of independent variables was based on previously conducted research on this topic.

**Table 1** *Defining dependent and independent variables*

Variables	Symbol	Effect on the banking sector liquidity dependent variable	Data Source
The banking sector liquidity	L		National bank of Serbia (NBS)
Index of industrial production, as a measure of GDP	IIP	+	NBS
Consumer Price Index	CPI	-	Informative Business Center (IPC)
The unemployment rate	UR	+	Serbian National Employment Service

**Source:** *Author*

The following parts of the paper will explain both the dependent and independent variables. Specifically, this paper analyzes the banking sector liquidity through liquidity indicators: average monthly liquidity, loans-to-deposit ratios (LTD ratio) to non-financial sector.

Liquidity ratio represents the ratio of liquid assets to liquid liabilities (sight deposits and liabilities with maturity up to one month). Resolution on bank risk management strictly defines that the average monthly liquidity ratio should not be less than 1, that the liquidity ratio must not be below 0.9 for longer than three consecutive days and that it should never fall below 0.8 (NBS, 2011). LTD ratio, i.e. loans to deposits ratio, indicates the ability of banks to fund lending through gathered deposits. If the value of this indicator is higher than one, it might suggest insufficient readiness of the banking sector to respond to shocks (NBS, 2016).

The issue of employment is a key for each country and its financial system. In addition to the level of gross domestic product, this must be the most reliable indicator of the efficiency of an economy, and thus the society as a whole. The

first and crucial thing for strengthening the labour market performance but also the national economy as a whole, is to improve the labor supply in terms of enriching the knowledge of both the employed and unemployed, which of course means a substantial investment in human capital. These investments are the fastest way to reduce poverty and to increase employment and the willingness of the population to deposit financial resources in the banking sector. This would provide a significant portion of liquid assets to banks, i.e. optimal liquidity, which is correlated with the movement of macroeconomic indicators that can not be influenced but can only be adjusted to.

The number of unemployed people in Serbia reached its historical maximum in 2012 when it amounted to 22.2%. The rise in unemployment (an increase of 2.5 percentage or from 13.6 to 16.6%), which was caused by the decrease in production volume, was a major factor in the reduction of GDP in 2009. GDP volume reduction factor was also the reduction in aggregate demand, domestic and foreign, which resulted in the formation of negative expectations about recovery and growth of the economy. National Employment Service has recorded around 724 thousand unemployed in 2015. Serbia's unemployment rate decreased to 19% while the unemployment rate was 16,7% in Croatia, 27.9% in Macedonia, 16,1% in Albania and 19,1% in Montenegro. Although the above data on the declining employment and rising unemployment do not fully correspond (a much larger drop in employment than a rise in unemployment), it is certain that the crisis had major adverse effects on our labor market.

As the most significant macroeconomic aggregate, GDP is suitable for the analysis of the economy of a specific country. Since the gross domestic product in 2010 rose about 1% to compensate for only about half of the decline in production from the previous year, economic recovery in the early 2011 continued at a slightly accelerated rate compared to the last quarter of 2010. This does not mean that Serbia has emerged from the zone of insufficient economic growth. The reason for the cyclical movements of GDP in % from positive to negative, is the change of its component parts.

As a result of strengthening domestic demand, economic recovery should accelerate in the period to come. After GDP growth of 0.8% in 2015, we expected that in 2016 GDP would be increased to 1.8%, and 2.2% in 2017. Favorable trends from 2016 should be continued throughout 2017, i.e. growth in economic activity still should be guided by investments, with a further strengthening of household consumption. Increased domestic demand will affect the growth of imports, because of which, in spite of the expected growth of exports, the contribution of net exports to GDP will remain close



to neutral. Contributions of component expenditures to real GDP growth are related to consumption, government consumption, investment, net exports. On the other hand, in line with the expected continuous implementation of fiscal consolidation, government spending in 2017 will record a decline (NBS, 2016).

Since the values of GDP are published quarterly and annually, and given the fact that for the purposes of this research monthly data were used, industrial production index was used instead of GDP to calculate the impact of macroeconomic factors on the banking sector liquidity. The industrial production index is the reference indicator which points to the turning points in the movement of economic activity in the early stages and is used to assess the changes in total GDP.

The index of physical volume of industrial production was obtained on the basis of monthly reports on industrial production in the Republic of Serbia (IND-1). It includes companies in the industry and units of non-industrial enterprises engaged in industrial production. Since the first of January 2011, the classification of industry in three sectors has been introduced: the extractive (mining), processing industry and the supply of electricity, gas and steam. Stocks of finished products represent the state at the end of the month (NBS, 2015). The fall in industrial production in 2008 marks the beginning of the global economic crisis while a slight growth in 2010 shows recovery from the recession until 2014. In February 2016 there was a growth of physical volume of industrial production of 14.0% compared to February 2015.

Inflation came back into the framework of the target tolerance band in 2012 and directs the movement around the central value of the target until the end of the year. Inflation declined after this period due to the weakening of cost pressures on food prices, low aggregate demand and the strengthening of the dinar until 2015. After a long period of a downward trend, it was expected that since mid-2016 inflation will experience a moderate growth and return within the target band at the end of this year or early next year. It is estimated that growth will continue in 2017 but at a much slower pace and it will level off at about 3.0% in average. The biggest impact of the gradual increase in inflation in the projection period will be a weakening of disinflationary pressures due to the expected growth in world prices of primary products, aggregate demand in Serbia and inflation in an international environment. Inflation measured by the consumer price index (CPI) from 2009 to 2012 recorded a growth trend. The devaluation of the dinar is attributed to the rising prices of food products, fruits and vegetables. Although it was anticipated that the target inflation will abate and come closer to the central value (due to the cheapening of food and implementation of monetary and fiscal

policy) the liquidity of the banking sector during the period from 2008 to 2015 had a slightly upward trend only in 2012. Depreciation of the dinar continues to fuel the fears of population to opt for saving in dinars, although the interest rate on savings in dinars is higher than the interest rate on savings in foreign currency. The way banks can deal with inflation is borrowing in the same currency in which claims are made. If the claims in a given currency are higher than the bank's liabilities, inflation will negatively affect the liquidity of the bank and vice versa. The banking sector in Serbia has a favorable structure i.e. the ratio of claims and liabilities (greater liabilities than claims), so inflation has no negative impact on the liquidity of banks.

Measures of the National Bank of Serbia used to curb inflationary influences also affect and the level of unemployment. Reduction of the amount of money in circulation decreases the aggregate demand, thus the level of production of goods and services. The repercussions of this reduction are reflected in an increase in unemployment. It can be said that it is precisely the growth of unemployment that gives impetus to banks to better distribute their assets in order to achieve higher profits and maintain liquidity levels above the optimum. The presence of such a trend also prompts bank to conduct a detailed analysis of risk ratings of loans since the large number of population lost their jobs from the beginning of the crisis. One of the critical elements of the economic situation in Serbia, is the high level of unemployment. Based on expert assessment, this macroeconomic risk had a tendency to increase during the period from 2008 to 2015 (when it recorded a slight decline), and left a mark on the further progress of economic activity until the investment and further growth of economic activity creates new productive jobs.

Since commercial banks are not immune to the changes of macroeconomic trends, they indirectly affect the liquidity of the business, so the bank can only establish a system of adjustment. Factors such as unemployment, gross domestic product and inflation affect the liquidity of commercial banks with different intensity. It can be said that the GDP, expressed by the level of the index of industrial production, is a factor without effect, while unemployment rate and inflation have significant impact, which will be confirmed in the next section by using statistical methods.

### **Correlation Analysis Results**

The research covers the period from 2008 to 2015 and refers to the liquidity of the banking sector. Mainly, official data the National Bank of Serbia were used. Three independent variables were included (IIP, CPI, UR) and one dependent

variable expressed through two indicators (liquid claims/liquid liabilities, loans/deposits). Consequently, a model of correlation which determines the degree of correlation between a dependent variable and three independent variables was applied together with the use of SPSS statistical software.

Descriptive statistics of the sample covered by the survey is shown in Table 2. It can be seen that there is a high degree of variation of observed indicators, as evidenced by the standard deviation. The most pronounced standard deviation is with loans to deposit ratio to nonfinancial sector of 11.88% and the index of industrial production of 9.6%. In the column *Skewness* we can see that the CPI values deviate the most from the normal distribution together with the curvature to the left, that is, to smaller values than the average. Liquidity (*averLiq*) also shows positive value of curvature while the other three parameters are curved to the right, i.e. to higher values. Parameter *Kurtosis* is a measure of the distribution curve flattening. Negative values of this parameter recorded in all variables show that the distribution is flatter than normal, i.e. that the data dispersion is bigger.

**Table 2** *Descriptive statistics od macroeconomic variables and banking sector liquidity in the Republic of Serbia for the period 2008-2015.*

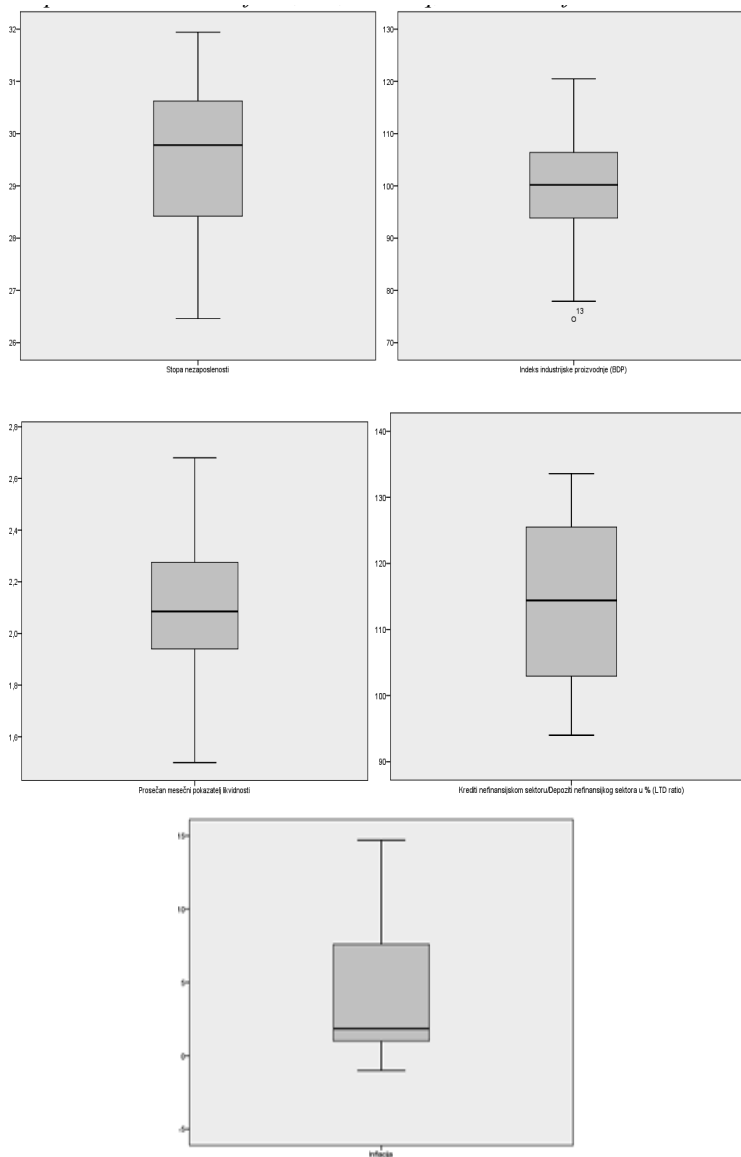
	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Stat	SE	Stat	SE
UR	96	26,5	31,9	29,500	1,4173	-,286	,246	-,883	,488
CPI	96	-1,0	14,7	4,023	4,4334	1,075	,246	-,355	,488
IIP	95	74,5	120,5	99,866	9,6042	-,291	,247	-,208	,490
averLiq	96	1,50	2,68	2,1072	,27232	,179	,246	-,264	,488
LTD	96	94,00	133,60	113,8875	11,88108	-,049	,246	-1,490	,488
Valid N (listwise)	95								

**Source:** *Author*

Dispersion (skewness and kurtosis) data of dependent and independent variables can be presented in the accompanying charts. In the so-called. “boxplots” the distribution of the values of each observed variable can be shown. The central line shows the median value. “Boxes” cover values of the second and third quartile (i.e. the values between the 25th and 75th percentiles) while “tails” represent a range from minimum to maximum value, except outliers that are marked with circles. Namely, outliers are consider to be the values that are distant for more than 1.5 length of the “box” from the the upper limit of “boxes”, i.e. values that are 1.5 times bigger or smaller than interquartile range.

From the insight into UR, LTD, averLiq graphs, we can see that the their distribution does not differ significantly from normal, while the distribution of CPI is curved toward lower values (median line is not in the middle of the box but at the bottom). The only outlier was noticed in the IIP graph, in which except that value, which is lower than others, normal distribution was also observed.

**Graph 1** *Distribution of UR, IIP, AverLiq, LTD and Inflation*



**Source:** *Author*

The table below indicates the intensity of the correlation between the dependent variable - the average monthly liquidity (averLiq) and independent macroeconomic variables such as unemployment, inflation and industrial production index. The correlation was calculated from 96 samples for independent variables which affect the dependent variable averLiq. Previously, the analyzes of the homogeneity, normality and linearity of variances were conducted and it was concluded that all prerequisites have been met. Using Pearson's correlation coefficient, it was observed that there is no connection between all variables. Medium, i.e. weak positive correlation exists between the average monthly liquidity and the unemployment rate and it can be said that the correlation is statistically significant at the significance level of .001. The index of industrial production shows the negligible correlation with the dependent variable which is not statistically significant. There is no statistical significance between average monthly liquidity and index of industrial production.

**Table 3** *averLiq correlation*

		averLiq
UR	Pearson Correlation	<b>,553**</b>
	Sig. (2-tailed)	<b>,000</b>
	N	<b>96</b>
CPI	Pearson Correlation	<b>,090</b>
	Sig. (2-tailed)	<b>,383</b>
	N	<b>96</b>
IIP	Pearson Correlation	<b>-,041</b>
	Sig. (2-tailed)	<b>,691</b>
	N	<b>95</b>
** . Correlation is significant at the 0.01 level (2-tailed).		

**Source:** *Author*

The following table also shows the intensity and direction of the correlation between the dependent variable - loans to deposits to non-financial sector (LTD ratio) and independent macroeconomic variables such as unemployment, inflation and industrial production index. The correlation is calculated from 96 samples for independent variables which affect the dependent variable LTD. Using Pearson's correlation coefficient, it was observed that there is no connection between all variables. Medium, i.e. weak positive correlation exists between LTD liquidity ratio and the unemployment rate and consumer price index CPI, so it can be said that the correlation is statistically significant at the significance level of .001. The correlation coefficient for the index of industrial production shows negligible correlation with the dependent variable which is not statistically significant.

**Table 4 LTD Correlation**

		LTD
UR	Pearson Correlation	<b>,544**</b>
	Sig. (2-tailed)	<b>,000</b>
	N	<b>96</b>
IPC	Pearson Correlation	<b>,564**</b>
	Sig. (2-tailed)	<b>,000</b>
	N	<b>96</b>
IIP	Pearson Correlation	<b>,034</b>
	Sig. (2-tailed)	<b>,742</b>
	N	<b>95</b>
** . Correlation is significant at the 0.01 level (2-tailed).		

**Source:** *Author*

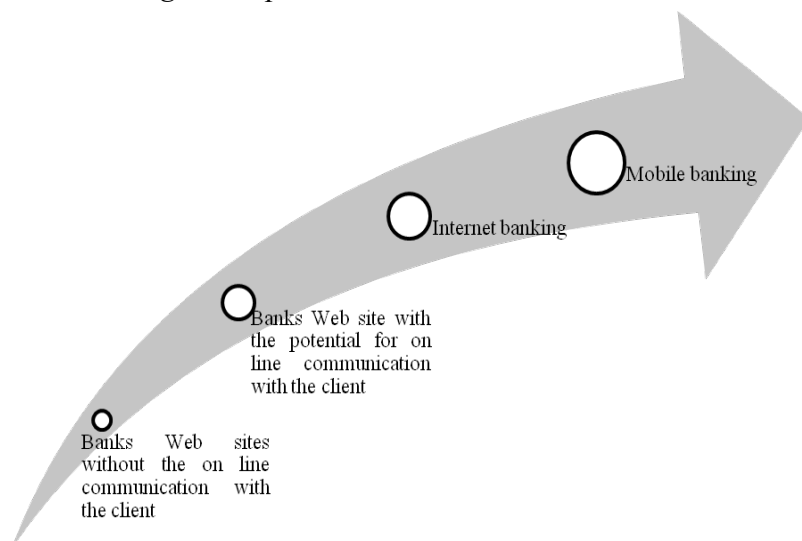
Based on the research of three macroeconomic factors of liquidity, it can be concluded that the index of industrial production does not correlate with the dependent variable with regard to both liquidity indicators. For independent variable - inflation, we can say that it correlates with the dependent variable LTD, but not with *averLiq*. Namely, higher inflation reduces the credit activity of banks and causes an increase in the share of liquid reserves of the first order in the balance sheet total. One of the main reasons for the resulting interdependence is a fact that a significant rise in consumer prices affects the reduction in aggregate demand, which further reduces economic activity and demand for credit (Račić, 2014). There is often a dilemma between inflation and unemployment in the short term. If economic policies are implemented in the direction of increasing aggregate demand, it reduce unemployment, but will increase inflation. If, however, the economy opts for the reduction of aggregate demand, it can lower inflation but will increase higher unemployment, at least temporarily. To reduce inflation, an economy must endure a period of high unemployment and low output. Namely, when the central bank reduces the rate of growth of money supply (inflation), it reduces aggregate demand which stirs a decrease in produced goods and services, which leads to an increase in unemployment. Independent variables - unemployment rate, had an impact on both indicators of the dependent variable. The unemployment rate entails a reduction in the creditworthiness of borrowers, and therefore the banks' credit activity. Also, the banking sector increases the share of liquid assets in total assets, thus increasing the liquidity of the banking sector.

Based on the findings from the research, the banking sector should consider investing in the modernization of banking services. Namely, if the macroeconomic factors affect the growth of liquidity in the specified period, it is possible to allocate funds for introducing innovations in

business. It is exactly the development of modern information technology that helps the banking sector to increase sale of their products and reduce the cost per transaction i.e. to increase its profit. Therefore, banks must support the development of modern information technologies because these technologies enable the expansion of banking services and motivate clients to accept a new form of contact with the bank (Sanader, 2014).

Banking in Serbia have had a relatively rapid path of development. Changes last until the present day and will be present as long as there are innovations in the world of technology (Đorđević, 2006).

**Picture 1** *Banking development*



**Source:** *Author*

Adaptation to the new changes in the world of information technology will help banks to stay competitive, to win new customers, but also to retain existing ones. However, without detailed analysis of the available liquid assets, i.e. factors affecting liquidity, it is pointless to start spending funds with the purpose of introducing new business platform.

### **Conclusion**

Results of applied statistical methods indicate that the liquidity of the banking sector is determined by certain macroeconomic factors. The unemployment rate has a weak positive correlation, which is statistically significant with both the liquidity ratio (averLiq) and LTD. Inflation has

a weak positive correlation, statistically significant, with a LTD ratio, but not with averLiq. The index of industrial production has a negligible negative correlation without statistical significance, compared with averLiq, while compared with a LTD, it has positive correlation with no statistical significance. After the establishment of correlation between the observed variables, questions for further research can be raised: How well the unemployment rate, inflation and the index of industrial production (together) may predict liquidity (averLiq) and LTD and which of these factors is the best predictor (which affects the most the change in the average liquidity and LTD)?

Based on the aforementioned, we can conclude that it is necessary to implement appropriate economic measures, which would put the nemployment rate and inflation within the limits of allowed framework. Then, the banking sector would, without major obstacles and difficulties, manage to regulate liquidity at the optimum level. With such a level of liquidity, it is possible to implement all forms of innovation in banking. Bearing in mind the fact that information technology is the generator of changes in the banking sector, it is inevitable to implement them in every banking product, i.e. service. To bear the “burden” of changes in modern technologies, the banking sector must observe macroeconomic factors that have influence on its liquidity and thus plan the allocation of funds for that purposes.

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# INNOVATION AS THE BASIS OF MODERN COMPETITIVE COMPANIES

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## Abstract

*Dynamic business environment with the growing interdependence of all business participants causes modern companies to base their business strategies on innovation and constant changes. Companies tend to provide a distinctive competence that allows them to build, do or perform something slightly better than their competitors. That requires a maximum consideration of technology potentials and possession of a wide range of knowledge and capability. The open innovation model, based on cooperation and exchange of knowledge and experience, quickly leads to new products, services, or new business processes and managerial approach, and includes both employees and customers and partners of the company. Competent teams of specialists provide a synergy of knowledge and innovation and they make the process more efficient and more successful. The aim of empirical study presented in this paper is to examine the effects of teamwork on the performance and competitiveness of business. Teamwork is seen through the synergy of the team, skills of the staff, innovations and quality. Emphasis is placed on innovation as the most important factor of competitiveness in the global and domestic markets.*

**Keywords:** *innovation, competitiveness, efficiency, teamwork, knowledge exchange, team synergy.*

## Introduction

At the time of globalization, computerization, changeability of the market, increase of international cooperation and sophistication of the customers, the competitiveness of the companies is a crucial factor not only of the success but also the survival in the market. The companies can achieve competitive advantage if they offer their buyers greater values than those offered by the

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competitors. It implies that they continuously listen to the requirements of the market and that they are able to timely answer them. Significant role in this belongs to the managers who provide efficient functioning of the companies with their knowledge, abilities and skills. Continuous improvement of the functioning oriented towards the buyers is necessary for the increase of their satisfaction. It depends on the teamwork where different functional and hierarchical parts of the companies take participate. Teamwork implies „cooperation between managers and all the employees who are not managers, between different business functions, as well as between the company and its customers and suppliers“ (Williams, 2010, p. 333).

Complexity of contemporary companies, great number of information and data, different factors from external environment, economic, political, social insecurities and other impose the need to understand the changes, focusing on them, as well as motivation of all employees to follow that path. Main competitive advantage of each contemporary company is its ability to inovate. In the most general sense, the innovation process refers to each system of organized and purposeful activities aimed towards the creation of changes. Peter Draker suggests that innovation should simultaneously be observed through two dimensions – as a conceptual (abstract) even and perceptive (observative) event. His studies also point out that innovativity is not related only to the companies with high technology, but also the companies with lower technological level (Draker, 2003, p. 298). Teamwork is particularly significant for innovative oragnizations because the creation and development of innovations is most frequently performed through special project teams or special functional groups. Performing innovative activities can also be observed as the combination of different perspectives for solving the problem amnd thus high potential value of innovation lies precisely in the teamwork. The aim of this paper is to give contribution to better understanding of the phenomenon of teamwork efficiency and factors that affects it, with a special review of the innovations. The study of the impact of teamwork is a part of a wider study that refers to the impact of organizational behaviour on the organizational dedication (Lekić, 2010, pp. 216–273).

### **Theoretical Approach tot Study**

Globalization encourages economic development through the connections of national economies, extension of the market and enabling the approach to modern technology in manufacturing, distribution of communication and increase of the possibilities of data processing (Lekić, Vapa–Tankosić, 2017).

Globalization aims at the open trade and breaking all the barriers down. At the time of rapid changes, new technological solutions and knowledge that becomes more and more obsolete from day to day, to be competitive implies providing a continuous growth and development. Competitiveness of one economy represents competitiveness of its economic subjects, as well as the business environment it is ready to offer them. According to Porter, competitiveness of the nation depends on the ability of its economy to innovate and advance itself (Porter, 1990). Competitiveness of one economy depends on own abilities and the weaknesses of other economies. The factors that lead to joining or rejection of supply and demand in external trade are called competitiveness factors. Competitiveness factors: quality and technological features of the products; price, corrected by the instruments of external policy in the export country and the import country; method of payment; deadlines and maintenance mode; organization of presentations in foreign markets and marketing; developmental qualifications of the economy in the country of the buyer, etc (Unković, 2010, p. 210–214). The companies can achieve competitive advantage by using their resources in a manner that will provide their customers a greater value than the one offered by the competitors. Most companies aim their strategies towards the creation and maintenance of competitive advantage. Competitive advantage becomes sustainable competitive advantage when the other companies cannot copy the value that a given company offers to its buyers. In order for the company's resources to be used, four conditions must be met: to be valuable, rare, irreplaceable and difficult to copy (Williams, 2010, p. 96).

Main competitive advantage of each contemporary company is its ability to innovate. Innovations are essential for the improvement of organizational performances and they very survival of the organization (Smith, Collins and Clark, 2005). Innovation represents the implementation of a new and significantly improved product (goods or service), or process, or a new marketing method or a new organizational method in business, work organization or relations of business entities with environment (OECD, 2005). Definition of innovation mainly refers to the development and successful transformation of invention into a useful product (innovation of products) or technique (innovation of the process) which are believed to be worth presenting in the market, or using within the company.

Innovations can be classified in several ways. Most common classification is into manufacturing and service. Manufacturing innovations are changes in the product range of an organization. They significantly affect the achievement of competitive advantage and contribute to the development, growth and

profitability of an organization (Salomo, Weise and Gemunden, 2007, p. 285). Manufacturing innovations can be: 1) change of the manner of manufacturing, 2) extension of manufacturing lines, 3) promotion of products, 4) new product, 5) start-up business and 6) significant innovation (Von Stam, 2009, p. 9). The first three types refer to the improvement of the existing products and the rest to the appearance of the new products. Service innovations include the innovations in the process of creation or delivery of the service paying attention to the quality of the contacts with the user, as well as the innovations within the service providing and innovation of symbols and signs (Goffin, Mitchell, 2010, p. 72). These innovations can be observed through four dimensions: 1) concept of a new service as a reply to the service of the competitors, 2) new user interface, 3) new organization of service delivery and 4) new technological options in service providing (Den Hertog, 2010, pp. 42–46).

Oslo Manual is the basis for the analysis of innovation activities in the companies of the countries of the European Union. According to it, there are four types of innovations: 1) innovations of products / services, 2) innovations of the process, 3) innovations in organization and 4) marketing innovations (OECD, 2005, pp. 45–61). Innovation of products / services implies the introduction of a new and significantly improved product or service (improvement of the technical characteristics, components and materials, software installed, user orientation or other functional characteristics of the products or services). Innovation of the process implies the application of a new or significantly improved process of production or delivery (changes in technique, equipment and/or software) in order to achieve certain useful effects such as reduction of the costs of production or distribution, improvement of quality or production of a significantly improved products. Innovations in organization represent the application of new organizational methods in business practice with the aim to improve business performances of a company and they result from strategic decisions at the management level. Marketing innovations refer to the implementation of a new marketing concept or strategy, including significant changes in design or package of the products, promotion and distribution of products or determination of the price of the products. Innovations of products/services and the process are the innovations of technological nature and innovations in organization and marketing are non-technological innovations.

From the aspect of innovation process, innovations can be incremental and radical. Incremental innovations refer to continuous adaptation, improvement and advancement of the existing products, services or processes. Radical innovations refer to the introduction of entirely new products and services and/

or new systems of production and distribution. They represent an uncertain and risky process of applying new knowledge in an unknown technological or business field (Kelley, Colarelli O'Connor, Neck and Peters, 2011, p. 249). Studies have shown that the majority of organizations implement a greater number of incremental innovations in relation to the radical. In relation to the overall income, the implementation of incremental innovations brings 62%, and radical 38% of income (Goffin and Mitchell, 2010, p. 13). Having in mind that the innovations are the result of organized, gradual and long-term activities, each innovation has its own evolution. Therefore, in the practice there more frequently appear incremental than radical innovations. Already existing companies give advantage to the incremental, while newly-formed ones are more prone to radical innovations. Diversity of incremental and radical innovations requires the application of the appropriate management process. Activities that the companies apply in case of incremental innovations refer to the searching of cost advantage, minimum modification of design, identification of organizational procedures and standards in order to have a more efficient and economic production, adding new characteristics to the existing products, implementation of reinnovation, permanent learning from users and customers. In management of radical innovations, the companies apply: openness towards new ideas outside the organization, continuous scanning of the market, investments in portfolio of new technologies within the innovation system, reaching new abilities through acquisitions or employment, rejection of a new manner of doing business (Dodgson, Gann, Salter, 2008, p. 60).

Innovation activities include all scientific, technological, organizational, financial and commercial steps that lead or have the attention to lead to the implementation of innovation. Innovation activities also include the research and development that are not directly related to the development of a specific innovation (OECD, 2005, pp. 89–117).

One of the contemporary models of innovation management is the model of open innovations. Open innovation was for the first time defined by Chesbrough (2003) as combining of internal and external ideas, as well as internal and external connections and paths in the market in order to improve the development of new technologies and application of innovations. Factors which lead to the appearance of open innovations are mobility and availability of knowledge which has grown in the era of information and communication technologies, by changing their job the employees also bring their knowledge with themselves, which lead to the information flow between the companies (Chesbrough, 2003). A step towards the open innovations means that the companies have to become aware of a

greater importance of open innovations, because not all the good ideas are developed within own company and it is not possible for all the ideas to be obligatorily further developed within the limits of own companies. West and Galager take a step further and define open innovations are a systematic stimulation and study of a wide range of internal and external sources of innovation possibilities, responsible integration of that study with the possibilities and resources of the company, as well as a wider exploitation of those possibilities through multiple channels (West and Gallagher, 2006). A paradigm of open innovations defined in this manner overcomes the usage of the external information sources only. Model of open innovations is based on generation of values through the cooperation with external partners that can improve the performances of the innovations of the products, which reflects the financial performances in a positive manner (Faems, De Visser, Andries and Van Looy, 2010).

The main precondition for the realisation of innovation process in one company is team work. Team is a formal group for a particular task whose members have complementary skills, they are dedicated to common goals and tasks that they are considered responsible for (Lekić and Erić, 2016, p. 142). Each team goes through certain development phases: formation, conflict, norming and functioning (Williams, 2010, p. 184). Formation is an initial phase where the team members meet each other, evaluate themselves mutually and start defining team norms. In this phase, people compare their expectations and the things that could be waiting for them. Conflict is a phase characterized by disagreements and conflicts. During norming, team members start to adjust to their roles within a team, group cohesion is growing and positive team norms are being developed. Functioning is the last phase in the team development during which the performances are improved since the team is matured and has become an effective and functional unit. During this phase, team members become extremely loyal towards each other and they feel mutual responsibility for both success and failure of the team.

Working team is a set of employees with similar or different work performances, i.e. type and level of knowledge, work experience, skills and personal traits who aim at implementation of determined work goals, implementation of project decisions and solving specific organizational and business issues in the company. Effective and efficient work team is the one that successfully implements the goals defines with the minimum time and other resources spent. In order for the working team to be effective and efficient, certain internal conditions within business organization where the working team will act must be achieved. Characteristics of a working team:

appropriate a structure, a defined manner of making decisions, cohesion in a group; creative conflict; focus on the problem; a good leader; stable status of a working team; acceptable external pressures (Pavličić, 2010, p. 419). Efficient teams are those that find innovative ideas, achieve goals and adapt to changes when it is required. Their members are devoted to the achievement of both team and organizational goals. Managers appreciate such teams and reward them for the achieved results.

The team efficiency is affected by different factors that managers must pay attention to (Certo and Certo, 2008, p. 420.). Human factors imply: that teamwork makes team members satisfied; construction of confidence between team members, as well as between the team and management; establishment of a good communication; minimization of unresolved conflicts and struggles for power within the team; efficient solving of the threats to the team or within it; creation of an impression that the work positions of team members are secure. Organizational factors refer to the steps that team leaders must undertake in order to build an efficient team and they include: construction of a stable organization and security of a work position; support of management to the teamwork; appropriate rewards and acknowledgements for the tasks performed; determination of stable goals and priorities. Factors that refer to *work tasks*: setting clear goals, giving precise instructions and projected plans; appropriate professional guidelines and management; independence in work and demanding work tasks; naming the experienced and qualified team members; encouragement of teamwork; make sure that the work of a team is well-known within the organization.

Critical aspect in a working team is the construction of confidence. Confidence is the belief into the reliability, ability and honesty of another person. Without mutual confidence, there is no efficient team (Stead, 1995). Theory and practice suggest that confidence will exist if there are integrity, competence, consistency, loyalty and openness. Integrity implies that working team members possess personal honesty and sense for justice. Competence implies for all the members of a working team to have relevant knowledge, experience and skills. Consistency implies that members of a working team act in a consistent manner in those situations. Loyalty implies that each member of a working team wants to protect the other member or the team as a whole. Openness implies that members of a working team share knowledge and information they dispose with. Model of a working team contains three components: roles, knowledge and skills and responsibility. In addition to the above-mentioned, it also contains three outcomes: results, common projects and learning and development.



It is believed that in one working team there can be nine roles: 1) innovators who create ideas and start the initiative; 2) promoters who accept the ideas of innovators and find channels for the promotion and acceptance of the same; 3) analysts who collect the information, create the alternatives and analyze advantages and disadvantages; 4) organizers who define goals, create plans and organize the activities; 5) producers who use the existing resources in order to the final result to correspond to the standards determined; 6) controllers who monitor the respecting of internal and external regulations; 7) supporters who protect the team against all external pressures; 8) advisers who affect the quality of making decisions by analyzing all the attitudes and opinions; 9) integrators who spread the idea of togetherness and channel possible conflicts (Robbins, Judge, 2009: 348).

In order to point out the importance of team work for the innovation process in one company with the aim of reaching certain competitiveness level the following study has been performed.

### **The Study: Methodology and Data**

The study was created in order to examine the importance of quality team work for the innovation process in one company. Study was carried out on a sample of 492 respondents, in two public companies (PCC Beograd put and PC for PTT services „Srbija“), one institution of high education (Belgrade Business School – High School of Professional Studies) that are state property according to ownership structure and many small private companies that are not separately segmented, but they are, due to the limited space in the paper, marked by a group name „Other companies“. Data collection was executed by an anonymous survey, which includes the six following dimensions: 1) socio-economic indicators, 2) satisfaction with the job, 3) loyalty, 4) motivation, 5) organizational dedication; 6) interpersonal relations and teamwork. Of the total number of respondents (N=492) from PCC Beograd put (hereinafter: PCC BP) there were 219 respondents (44,51%), from PC for PTT services Srbija (hereinafter PC PTT) 141 (28,66%), Belgrade Business School – High School of Professional Studies (hereinafter: BBS) 54 (10,98), while from the group of other companies (hereinafter OC) the sample included 78 employees (15,85%).

A part of the study related to teamwork consists of four categories of questions: 1) synergy in the team; 2) skills of the cooperatives; 3) innovations; 4) quality. Questionnaire is designed by the methodology suggested by Bateman, Wilson and Bingham (2002, pp. 215–216).

Questionnaire consists of the scale of answers of the Likert type, and the answers on the scales from 1 to 5 define the level of agreement or disagreement with a particular statement: 1 – I strongly disagree, 2 – I disagree, 3 – I am indecisive, 4 – I agree, 5 – I strongly agree.

### Analysis and Results

Descriptive statistical analysis shows that the study has included 284 (58%) female respondents and 208 (42%) male respondents. According to the age, respondents are divided into three groups: 194 (39%) respondents younger than 35, 250 (51%) employees between 36 and 55 years and 48 (10%) employees who are older than 55. Structure of the respondents' sample according to the education is the following: 172 (35%) of respondents have secondary school, 95 (19%) of respondents have a higher education and from there are 194 (40%) of respondents who graduated from the faculty, the titles – master and PhD have the 31 (20%) of respondents. In relation to the years spent in organization, respondents are divided into four groups: up to five years 119 (24%), from six to fifteen years 219 (45%), from sixteen to twenty years 55 (11%) and over 20 years 99 (20%).

**Table 1** Socio-economic indicators of respondents

Company		PCC BP	PC PTT	BBS – HSPS	OC	Σ
Sample size (N)		219	141	54	78	492
Gender	Male	103	53	19	34	209
	Female	116	88	35	44	283
Age	–35	95	59	24	16	194
	36–55	103	74	24	49	250
	55–	21	8	6	13	48
Education	Sec.school	85	63	1	23	172
	Higher educ.	49	28	11	7	95
	Faculty	79	46	23	46	194
	Academic title	6	4	19	2	31
Years spent in an organization	–5	65	23	11	20	119
	6–15	90	81	33	15	219
	16–20	29	9	4	13	55
	–20	35	28	6	30	99

Source: Lekić, S. (2010)

Synergy in the team represents a sense of belonging that is shared by team members. It is evaluated as an average value of eight factors: clearly defined belonging to the team ( $a_1$ ), clearly defined meaning/goal of the team ( $a_2$ ), clear role of team members ( $a_3$ ), efficient communication within the team ( $a_4$ ), sense of value of team members ( $a_5$ ), other organizational units of the company appreciate the team in which an individual works ( $a_6$ ), sense of pride due to belonging to a team ( $a_7$ ), each member of the team maximally contributes to the teamwork ( $a_8$ ).

**Table 2** *Average grade of team synergy*

Company	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$a_6$	$a_7$	$a_8$	Average grade
PCC BP	3,79	3,86	3,83	3,71	3,96	3,55	3,9	3,58	3,77
PC PTT	3,33	3,35	3,24	3,28	3,76	3,21	3,5	3,07	3,34
BBS - HSPS	3,91	4,04	3,81	3,89	4,13	3,76	4,15	3,76	3,93
OC	3,46	3,5	3,33	3,51	3,82	3,32	3,65	3,46	3,51
<b>ENTIRE SAMPLE</b>	<b>3,62</b>	<b>3,69</b>	<b>3,55</b>	<b>3,60</b>	<b>3,92</b>	<b>3,46</b>	<b>3,80</b>	<b>3,47</b>	<b>3,64</b>

**Source:** *Lekić, S. (2010, p. 230)*

Data from *table 2* show that BBS in all categories of the synergy evaluation parameters has had the best results. Having in mind that PC PTT has the lowest average grade of team synergy, it is required for the company's management to aim its attention towards developing the sense of belonging that all team members share.

Skills of cooperatives describe the preparation of the team members, competence in performing the job and flexibility within the job description. They are evaluated as an average value of eight factors: team members are adequately trained and competent for professional performance of their job ( $b_1$ ), team members are appropriately trained in administrative jobs and procedures related to the job ( $b_2$ ), there is a formal system for recognizing the needs for further education of workers ( $b_3$ ), needs for education and improvement are identified systemically ( $b_4$ ), based on the analyzed needs of the employees, an additional training ( $b_5$ ), members of the team are competent to perform a series of jobs within the team ( $b_6$ ), team members are flexible and willing to execute other jobs within the team ( $b_7$ ), members of the team highly appreciate additional education ( $b_8$ ).

**Table 3** Average grade of the skills of cooperatives

Company	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	b <sub>6</sub>	b <sub>7</sub>	b <sub>8</sub>	Average grade
PCC BP	3,66	3,59	3,27	3,25	3,20	3,67	3,57	3,53	3,47
PC PTT	3,05	3,11	2,91	2,89	2,77	3,32	3,18	3,19	3,05
BBS - HSPS	3,81	3,78	3,44	3,33	3,44	3,72	3,56	3,59	3,58
OC	3,42	3,38	3,11	2,91	2,79	3,53	3,56	3,49	3,27
<b>ENTIRE SAMPLE</b>	3,49	3,47	3,18	3,10	3,05	3,56	3,47	3,45	3,34

Source: Lekić, S. (2010, p. 244)

From Table 3. we can see that average grade for the skills owned by cooperatives in the team is the highest in Belgrade Business School, while in PC PTT it is the lowest.

**Inovations** include looking for a manner to improve productiveness and manner of work. Innovations in the team are evaluated as average value of eight factors: team members are encouraged to try new methods of work (c<sub>1</sub>), team has been included in new projects related to its products/goals from the very beginning (c<sub>2</sub>), each innovation in work of the team is appreciated and rewarded (c<sub>3</sub>), problems related to the job/clients are revealed rapidly (c<sub>4</sub>), problems revealed are spotted rapidly (c<sub>5</sub>), problem solving is experienced as learning and development of the team (c<sub>6</sub>), team members often suggest innovations in work (c<sub>7</sub>), team members willingly accept innovations in work (c<sub>8</sub>), Table 4.

**Table 4** Average grade of innovations in teamwork

Company	c <sub>1</sub>	c <sub>2</sub>	c <sub>3</sub>	c <sub>4</sub>	c <sub>5</sub>	c <sub>6</sub>	c <sub>7</sub>	c <sub>8</sub>	Average grade
PCC BP	3,57	3,49	3,23	3,67	3,63	3,66	3,40	3,60	3,53
PC PTT	3,18	3,23	2,72	3,44	3,41	3,29	3,16	3,26	3,21
BBS - HSPS	3,80	3,78	3,54	3,94	3,80	3,61	3,48	3,44	3,67
OC	3,32	3,31	2,74	3,35	3,22	3,41	3,04	3,27	3,21
<b>ENTIRE SAMPLE</b>	3,47	3,45	3,06	3,60	3,52	3,49	3,27	3,39	3,41

Source: Lekić, S. (2010, p. 258)

The highest average grade of innovations in teamwork is recorded in Belgrade Business School, while the lowest recorded is in PC PTT and the group of privately-owned small companies.

Quality measures the level of familiarity with the needs of the clients and standards of monitoring their pleasure. It is evaluated as average value of

eight factors: team members are familiar with the needs of their clients ( $d_1$ ), it is clearly defined who the clients of an individual team are ( $d_2$ ), work standards within the team are clearly defined ( $d_3$ ), work standards are regularly updated ( $d_4$ ), feedback on monitoring teamwork is obtained regularly ( $d_5$ ), there are quantitative standards of efficiency that are followed ( $d_6$ ), the team complies with the organization standards for solving the complaints of the clients ( $d_7$ ), complaints are considered on daily basis and messages are systemically applied in further work ( $d_8$ ), *table 5*.

**Table 5** *Average grade of the teamwork quality*

Company	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$d_8$	Average grade
PCC BP	3,77	3,81	3,63	3,65	3,36	3,39	3,62	3,63	3,61
PC PTT	3,53	3,45	3,41	3,30	3,06	3,21	3,51	3,49	3,37
BBS - HSPS	3,89	3,96	3,80	3,65	3,67	3,59	3,83	3,89	3,79
OC	3,47	3,49	3,22	3,17	3,05	3,05	3,28	3,31	3,26
<b>ENTIRE SAMPLE</b>	<b>3,67</b>	<b>3,68</b>	<b>3,52</b>	<b>3,44</b>	<b>3,29</b>	<b>3,31</b>	<b>3,56</b>	<b>3,58</b>	<b>3,50</b>

Source: Lekić, S. (2010, p. 272)

The highest average grade of the quality of teamwork is recorded in Belgarde Business School, while the lowest is in PC PTT.

**Table 6** *Average grades of teamwork*

Company	Synergy	Skills	Inovations	Quality	Average grade
PCC BP	3,77	3,47	3,53	3,61	3,60
PC PTT	3,34	3,05	3,21	3,37	3,24
BBS - HSPS	3,93	3,58	3,67	3,79	3,74
OC	3,51	3,27	3,21	3,26	3,31
<b>ENTIRE SAMPLE</b>	<b>3,64</b>	<b>3,34</b>	<b>3,41</b>	<b>3,51</b>	<b>3,47</b>

Source: Lekić, S. (2010, p. 273)

Average grade of teamwork is given in Table 6. Results show that teamwork is appreciated the most in Belgrade Business School. Based on the table we can conclude that sample includes two types of teams: administrative and entrepreneurial. Administrative team, i.e. bureaucratic represents a transition path from the work group in the team and that is where we observe a formal selection of members, authoritarian style of leadership, non-elastic organizational rules and classification of jobs by specialized

unit, although with caution, the team gives an opportunity for development and learning, such as it is the case with PC PTT. In Belgrade Business School we observe the entrepreneurial team which has development as a goal. Employees in Belgrade Business School access the problems in an exploratory and creative manner, leadership is liberal and democratic, it is strived towards multidisciplinary in education of employees, organizational rules are flexible and dynamic, and the teams are opened for the environment and innovation. The good foundation for joint work is set by systemic operation of managers and cooperatives, team members.

If we accept the model of Schermerhorn (according to Ingram, Teare, Scheuing and Armistead, 1997) which suggests that team's efficiency can be measured through individual and group results which are the products of the process of formation of internal processes in groups that lead to the results, we can see that these processes are most frequently affected by the managers who form teams, while the processes within group are one of the most influential determinants of higher team efficiency. They include orientation towards the common goal, cohesion, communication, decision-making, work tasks and resolution of conflicts. We can determine that the highest level of team efficiency is achieved in Belgrade Business School. Efficiency of the teamwork is based on final result of the work, as well as dissatisfaction of team members. The ultimate result is determined through qualitative and quantitative achievements of the team defined through team goals, while the satisfaction is based on the possibility to meet basic needs of the members and that for that reason the commitment to the team, i.e. business entity, is increased.

## **Conclusion**

In order to provide better position in the international market and achieve significant competitive advantage, the companies must perform constant changes and adapt themselves to the requirements of the environment. They should base their business on the experience of other, successful companies, as well as to apply contemporary methods and techniques of management. With the growth of organizations and increase of complexity of organizational structure, there appears the need for the introduction of teams in which the people work together in order to achieve the common goal of the organization. Main reason for this is the observed connectivity of the teamwork and efficiency of the business. For that reason, in contemporary organizations we observe the efforts of the managers in creation of competent teams required for the development of new business solutions, strengthening the motivation of people for desired results of

work and increase of work efficiency. Efficiency of teamwork is observed through four groups of questions: synergy in the team which represents the sense of belonging shared by team members; skills of cooperatives which describe the preparation of team members, competence in performing the job and flexibility within job description; innovations that include searching for the manner to improve productivity and manner of work; quality that measures the level of familiarity with the needs of clients and standards of monitoring their pleasure.

Study has shown that it is not easy task to reach team's efficiency measured either through individual or group results. Under the conditions of increased speed of changes that are imposed by technology, globalization, profitable growth and requirements of buyers, an organization has to give priority to efficient team work in order to enable continual innovations of its products, processes and organisation and reach certain competitive level.

Key factor of the creation of competitiveness in contemporary business are the innovations. Support of the country in improvement of the competitiveness of national companies is of great significance, because the competitiveness of one country depends on the competitiveness of its economic subjects, as well as business environment that it is willing to offer them. National companies should be exposed to a healthy competition. Contemporary flows of business dictate market environment that provides the success in business only to those who are ready for challenges, changes and continuous specialization.

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# THE CONCEPT OF OPEN INNOVATIONS IN THE KNOWLEDGE ECONOMY

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## Abstract

*The main characteristics of the knowledge economy is the continuous investment in education, research and development, information and communication technology, as well as the creation of a business and institutional environment conducive to the emergence and the general diffusion of knowledge, especially to its efficient commercialization of innovation. With globalization over the last few decades, knowledge commercialized into innovation has become a key factor in improving the competitiveness of enterprises and countries. Countries that effectively commercialize knowledge into innovation are more competitive in the global market compared to less innovative economies. The widespread concept of open innovation in the business sphere has a special role in these processes. For enterprises, the model of open innovation represents a profitable way of innovating, because it can reduce development costs, increase the speed of market entry, increase differentiation in the market and realize new sources of revenue. The concept of open innovation describes a process in which the company seeks foreign cooperation in order to obtain new ideas or technologies, use its own funds and establish alternative routes towards market in the innovation cycle. The transformation of the results of knowledge into innovative products, services, methods and processes has a significant impact on the competitiveness of countries, economic growth and employment.*

**Keywords:** *knowledge economy, innovation, the concept of open innovations.*

## Introduction

Modern era of the mankind development is rightfully marked as the economics of knowledge. Commercialization of the knowledge into

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the innovations marks basic actuating impulse of the modern economy development in the contemporary environment of economy functioning. Economic history, especially experiences related to the 20<sup>th</sup> century reflect that the most successful countries were the fastest adapting to the changes together with those that most intensively improved their innovativeness.

Development of the society of knowledge and the improvement of the innovativeness are two complementary phenomena that intervene mutually and complete. Innovation, most simply signifies something new. It creates change, but each change is not innovation (Pokrajac, 2001) Innovation achieves its economic effect through two channels: by influencing the growth of the productivity and by stimulating the process of new enterprises foundation i.e. by developing activities that create new value (Atkinson & Ezzel, 2012).

Innovation process encompasses all aspects of business results of one company from research and development over new production procedures, new products to culture of continual education (Hindle, 2003). Numerous researches show significance that the knowledge commercialized into innovations has for the long-term economy growth (Greenhalgh & Rogers, 2011).

During last 50 years large number of generations and dominant innovation process are replaced. Generally, they are not possible to be divided into the models of open and closed innovations. Model of closed innovation started to extinguish in the last decade of the previous century. The reason for that is that the business model of closed innovation was faced with the declining efficiency due to the continually increased expenses of the technology development on one hand and on the other with the new products life cycle shortening. Large research and development expenses make it difficult to justify the investments into innovations. Relaying to closed system with vertical commanding structures became non economical. That was the reason why open system of innovations became a solution for the overcoming the situation of large expenses and low productivity. Briefly, this model assumes that the enterprise should use its own ideas along with the ideas that come from the external environment and which may serve for the improvement of the innovativeness and profitability. It also stresses how internal knowledge can be brought to the market with an aim to generate added value. That is a situation when an idea generated within the enterprise is not in harmony with the direction that the company intends to pursue, or the company has at that moment no available assets to realize the idea into practice. Border between the company and the environment

in which it is doing the business become loose and transferable in both directions (Cvijić, Boricki, Lilić, 2012).

Subject of the work is the concept of open innovations. The aim is to point to its significance in knowledge economy and especially to reflect it as a component of the open business model of a company.

Work composition, along with the introduction and conclusion consists of three units. Second deals with generations and the third of the concept of open innovations as a compositional part of the company open business model.

### **The Knowledge Economy Characteristics**

Elementary characteristics of the knowledge economy is continual investment into education, innovations, ICT as well as creation of the favorable business and institutional ambient that enables creation and increase use of the knowledge in Economy. Development of the knowledge economy assumes developmental paradigm establishment that includes: a) orientation to endogenous models of economy development that replace conventional production factors of growth founded in a knowledge such as research and education, b) acceptance of the theoretical postulates of evolutionary and institutional economy of new innovation paradigm that interprets innovation and technological development as endogenous process i.e. reflection of socio-economic ambient that speaks of exquisite interrelations among technological and social and c) orientation to system innovation policy that integrates scientific, technological and industrial politics aimed at the increasing of the national innovation capacity (Švarc, 2009).

Accumulation of knowledge and human capital and innovations became actuators of socio economic development in the world of knowledge economy. Along with globalization and fast spreading and knowledge transfer by ICT these forces impact all countries and regions in their search for economic growth and prosperity. In the new conditions knowledge is more effectively created, acquired and transferred between the individuals, companies, organization and community in order to improve social and economic development. These tendencies have far reaching implications for education and training.

Industrial success is based on knowledge that is fast transferred especially industry related to ICT services increased the demand for high skilled

labor force. Skills demand increased promptly in the last decade of the previous century, in the countries with average incomes more for the skills upgrading within the industry than for the low skilled workers industries restructuring to the high skilled. Human capital and skilled labor complete technological progress: new technologies cannot be adopted in the production without relevant trainings and education of the labor force. Demand is also important because innovations development depend on the demands of the clients and customers. This issue is relevant for both formal and informal sectors in both developed and developing countries.

Countries that are able to coordinate the policy of education, skills development and innovation are in a better position to compete in global economic environment. Besides, contemporary policy of innovation searches for the sources of innovation among the employees, customers and users.

In order to assist the countries to build the society founded on the knowledge World Bank developed Knowledge Assessment Methodology (KAM) with an aim to enable the basic assessment of the readiness of a country to develop the economy based on knowledge and recognize the sectors on which the creators of the economic policies should pay more attention and/or increase investments (Knowledge Assessment Methodology, 2012). Knowledge Assessment Methodology enables the users to overview large number of relevant actuators of the production activities in knowledge economy. Research is made on the base of several indicators that measure total performance of economy. Indicators assist to have insight into the amount of the real use of the knowledge by a country in economic and wider social development (Picture 1).

**Picture 1** Education Pillars Description

Pillar 1 Economic and Institutional regime	Pillar 2 Education and skills	Pillar 3 ICT infrastructure	Pillar 4 Innovation system
The country's economic and institutional regime must provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship.	The country's people need education and skills that enable them to create and share, and to use it well.	A dynamic information infrastructure is needed to facilitate the effective communication, dissemination, and processing of information..	The country's innovation system — firms, research centers, universities — must be capable of tapping the growing stock of global knowledge, assimilating and adapting it to local needs, and creating new technology.

**Source:** *Knowledge Assessment Methodology*, (2012). World Bank Institute. [www.worldbank.org/kam](http://www.worldbank.org/kam)

Assessment and comparison of the countries on the basis of this methodology is useful for giving preliminary assessments of the knowledge based economy development. Methodology provides for the fast and brief account of the most significant advantages and weaknesses, fields of progress even the errors of the available data for given country. Knowledge indicators are also used for the knowledge economy index (KEI) calculation as well as knowledge index(KI).

KEI is indicator that assesses capacity of the country or a region to develop economy based on knowledge that is environment favored for the efficient knowledge use for economy development. KEI is aggregate index that represents total level of the development of the country and/or a region towards the knowledge economy. Assessments are made on the basis of the average normalized performances of the country and/or a region for 4 pillars of knowledge economy -economic and institutional systems enhancement, education and human resources, innovation system and ICT.

KI is indicator of total potential for knowledge development in a country and it assesses its capacity to create, adopt and transfer knowledge. It is assessed as an average of normalized performances of the most significant indicators of the country and/or a region that envisages three pillars of the knowledge economy –education and human resources, innovation system and ICT. Unlike knowledge economy index, knowledge index includes three pillars (first pillar is excluded Economic impetus and institutional frame).

The essence of the knowledge economy is its capitalization, transformation into newly acquired value that indicates the conclusion that science becomes the source of new knowledge and *condition sine qua non* of the technological development. Required condition of the development becomes innovation that represents immediate relation between investment and knowledge and its commercial valorization. Briefly, the improvement of the innovation capacities of the companies or the growth of the innovation capacity of the manufacturing and service sector is very significant for the economic growth of the country and the region as well.

Most developed and competitive countries are economies based on knowledge. Knowledge and technology become more complex, participation of the activities based on knowledge (high-tech production and knowledge based services) significantly increase while the linkages of the companies in private and public sectors supports development and successful application of innovations that increase the competitiveness

of both the country and companies. In the last years fast growth of high tech products and knowledge based services substantially changed international competitiveness of many countries. These tendencies imply that the creation, application and commercialization of new technologies and knowledge enables development of high-tech products and knowledge based services that become important factor for the increase of productivity and exporting competitiveness (Nikolić, Filipović & Ilić, 2015).

### **Generation of Innovation Processes**

In the economic literature there are numerous different classifications of innovations. One refers to differentiation of the generations of innovation processes (Rothwell, 1994). Significance of the insight into these models, among other things, confirms that innovation is not accidental on the contrary it is a process with its stages and activities (Trott, 2005).

*First generation of innovation* developed in the fifties and sixties last century in the conditions of fast development of industry and powerful economy development of most of the countries. Innovation process is considered as a linear progression of scientific discoveries over the technological development from a company to the market. Innovation concept started from the assumption that larger investments into researches and development lead to larger number of successfully implemented innovations in the form of new products and services. In this period the attention is not paid to the innovation process and the role of market in the process. That is why 'technology supported' is phase in the development of innovation process.

During sixties of the last century the model of *second generation* is adopted. It was also linear but it was based on completely opposite ideas of demand-customers and market for the new products. Marketing sectors in the companies could best see what customers need and they were able to stimulate afterwards the innovations. In this period increases the competitiveness so the focus of the investments is shifted to new products development and technological changes rationalization. Larger attention is devoted to factors on the side of demands that are to the position of company on the market. Accordingly second generation of innovation process is considered 'market guided', and in literature it is described as 'demand guided'.

The idea that launched *the third generation* model of innovation is the feedback. Communication and feedback link together science and technology with the demand arising from the market. Management task refers to the

determination of feedback and promotion of the integration within the sector for research and development, design and engineering, as well as the sales and market research sectors. Third-generation innovation process covers the period from the early seventies to mid eighties of the last century. It was created in a period when a large number of countries had problems with high inflation and demand stagnation, a rise in structural unemployment and oversized production capacities for which full production there was no market demand. All the above mentioned led to the fact that the companies had to carry out the consolidation and rationalization of the overall business. To reduce the costs, companies tried to organize the production in large batches. Due to great resource constraints, it was necessary to understand the basics of a successful innovation, since scarce resources of companies do not allow large failures. The models developed on the basis of empirical studies that were conducted have shown that the innovation models supported by technology and needs are extreme, or that they do not reflect the real situation in the economy. Therefore, the authors who belong to the third generation of innovation process are focused on finding the best practice that would probe into the very core of a successful innovation process. Great attention is paid to the human factor whereby the importance of 'key people' characterized by great quality and ability, entrepreneurial orientation and huge dedication to innovation is recognized and emphasized.

*The fourth generation* of innovations was developed as a result of increasing competition among companies, because they were striving for the realization of their goals - the appearance on the market in the shortest possible time with high-quality new products to satisfy consumers. Weather has become an important factor in competition as well as the ability of the company to ensure quality standards but also to extract new ideas for improvement from consumers and suppliers. At the same time, companies have realized that it is important to create a horizontal alliance of research. This required more intensive integration of different sectors and cross-functional teams were also activated. New advanced technology such as computer-guided design or computer-guided manufacturing (CAD/CAM) and the intranet have helped the process of innovation at all levels of design, production and testing of products. The fourth-generation of innovation process covers the period from the mid-eighties to the early nineties of the last century and it covers the period of economic recovery. The appearance of the global strategy and the formation of a large number of strategic alliances between companies characterize this period.

The fifth generation of innovation process began in the early nineties and in certain way it has lasted until today. It was created as a result of



several trends such as increasing the number of international strategic technology alliances, linking in the field of the research and development, better cooperation and establishing deeper relationships within the supply chain and value chain, increasing connectivity and networking between small and medium-sized enterprises with each other and their linkages with large enterprises. Networking commenced in the previous generation of innovation process, however, besides its intensity, a consideration of the relationship of time/costs and optimization between these two values was the most significant above all. This period is characterized by the increasing use of ICT, and later the Internet as a basic infrastructure that facilitates and accelerates cooperation between different business partners within the innovation process.

Key features of the previously expounded five generations of innovation processes are given in Table 1.

It is understandable that the aforementioned generations of innovations can not be treated as final. On the contrary, with a great deal of conviction it can be assumed that creativity and innovation will be the most respected, as personal and group legitimacy and reliable 'ticket to the future' for any future single inhabitant of this country.

**Table 1** *Five generations of innovation models*

Generation	Key features
First and second	Linear models: research of push and pull market models
Third	Interaction between the different elements and feedback among them - connecting model
Fourth	Model of parallel connections, integration within the companies – upstream with key suppliers, downstream to the demands and active consumers. The emphasis is on connecting and creating alliances.
Fifth	System integration and extensive duplication, flexible and tailored response, continuous innovation.

**Source:** *Tidd, J. (2006). Innovation Models, Imperial College London*

Therefore, it is certain that some future analysts of the said issue shall talk about sixth, seventh, eighth and who knows what kind of the generation of innovations (Pokrajac, 2010).

## **The concept of open innovations as a component of an open business model of enterprises**

Observing five generations of innovations, the process of the gradual opening and increasing the role of collaboration, alliances and partnerships can be detected. This opening is known as the concept of open innovations (Chesbrough, 2003a). Various influencing factors which have emerged in this period, drastically have changed the innovation scene. This change mainly refers to the following influential factors: an increase in available venture capital, an increase in the number and the availability of experts, the availability of unused ideas beyond the boundaries of the firm.

Open innovation model means an alternative use of meaningful inputs and outputs of knowledge in order to intensify internal innovation process and to expand the market for external use of innovation (Chesbrough, Ahern, Finn & Guerraz, 2006). In a certain way it directs enterprises to use external ideas as well as internal, in order to improve their own innovation.

The basic principles of the concept of open innovations can be described as follows. Not all creative people work in our company. Therefore, the company is trying to find them inside and outside its own borders. It is desirable to have a better business model than to appear first on the market. Efforts should be made for internal innovations so that the efforts for external innovations can be settled. Generating as many ideas is not the key to success, but it's efficient use of existing internal and external ideas.

Synchronization of external development involves costs and saving time as well. Good sources of additional income may include the unlicensed technologies created within the company and that can be used outside of it as well. Exchange of technologies that was based on brokers and agents for patents was not often considered to be conducive market for innovations. Enterprises were forced to keep unnecessary technology rather than to sell it. According to some estimates, between 75% to 95% of the patented technology is not used (Chesbrough, 2007a). Marketing of these technology solutions provided the additional benefits for both sellers and for customers. In many industries, customers are the initiators of the latest innovations because they are the one who first experience the needs of specific innovations long before the producers themselves (Karim & Panetta, 2007).

The concept of open innovations efficiently generates innovations because it combines the creativity and new ideas. Useful ideas and inventions come from many unexpected places, from consumers, suppliers, partners, joint ventures, and even the public (Chesbrough, 2007b).

The concept of open innovations can be seen as an integral part of modern open business model of the companies. It represents specific response to the current requirements in terms of innovative and research and developmental activities and protection and use of intellectual property of companies. It emphasizes mutual cooperation among companies, which should reduce the potential risks and costs, and to increase the effectiveness of the innovation process and the commercialization of ideas (Cvijić, Borička & Lilić, 2012). It indicates a strategic element for the commercialization of innovations, the base for the reduction of operating costs and increase of the profitability of companies (Chesbrough, 2003a). Some authors point out that open innovations represent the most appropriate way to create superior value for the organization and consumers (Chesbrough, Ahern, Finn, & Guerraz, 2006). It is based on a new way of thinking that implies openness, flexibility, sharing of intellectual property rights, investment in the global knowledge base and integration with customers, partners, universities and other stakeholders in order to incorporate new knowledge, ideas and resources from the external environment (Chesbrough & Bogers, 2014).

The business model that is solicited in the present conditions and offers solutions to the current problems, implies greater openness of companies and better flow of knowledge and innovation both within the companies and within the established partner network (Chiaroni, Chie & Fratini, 2011). The development of information technologies is in the function of the affirmation of open business model. Companies are expected to seize the opportunities offered by modern technology by improving communication with external partners in the business. Internal sources of ideas are far from being sufficient for their effective concretization and realization in the market. Companies become open to new external sources of resources. This is the way to open new paths to market for themselves, to come to the idea of what to change and how to do that, to improve existing products, processes, technology and knowledge as well as to enhance their innovative capacity in general. On the other hand, they help other companies to create value, giving them a part of their intellectual property rights. Consumers get involved in innovative processes of enterprises by providing them with key information about what the market needs and the way to achieve more complex requirements on time.

Improvement of the existing knowledge in the field of open innovations in the high tech industry and more thorough research in the service industry, remain a challenge for future researches and researchers. Companies should be aware that contemporary model is not eternal, and that the day will come when the environment shall impose the need to re-change their business model, as existing one shall not provide favorable results anymore. The change will become their lifestyle. The most successful will be those that will dictate the changes, which will not wait for those to happen, but will always be one step ahead, carefully dealing with the future and prediction. Pitfalls of the new model relate to the management of intellectual property. The consequence of the opening of the companies towards the environment and external sources of knowledge and technology is the fact that it is difficult to draw the line between the thing that represents the property of the company and one that does not.

When it comes to the concept of open innovation, the boundary between the enterprise and its environment is not so distinguished as it used to be, and in contrast to the closed model of innovation, launching the innovative project may be the result of either internal or external source of ideas, knowledge and technology. Valuable ideas do not have to originate from the companies while the market realization of the ideas does not have to be achieved only through its own activities of the company. In this model, companies do not only use internal ideas and technologies, as well as their own paths to market. Commercial valorisation of innovation is not based solely on its own distribution channels, but the commercialization includes a number of ways, for example. the spin-off ventures or buying the license.

Growing market of the technological knowledge and capabilities, as well as increasing the number of external suppliers have a strong influence on increasing the accessibility and mobility of the knowledge of hired experts. The increased availability of well trained and educated workers means that more people are able to produce useful knowledge. Increased mobility of skilled workers leads to increased diffusion and knowledge spillover from one company to another. Since high-quality, educated and highly skilled workers are free to move from one company to another, working for a company that offers the best conditions, companies can obtain huge knowledge and experience simply by employing proven professionals or talents from other companies or even competitors. This means that when a company hires a worker, the worker brings to that company all his knowledge, skills, experience, formal and informal connections he disposes of and other things as well. In addition to the

fact that companies can hire quality employees, they can also lose a very valuable workers.

### **The relevance of the open innovation model in the business of small and medium-sized enterprises**

Small and medium-sized enterprises (SMEs) represent the most important segment of the economy of the leading countries in the world. Their contribution to the increased employment, gross domestic product and trade is the largest, compared with other segments of the economy. Thanks to their basic characteristics, primarily size, flexible organizational structure and inclination towards innovative and risky business ventures, these companies are able to respond effectively to uncertainties in the global market. Therefore, they have an effect on improving the competitiveness, improving the quality of products and services, lowering of prices, innovation and development of new technologies and economic growth of countries and regions. Numerous studies of SMEs around the world show that free enterprise and innovation are the most important generators of these business entities (Pokrajac, 2004).

In terms of the globalization of the world economy and growing outsourcing of production, SMEs have become significant participants in the supply chains of global manufacturers providing materials, sub-assemblies and services to large enterprises and performing the delivery of goods to consumers. Establishing long-term relations of cooperation between global companies and SMEs through subcontracting, represents a great development opportunity for SMEs.

Small and medium-sized enterprises (SMEs) have a very important role in the model of open innovation. They are often the most important part of the innovation efforts in an economy, unlike large companies, which act as an integrator of the entire innovation process. Since SMEs operate in the global environment, it is necessary to establish a cooperative relationship with major enterprises in order to create better opportunities and better utilization of their capacity, as well as with other small and medium-sized enterprises with same or different business activities, and with research and development centers, institutes, laboratories, independent researchers, universities and all other entities that can contribute to the improvement of their innovation.

Increased global competition and continued growth of expenditures for research and development activities are forcing small and medium-

sized enterprises to seek new, more open forms of innovation, as well as to collaborate with external partners (suppliers, customers, universities, research centers, etc.) to develop new products or services on the market before their competitors. At the same time, innovation will be more accepted if the users of products and services, be they enterprises or individual consumers, become more and more involved in the innovation process (De Backer, 2008).

It is necessary to distinguish two aspects of the cooperation of the SMEs with the other participants in the innovation process. First, there is a movement from inside to outside, where the existing technological potentials of SMEs are used outside the enterprises. Secondly, there is the inward movement in which external sources of innovation are used to improve existing innovative development of small and medium-sized enterprises. This means that in the overall environment of open innovation, SMEs combine both forms of cooperation with the environment in order to improve the innovative performance and benefits of innovation efforts (De Vrande, De Jong, Vanhaverbeke & De Rochemont, 2008).

The main concern of small and medium-sized enterprises is still the question of how to make the best use of internal Research and Development capabilities in order to maximize the advantage of the open innovation model. These opportunities may include generation of innovation for the internal commercialization similar to the traditional model, capacity-building, which can be used by other external innovation, innovation that promotes the value chain through external commercialization and intellectual property that does not have to produce a direct economic benefit but indirectly creates conditions for overflow or sale of related products and services (West & Gallagher, 2006).

Successful strategy of open innovation for small and medium-sized enterprises needs to find creative ways to use the internal innovation and available external innovation that contribute to the development of enterprises. Small and medium-sized enterprises have certain advantages in the innovation process, which makes them suitable partner for connectivity, as they are usually less bureaucratically established and generally speaking, often have a stronger motivation to be more successful than large enterprises.

You should always bear in mind that there are problems and constraints that hinder the implementation of the open innovation model in small and

medium-sized enterprises. Small and medium-sized enterprises have a bigger problem with the funding of the research process, the lack of qualified staff and little opportunity to replace relevant products in the market, limited opportunities for product placement and others. In addition to these, there are also a number of other internal and external obstacles to innovation in SMEs, which somewhat reduce and hinder the successful implementation of the model of open innovation (Michael & Palandjian, 2004).

## **Conclusion**

At the turn of the twentieth century, it was customary that the industry outsources research to universities and independent researchers. Even for the pharmaceutical industry, this was the most appropriate method of conducting scientific researches until the First World War. It was only during the years between the two world wars that there was a significant internal I&R, when the laboratories became frequent in the leading industrial countries such as the USA, Germany and Great Britain. One hundred years later, the companies returned to the idea of outsourcing research and development, therefore the closed model of innovations became obsolete.

During the inter-war years, a large research and developmental sectors were established, and during most of the twentieth century they were the most important form of improving the innovation of enterprises in industrial nations. This concept of closed innovations was based on several principles. A company that invests in its own research and development is the most likely to recruit the best qualified people for certain job. In order to benefit from research and development activities, companies need to identify and complete the complete process, starting from development to sales of products. Companies should control their own intellectual property and prevent competitors to benefit. Companies with the best new ideas and products win a competitive battle. For a while, this closed model functioned relatively well. However, competition in finding optimal innovation processes particularly intensified after the Second World War.

In the context of the concept of open innovations, companies focus on qualitative changes, especially on the advancement of knowledge which will lead to economic results. It is not just adjusting one's invention but it means creation of something of your own, something new, something that has not existed in this form before. Innovations can include product specialization and targeted commercialization or inventions which aim to increase the value of the product. Innovation can be a product, service, technological process,

innovation at the organizational level, in the manner of functioning of the enterprise, the relationship with consumers and other interested parties and others. In the paradigm of the open innovation process, the innovation must be tailored to the global environment enabling the flow of knowledge from the inside or the outside, and to include all stages of development as well.

The concept of open innovations emphasizes the importance of cooperation between different companies in order to reduce the potential risks and costs and simultaneously to increase the efficiency of innovative processes as well as to better commercialize ideas in the market. Open innovation occurs in a globalized environment where knowledge through connection (primarily through the Internet) becomes widely available and where individual companies do not have enough resources to independently carry out the necessary research, but instead they can cooperate, buy, rent or license processes or inventions with other companies, organizations or institutions. In addition, internal inventions that are the result of the innovation activities of the company and one that the company can not commercialize in the best way in the market, can be invest outside the company and thus obtain additional revenue.

Companies today have quite more opportunities for commercialization of innovations outside the company. In the past, ideas, knowledge, technologies and innovations that could not be commercialized by the company, were mostly internally stored and collected in the internal databases of companies and if the company had no interest or ability to commercialize them directly, they remained unused.

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# SOCIAL ENTREPRENEURSHIP AS AN INNOVATIVE ORGANIZATIONAL METHOD IN BUSINESS

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## Abstract

*The main aim of this paper is to identify models and means of doing business for social companies in Serbia, as well as the analysis of environment's incentives towards this type of companies. Entrepreneurship is not just the aim of business and social subjects, but also the means for achieving higher productivity. Today, any company can organize itself so that it utilizes innovations for expanding its business. One of the main trends is social entrepreneurship as an innovative method especially in funds for socially responsible business. In order for social entrepreneurship to gain momentum in development, it is necessary for the general public to recognize the importance of synergetic, partnership nature of all social economy stakeholders. This paper will show the solutions and possibilities for employment of the less employable social groups through models of social entrepreneurship.*

**Keywords:** *entrepreneurship, social entrepreneurship, business, innovation*

## Introduction

The term entrepreneurship can be analysed from several different perspectives. It can be related to a person opening their own trade shop, a person starting their own business, a person who brings innovations into different for-profit and non-profit sectors, and, finally, entrepreneurship can be seen as a state of mind, the ability to make changes in one's immediate or broader environment, based on one's knowledge or skill.

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Entrepreneurial function is performed by different subjects in the economic system. Depending on the type of capital and property, their effects in the entrepreneurial business are not the same. Entrepreneurship is not just a goal of economic subjects, because it is a modern trend of development, but it is also a means to achieve greater efficiency. There are different types of entrepreneurship, depending on the criteria.

Individual entrepreneurship is the right kind of entrepreneurship. When talking about entrepreneurship, people are thinking about individual entrepreneurship, because enterprise is an individual's capacity, which can be increased through training and experience, but that can not be taught to people who are unable to recognize lucrative contracts in the economic environment, to detect risks and lines which can be used to achieve them most effectively.

It can therefore be concluded that only individual entrepreneurship is the right kind, and other forms are its surrogates. The society which develops the free initiative of people, and especially the economic system that favors open competition, has a chance to include entrepreneurship as a fourth factor of production. Other quasi-entrepreneurial societies with the remains of real-socialist past, do not have such a chance. Only a declarative commitment to the development of entrepreneurship will not lead to an entrepreneurial economy (Markovic, 2008).

In developed economies, entrepreneurship is the main lever of economic and overall social development. Like other countries in transition and the environment the Republic of Serbia has recognized the importance of entrepreneurship and began supporting its development. This was especially expressed in 2016, which the Government of Serbia and the relevant Ministry of Economy declared the "Year of Entrepreneurship". One of the possible directions of development, which is being recognized only in the last decade as an important and untapped potential for economic growth, is the development of social entrepreneurship (Kalinic, Simin, Janjusic, 2014).

### **Social entrepreneurship**

The term social economy, as a broader concept in relation to social entrepreneurship, is often defined as the third sector of economy next to the two obvious - private and public. Social entrepreneurship involves numerous economic activities with a strong social orientation, which do not have a commercial connotation, nor are they under the auspices of the state. These activities are carried out at the municipal / local level,

are voluntary and/or non-profit. It is often said that the social economy includes three subsystems: the local community (community sector); voluntary work and social enterprises (Mijatovic et al., 2012).

Social entrepreneurship is an innovative way for people to solve various economic, educational, health and environmental problems in their community through their work - by joining and using sustainable business models, that is by using entrepreneurial principles.

“Businesses are the operators of social economy whose main objective is the realization of social impact, and not making a profit for owners and shareholders. Social enterprise produces goods and/or services for the market in an entrepreneurial and innovative way and earned profits are used to achieve a social objective. Management is responsible and open, including employees, customers and all other stakeholders interested in the social enterprise’s activities” (European Commission - Social Business Initiative).

According to the classification of the European Union, which is widely used, the sector of social enterprises consists of: cooperatives, mutual benefit societies, associations and foundations.

Social enterprise should possess two desirable sets of characteristics: economic and social. By economic we mean entrepreneurial orientation in the market competition, and social refers to the care for general interests.

The definition of OECD LEED (Organisation for Economic Co-operation and Development, Local Economic and Employment Development, [www.oecd.org](http://www.oecd.org)) considers social enterprise as “any private activity done for the public interests, organized within an entrepreneurial strategy” (Mijatovic et al., 2012). The main objective should not be maximizing profits but achieving certain economic and social objectives. It can bring innovative solutions to problems of social exclusion and unemployment.

In order to define the position of social entrepreneurship in the context of a broader spectrum of entrepreneurship two borders are proposed. Social entrepreneurs operate within two business strategies: 1) Non-profit – with the strategy of earned income – is a social enterprise which performs hybrid social and economic entrepreneurial activities to achieve sustainability. Social entrepreneur manages an organization of a social and commercial type, while revenues and profits are used exclusively to further enhance the realization of social values. 2) For-profit – with the strategy based on

a mission – is a business based on social grounds, which also includes commercial and social business activities. In this scenario, the founders and investors can achieve personal and financial gain.

According to the area of operation, the European-continental social enterprises can be divided into three groups, although this division should be taken with caution due to the intermingling of different services and jobs that social enterprises perform.

Firstly, there are social enterprises providing social services to vulnerable groups or services of public interest (e.g., child care, training and care of persons with disabilities, day care centers, home help, etc.). In Italy, these companies have a form of social cooperatives.

Secondly, there are social enterprises engaged in job integration of hard-to-employ members of marginalized social groups (the so-called WISE - work integration social enterprises). Social enterprises of this type offer products and services on the market, and funnel their profits into the further training of their members and improving their position in society.

Thirdly, there are social enterprises working in the areas of non-traditional social economy (e.g. local development, cultural services, environmental protection, recycling and environmental management). The trend of establishing social enterprises for work integration working in the field of environmental protection (ECO-WISE) began in the nineties. However, in 2005 Italy adopted the Law on Social Enterprises, which has allowed a deviation from the previous areas of work of social cooperatives, and SEs were allowed to provide education and research services, to carry out environmental activities and similar. Also, the UK has adopted the Law on enterprises to represent the interests of the community. This type of enterprise, at the community level, provides a wide range of services - from entertainment and recreational services to supporting social housing.

### **Models of social entrepreneurship**

A business model requires a clear explanation of how an organization creates, delivers and collects value (Osterwalder, 2009). In the case of social entrepreneurship, it is how the company creates financial and social value, as well as the relationship between the two types of values in the company. The model explains why the social enterprise exists, how it operates and it can also help in the design and implementation of innovations.

There are three basic models to achieve social impact through entrepreneurial activity:

**Profit Making Model:** Involvement in various economic activities, without any direct social character, and earning a profit which is then transferred to the social activities that have a direct social impact (for-profit organizations with programs of corporate social responsibility, humanitarian organizations that invest in regular financial markets, etc.).

**Compromise Model:** Involvement in economic activities that have a direct social impact, but managing to maintain a compromise between the making a financial profit and social impact (companies that invest in other micro enterprises, that employ persons with disabilities, etc.).

**Lock-step Model:** Involvement in economic activities which have both a direct social impact and financial gains in direct correlation with the formed social influence (organic farms, wind energy, and similar).

### **Legal framework of social entrepreneurship in Serbia**

Serbian social protection system is designed on the model of a modern European-type system in which the government has largely taken over the support of the poor. The system is relatively well-funded and in the recent economic crisis it has adopted austerity measures. In the general context of social inclusion and poverty reduction, the reforms of social protection systems were focused on two main areas: cash benefits and social services. In the area of cash benefits, there is a new poverty line and new criteria for assistance. Two major programs - social assistance and child allowance - are conditioned by material census.

Other changes included the limitation of the duration of assistance for able-bodied users to nine months per calendar year, the increase in fees for care and assistance for the elderly and persons with disabilities, and defining the legal criteria for foster families (Mijatovic et al., 2012).

All these changes are defined by the Law on Amendments to the Law on Social Protection and Provision of Social Security, which the National Assembly adopted in 2004, and by the Law on the Financial Support for Families with Children. The new Family Law was adopted in 2005, and it introduced many changes in the field of care for children and families: the role of social work centers has changed in terms of the legal protection

of the family; the law introduced a plurality of services; and domestic violence is recognized as a problem and protection measures are defined.

*Centers for Social Work* are protruding branches of the Ministry of Labor, Employment, and Social Issues. The primary scope of CSW is to implement the law on social protection, including the application of the criteria for entitlement to cash benefits, and diagnostic services, counseling and determining the needs of sensitive populations and referral of the users who are eligible for services in the community. In accordance with the adopted strategic objectives of the Social Welfare Development Strategy, the Government of the Republic of Serbia adopted the Law on Social Protection in November 2010. The law lays down new mechanisms for the extension of assistance to the poor. In the area of provision of social services, the new law allows the operation of the system with clearly defined minimum standards of service delivery but also equal treatment of government and non-government service providers, and the diversion to the alternative non-residential care. This extension of the Law has a positive effect on the development of social entrepreneurship. Emphasizing the proactive role of users and the introduction of possibilities for their activation are important advantages of the new law for social entrepreneurship. Also, the law regulates the rights and obligations of working-age persons to participate in activities that lead to their social inclusion (Mijatovic et al., 2012).

*The Law on Enterprises* is a systemic law governing the operation of enterprises engaged in economic activities. The standard goal of companies is certainly profit, achieved through market competition. On the other hand, for social enterprises, profit is not only not the primary objective but its distribution in the capital has to be restricted in order for the given company to be considered social. However, the Law on Enterprises is sufficiently flexible and considers opportunities for social entrepreneurship.

According to this law, you can establish social enterprises, i.e. include some of the characteristics of social entrepreneurship. In Serbia, since there is no specific law on social entrepreneurship, in some cases, a social enterprise is established under this law.

### **Social entrepreneurship in Serbia today**

*Cooperatives Act* prescribes what types of cooperatives can be established. “The cooperative is a form of organization of individuals (cooperative) in which they exercise their economic, social and cultural



interests of the business on the cooperative principles of voluntarism and solidarity, democracy, economic participation, equal management rights, independence, cooperative training and collaboration.” (Mijatovic et al., 2012). Part of the income of the cooperative shall be allocated to the mandatory reserve fund, which can be called social enterprise.

Generally, the existing Law on Cooperatives provides for the creation and operation of social enterprises in the form of cooperatives. Certain disadvantages of the law, which also limits the business, refer to narrowing the number of activities in which cooperatives can form, to a certain ambiguity about the obligations of the cooperative and the cooperative audit that can bring uncertainty to the future of the cooperative.

The biggest difference between a cooperative and a regular company is the obligation of deciding on the principle of one individual-one vote, not on the principle of one share-one vote, but this difference loses its significance if the cooperative members have equal roles because then the cooperatives are very similar to an LLC.

*Law on Associations* regulates the establishment and status of domestic and foreign associations in the Republic of Serbia. According to this law, “association is a voluntary and non-governmental non-profit organization based on freedom of association of natural or legal persons established in order to protect and improve certain common or general goals and interests, which are not prohibited by the Constitution or the law.” (Mijatovic et al., 2012, Bobic, Rakin, 2016).

Although an association can not be established for the purpose of performing economic and other profit making activities, an association can carry out economic activities in order to provide additional resources necessary to perform its primary (non-profit) activities. According to the Law, an association may conduct economic activity, if the activity is related to its statutory objectives and if it is small-scale, i.e. the activity is performed only to the extent necessary to achieve the association’s objectives. Apart from the fact that it can directly be involved in economic activity, an association may establish a limited liability company, alone or with others, and it can be a co-founder of other types of companies.

One of the important laws related to the field of social entrepreneurship is the Law on Vocational Rehabilitation and Employment of Persons with Disabilities, which was adopted in May 2009 (Bobic, Rakin 2016).

This law introduced special incentives for hiring persons with disabilities. It also specifies the following: manner of evaluating job performance; vocational rehabilitation; obligation to hire persons with disabilities; conditions for the establishment and performance of activities of the company for professional rehabilitation and employment of persons with disabilities and other special forms of employment and work opportunities for people with disabilities.

Under this law, the status of persons with disabilities is given to war veterans, peacetime military invalids, civil war invalids, persons who have undergone categorization and other persons who have been diagnosed with a disability, persons who, in accordance with the regulations on pension and disability insurance, are defined in the disability category and remaining work capacity, and people whose work capacity has been assessed according to which they have the ability to find employment or retain employment and work opportunities (Bobic, Rakin, 2016). Forms of employment and work opportunities for people with disabilities can be organized as: companies for vocational rehabilitation and employment of persons with disabilities; work centers and social enterprises and organizations (Mijatovic et al., 2012, Gvozdenovic et al., 2011).

A company for professional rehabilitation and employment of persons with disabilities may be established by the Republic of Serbia, the Autonomous Province, local self-government, another company, an association of persons with disabilities or other legal or natural person, for the purpose of job creation and employment of persons with disabilities.

*Operating center* is a special form of an institution which employs people with disabilities as a working therapeutic activity. Operating centers may be established under the condition that they hire at least five people with disabilities for working therapeutic activities, or at least 80% of persons with disabilities compared to the total number of employees.

*Social enterprise*, in terms of this Law, is a company that is established to carry out activities focused on meeting the needs of people with disabilities. Social enterprise operates in conformance with the rules of the companies and represents a second form of organization that is established to carry out the activity which is directed to satisfying the needs of people with disabilities and which employs at least one person with disabilities. Social enterprise and organization is obliged to use a part of the income generated from the performance of the industry to invest in

the improvement of working conditions, work skills, social integration, living standards and meet the needs of persons with disabilities. Social companies are formed as a bottom-up initiative when social entrepreneur or group of founders who share a specific and well-defined goal manage to translate their idea into a new organization that effectively combines economic and social dimensions. The emergence of social enterprises depends largely on the context of the existing national framework and a favorable ecosystem for social enterprises. By ecosystem, we mean to say a set of developmental factors (public policy, the ability of self-organization, research and training, managerial capability, finances) and their interconnection, which makes the climate in which social enterprises are created and developed. For this reason, each national ecosystem creates a special type of social enterprises, and it is almost impossible to replicate the legal and institutional models from one country to another, even with the intention to encourage the development of the sector. However, there are some rules that apply universally. Available research suggests that a transparent process of public procurement of products and services by public institutions and active labor market policies play an important role in fostering the development of social enterprises.

In Serbia, social enterprises are involved in following areas (Bobic, Rakin, 2016):

Associations and foundations are involved in education and training (31%), tourism and catering (18%) and culture and arts (11.8%). Cooperatives earn money from the purchase and sale of agricultural products (61.9%), manufacture of agricultural products (36.8%) and wholesale and retail trade (23.8%). Companies for professional rehabilitation and employment of persons with disabilities operate in the printing and copying (28.9%), manufacture of clothing and footwear (20%) and furniture (17.8%).

Other types of social enterprises (agencies, incubators, “spin-off” companies - subsidiaries) receive income mostly from education and training (58.3%), and administrative services, book-keeping and accounting services (13.3%).

The primary objectives of foundations and associations of citizens in social entrepreneurship are social and humanitarian causes (44.1%), of cooperatives - economic empowerment and employment (88.7%), which is also true of companies for professional rehabilitation and employment of persons with disabilities (75%), while other types of social enterprises

equally emphasize that their objectives are local economic empowerment and sustainable development. Education, promotion and information are equally present in foundations, associations, and other types of social enterprises (18.3% and 14.6%).

Non-governmental organizations, primarily associations of citizens, also engage in the provision of social services mainly to people with disabilities, children and young people with disabilities, the elderly, children in conflict with the law, and similar. This is also the most common type of activity in Europe, the activity from which in many countries social enterprises originated in the late seventies and early eighties. According to the current Law on Social Protection and the Regulation on Licensing Social Protection Organizations, there have been 130 licenses issued so far.

According to the Regional Employment Service, in Vojvodina during 2016 in the process of recruitment, there were 3,525 people with disabilities, of which - 1,199 women (34%), which is about the same as the previous year. At the same time, there were 7,064 unemployed disabled people (5% less than in 2015). Women accounted for 31% (2,190 women with disabilities). Unemployment structure is without significant changes: the most numerous are those aged over 40, 72% of them, while young people under 30 years old constitute 20%. People with no qualification make up 48%, while people with disabilities who have higher education make up 5%. 18% of unemployed people with disabilities wait for a job for a year, while 30% of those registered are unemployed for more than 10 years. In 2016, 1,977 people with disabilities applied to the labor market, of which - 668 women (34%) (Bulletin of the Regional Secretariat for Economy and Tourism, 2017).

### **Obligation of hiring people with disabilities**

Employing less employable categories, especially people with intellectual disabilities, is very important, given that this is a group of people who for decades had been excluded from all social trends. Employment is the key to social inclusion.

According to the Law on professional rehabilitation and employment of persons with disabilities, all employers in the public and private sector with more than 20 employees are under obligation to hire people with disabilities. They are therefore the most powerful platform of “reserved positions” for people with disabilities. In Vojvodina, in accordance with the

said law, the capacity for employment of persons with disabilities is two-thirds of the private sector and one-third of the public sector. In Vojvodina, the affected employers reported about 4,186 people with a disability (72% of the full potential), and the full application of the law in the form of job availability in Vojvodina could employ another 1,500 people with some kind of disability. On average, about 26% of the legal obligations is paid into the fund of the Ministry of Finance (average annual pay in dinars and statistical tendencies for 2016 amounts to 560,000,000.00 dinars), while 2% of employers execute their obligations via contracts on business and technical cooperation with enterprises for vocational rehabilitation and employment of persons with disabilities (Bulletin of the Regional Secretariat for Economy and Tourism, 2017).

### **Methodological framework and the structure of research samples**

The subject of the research. Through the theoretical basis, the paper highlights the significant characteristics of social entrepreneurship. Social entrepreneurship includes a number of economic activities with a strong social orientation, which do not have commercial connotations, nor are they under the auspices of the state. This paper aims to collect and examine the available literature on social entrepreneurship as a form, its previous visibility, monitoring and evaluation. By doing empirical research in order to define the framework of social enterprises, legal framework and the encouragement of the social environment, we examined what are the challenges, efficiencies and effects of the application of social entrepreneurship. The purpose of this paper is to encourage new opportunities for further research based on the obtained relevant data in this area. The subject of this study is to identify ways of operating social enterprises, the analysis of the legal framework of their activity in the Republic of Serbia and the analysis of the encouragement of social environment for social enterprises. Past experience, analyses and conclusions on social entrepreneurship, especially on its implementation in our country, are the necessary starting points for empirical research in this paper. This study conducted an exploratory research, and the technique applied is the SWOT analysis. The research sample consists of two social enterprises: “Bagel” (NGO Atina) and IDC (association Initiative for Development and Cooperation).

NGO Atina is an organization engaged in the programs of comprehensive social inclusion of victims of trafficking and other forms of exploitation through an approach based on respect for human rights, with full

participation, consent and cooperation of users and active involvement of state institutions in order for the support system to become a viable solution for complete recovery and full integration. Through support programs users are provided with various support programs including: medical, psychological and legal assistance, education and support in resolving civil-legal status, temporary housing, family counseling and mediation, economic empowerment programs, working with self-help groups as well as educational and other workshops. The activities for achieving this objective are conducted at four specific levels: the empowerment and support of the inclusion of the victims; networking capacity of local communities to more efficiently respond to issues of prevention, identification and reintegration of victims; strengthening the capacity of relevant institutions and organizations at local and national level; work in the fight against prejudice, intolerance and discrimination, and providing direct assistance and support to victims of trafficking and sexual exploitation. NGO Atina was established in 2004 in response to the women's movement activists in Serbia on the issue of human trafficking and the lack of adequate long-term support programs for victims and help with social inclusion. "Bagel" ([www.bagel.rs](http://www.bagel.rs)) is a social enterprise that was launched in 2015 by NGO Atina with the aim of economic empowerment of victims of trafficking and other forms of gender-based violence. The whole concept of this store is part of a struggle that has lasted for more than 12 years - the struggle for a just society of equal, which promotes diversity and solidarity. The store currently employs 5 people, and has a growth tendency. In addition to helping victims of human trafficking or other forms of violence with the possibility of economic empowerment and independence, they have developed a special segment of constant training and education for people belonging to this vulnerable group. All the profits that the store receives from selling donuts and pastries are directed to programs of support and recovery of victims of trafficking.

Association of citizens Initiative for Development and Cooperation Serbia (IDC) was formed as an association of humanitarian workers inspired by a collaboration with the Spanish humanitarian organization *Movimiento por la Paz* (MPLP). MPLP was present in the Balkans from the beginning of 2000 until 2008. In the process of MPLP's withdrawal, IDC began to take over part of their activities and programs, and officially registered on 13 April 2007.

Association Initiative for Development and Cooperation Serbia is a nonprofit organization dedicated to social and economic inclusion of less

privileged categories of citizens and protection of their human rights. The association works with vulnerable social groups who mostly live below the poverty line.

Involvement in these areas has resulted in the membership in the International Samaritan Network, associate membership in the network SOLIDAR, membership in the European Civil Forum, as well as membership in two national networks - Anti-Poverty Network and the Coalition for Development of Social Entrepreneurship Serbia. Also, they are members of the World Association of NGOs (WANGO). Since 2013 IDC has the role of the Secretary General of the Social Economy Network of Serbia (SENS), which is currently the only network of social enterprises in Serbia. Besides this, IDC is the initiator and founder of two social enterprises - EcoBag and TDI Mladenovac.

### **Results of research**

In our research we used the SWOT analysis as a technique for obtaining relevant organizational information about the organizations / enterprises in the environment in which they operate now and in the future in order to determine strategic opportunities and threats in the environment. Based on the information we have received, we can assume further movement of the organizations / companies if they maximize their own strengths and opportunities in the environment while minimizing the threats and weaknesses, i.e. if they employ the best use of internal forces in the use of the possibilities of the environment.

An essential assumption is the analysis of the conformity of internal and external factors, or the determination of their implications for the strategy. In fact, internal strengths and weaknesses should be viewed in the context of external opportunities and threats, and vice versa.

**Strengths:** The respondents believe that the power of social entrepreneurs are reflected in the existence of a large number of foreign examples of good practice. Foreign practice shows that they are the most successful models of economic integration of the most vulnerable social groups precisely in social entrepreneurship. They find social entrepreneurship an innovative method, and can see it verified in practice. There are foreign examples that can be applied in the national framework, and there is also long-term experience in the development of social entrepreneurship in Serbia. They see their strength, too, in the number of civil society organizations that have

the experience and the desire to support social entrepreneurship and the important tradition of cooperatives. They point out the power of networks and associations such as the National Network of Social Enterprises - SENS and the National Coalition for the development of social entrepreneurship and the networking of social entrepreneurship promoters with regional and European stakeholders. There is a clear motivation of employees for development and an unlimited field of permanent advertising on social networks.

**Weaknesses:** The weaknesses of social entrepreneurship in Serbia are defined by the respondents as the absence of a sufficient number of successful social enterprises that would serve as a strong motivating factor for the establishment of new ones. Then, social enterprises that have arisen in the projects remain without the support of the completion of the projects and there is a limitation on activities to support social entrepreneurship project cycle, or no sustainability. They recognize that there are no incubators of social enterprises, operating clusters of social enterprises. The knowledge base on social entrepreneurship is insufficient and inaccessible. The legal framework is not sufficiently defined and there are no long-term financial support mechanisms.

Another weakness is the identification of social entrepreneurship, on the one hand, with the previously failed socialist self-management model and, on the other hand, the experience of social entrepreneurship as something imported and directed from outside. They also believe that social entrepreneurship is not given enough media coverage. The media are not educated enough to covered the news in this field.

They also emphasize that there are no benefits for hiring the less employable categories. It is clear that the state cannot financially help, but it can provide an opportunity for free training in hiring the less employable categories and their inclusion in the labor market.

**Opportunities:** Respondents point out that opportunities are reflected in the development of social services and the growing number of social incentive funds - start up programs. They state that there is a possibility for citizens' associations to engage in economic activity, the transition to program budgeting of local self-governments and the existence of significant resource for funding the corporate social responsibility of the business sector. They also recognize the public awareness of the need for synergy, partnership and coordinated performance of all the major promoters of the model of



social economy. They point out a positive opportunity for the development of social entrepreneurship in getting the national legislation to match the EU legislation and the adoption of a set of optimal laws. In terms of business the respondents cite the following opportunities: there is a development of new contacts and networking and the possibility of advancing products through the mentoring projects, the potential for expanding the product range and introducing customers to fair trade products.

Threats: Threats were defined by the respondents as the following items: the establishment of “quasi social enterprises” in order to manipulate people, feigned support for social entrepreneurship in order to achieve political gains, keeping the support at a declarative level, inadequate legal framework and lack of experience in managing companies (due to lack of training, etc.). Respondents point out the bad public scrutiny through labeling social enterprises in the sense that the service provided is of lower quality.

## **Conclusion**

Based on the analysis of the available literature and legal acts and interpretations of data obtained through explorative research we can conclude the following:

Social entrepreneurship should share equal rights and have equal obligations on a single platform of entrepreneurial work. Entrepreneurship is not only the goal of economic and social subjects, because it is the modern trend of development, but it is also a means to achieve greater efficiency and effectiveness in modern business.

Any company in any field of business today can be organized in a way that utilizes innovation to expand and improve its business. One of the main directions in the present entrepreneurship is social entrepreneurship as an innovative method, particularly in the context of funds of corporate social responsibility of the business sector.

The concept of social entrepreneurship is underdeveloped in Serbia, which may be due to the fact that there is still no comprehensive package of legal and economic measures regulating its existence. The largest number of programs that have economic and social objectives can be found in the activities of citizens' associations, religious organizations and new forms of cooperatives. Content of their programs tend to be limited to providing social service and social integration, and inclusion of vulnerable groups.

In order to improve this process, it is necessary to map out the existing experiences and enterprises, to explore and monitor the conditions in which they operate, as well as the dynamics of their emergence and sustainability. In recent years, it can be said that social entrepreneurship has been identified as a catalyst for social reforms.

The goal of new policies and measures to support the development of social entrepreneurship is to promote corporate social responsibility and effective social protection measures provide a higher percentage of employment for typical and atypical populations, modernize labor markets, and provide support to socially vulnerable groups. Active involvement measures (which put special emphasis on social economy) should include incentives for employment and education of poor and excluded people, and the aim is to train and return the less employable population groups in the labor market. One of the incentives would be the introduction of fiscal incentives for companies that operate according to the principles of social enterprise.

Even after the adoption of the Law on Vocational Rehabilitation and Employment of Persons with Disabilities, the problem of complete lack of opportunities for employment of these persons has not significantly improved. One of the biggest obstacles to create opportunities is certainly the practice of making people completely lose their right to employment. For them, in this case there is only the possibility of a working arrangement, which takes place mainly in inadequate conditions as isolated, uninspired and unpaid. However, widespread prejudices that prevail about people with intellectual disabilities as incompetent and useless to society, are in fact a major factor at the moment which makes their employment difficult. Therefore, it is necessary to increase the society's sensitivity to this subject at all levels, and their media promotion.

Support for the development and promotion of social entrepreneurship is very important. It must come from the user, from individuals, groups and associations, on the one hand, and the local self-government and relevant state authorities, on the other. The purpose of the development of social entrepreneurship is a better quality of life of an individual and a more balanced and equitable development of society and the local community and greater employability of people with disabilities. In order to realize this it is necessary that the community support the initial development of the capacity of social enterprises and social and entrepreneurial innovation.

In order for social entrepreneurship to gain greater momentum of development, the public needs to become more aware of the need for synergy, partnership and coordinated performance of all the major promoters of the model of social economy.

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# THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON EMPLOYMENT

Zorka Grandov<sup>1</sup>, Verica Jovanović<sup>2</sup>

## Abstract

*The main goal of this paper is to analyze the impact of information and communication technology on employment growth. The paper is based on theoretical research in which comparative analysis is used to find the similarities and differences in the increasing number of employees in the ICT sector in certain countries and regions of the world, with the emphasis on countries with significant improvements in that regard. The main part of the paper offers the analysis of the increasing number of enterprises and employees in this sector in Serbia, while identifying the main factors which made it possible for this country to make significant success. The main contribution of this paper is the fact that it proves the existence of some other factors which can accelerate the opening of new enterprises and encourage employment, besides the already known indisputable impact of the general degree of gross domestic product growth and the money invested in ICT sector.*

*The obtained results on the example of Serbia show that certain countries, although they are not highly economically developed, competitive and innovative, can also have certain comparative advantages in the field of information and communication technology.*

*They accomplish that thanks to the highly competent, creative and innovative individuals who can quickly adjust to the new and growing demands and needs of the labor market.*

**Key words:** *Information and Communication Technology (ICT), Employment, Labor force*

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## Introduction

In the era of very fast and unpredictable economical and political changes round the world, other events can happen unnoticed although they can be very important, such as the change of workers' structure due to the rapid development of the information technologies. Although more than one century there are stories that the development of these technologies may cause many jobs to disappear, according to some empiric scientific researches the trend is completely opposite. According to one comprehensive research about the impact of technology and progress on the volume and structure of employment conducted in England and Wales from 1871 to 2011 it was concluded that the employment generally increased. One thing is sure, in many fields such as agriculture and other difficult and dangerous ones the number of workers decreased, while in the other fields the number increased. Intensive technological development caused creation of numerous new occupations for which better qualifications, creativity and social interaction are needed. These trends are particularly notable during the last decades, and so in the period from 1992 to 2014 the number of employees in some fields increased more than 900% (Stewart, I., Debapratim, De., Cole, A. 2014).

The modern trends in this field point out that in the years to come there will be the process of computerization of many work places and it is estimated that 47% of present occupations in technologically most developed country – the USA will be automated (Fray and Ozborn, 2016). This does not necessarily mean that the general employment will decrease, but it means that the structure of the employees will be drastically changed. There will be less work for the less qualified workers such as transport workers, assistants in production, sales assistants and so on. However, many administrative workers such as employees in banks and post offices are endangered and can lose their jobs due to the computerization. The new generation of robots will cause decreased number of employees in the fields where during recent years there was considerable increase in the number of employees. For example, there will be increased number of these smart machines in coffee shops and restaurants and they will replace waiters and cleaners as well as diagnosticians in hospitals. The development of artificial intelligence has the great impact on automation of many occupations which since recently did not seem susceptible to automation. The least

fear should have the employees whose work needs the high level of creativity and social intelligence (Fray, 2016).

Although the first impression according to this analysis points out the danger of general employment decrease and the general unemployment increase (MC Kinsey, 2013), the huge number of the conducted empiric researches prove the positive effects of the development of ICT on the increased number of jobs in all national countries (Pantea S., Biagi F., Sabadash A. 2015). The essence of these evidences is in the fact that ICT really has an impact on many jobs to disappear and so many employees to lose their jobs, while on the other hand ICT has considerable direct and indirect effect on the increasing number of total employees. The direct impact is connected to the intensive increase of the number of employees in the ICT sector while the indirect impact is connected to the creation of the numerous newly available jobs created as the result of the modernization of businesses due to the use of the new information technologies.

The main point of this manuscript is to analyze the direct impact of ICT on the increased employment, observed on the example of Serbia, as a country which recently has many general macro economical and other difficulties but still is successful in decreasing the high level of unemployment by increasing the number of employees in this field.

### **Methodological remarks**

The research in this manuscript is based on comparative analysis of the quantitative and quality data obtained from the theoretical sources that deal with the ICT sector and on the comparison of relevant statistical ICT data collected from various institutional sources. Although there are many statistical reports and other sources about the development of ICT industry, still there are no unified (uniform) data about the general characteristics and the level of employment in this sector globally. The data are usually given separately for each country, region or other types of their joining such as OECD of the European Union and so on. According to the hypothesis that ICT has positive impact on employment, especially on self employment, the research in this manuscript will be based on the analysis of the several chosen factors which are, according to the economical theory, regarded as important causes of success and employment. Primarily, those factors are related to the most universal indicator represented by gross domestic product (GDP) of each observed country, as well as to the global competitiveness

index<sup>3</sup> as the indicator which comprises various performance factors of the single national economies.

Apart from this, to compare the position of Serbia with the chosen countries the indicators of the digital competitiveness index will also be used as well as the amount of investment into the ICT sector. These indicators were observed for the last calendar year for which it was possible to collect official data; for some indicators it was the year 2013, while for the others it was the year 2014 or the year 2015.

When choosing the representative countries for comparison, our starting point was to choose the neighboring countries which are similar to Serbia regarding the level of development, macroeconomic characteristics and general socio-economic development. We analyzed a certain (admittedly lower) number of countries which are according to some important indicators in less favorable position (Albania, Bosnia and Herzegovina and Macedonia) as well as a certain number of countries which are according to the general economic performances high above our country but in some sectors we are catching up with them (Romania, Greece, Croatia and Bulgaria). The following comparative group that consists of the larger number of neighboring countries Serbia aims to reach as soon as possible (Hungary, Slovenia, Poland etc.) and those countries currently belong to the group of economically developed countries. As the example of success and important achievements in ICT sector which is at the moment unattainable for our country, but can be used as the guideline, the relevant data are shown for a certain number of the highly developed countries (The USA, The UK, Australia, Austria, Germany etc.).

To gain more realistic picture of the position of Serbia in the global ICT industry, in the analysis a certain separate data are given regarding some

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<sup>3</sup>The global competitiveness index (GCI) is established by the World Economic Forum and it presents the indicator which is based on twelve pillars of competitiveness organized in three groups. The first group is called *Basic requirements* and it comprises the following pillars: (1) Institutions, (2) Infrastructure, (3) Macroeconomic stability, (4) Health and primary education. The second group is called *Efficiency enhancers* and it is formed by the following pillars: (5) Higher education and training, (6) Goods market efficiency, (7) Labor market efficiency, (8) Financial market sophistication, (9) Technological readiness and (10) Market size. The third group is called *Innovation and sophistication factors* and it is formed by the last two pillars: (11) Business sophistication and (12) Innovation. These pillars comprise microeconomic and macroeconomic factors as well as the institution development factors which taken together determine the competitiveness of the national economy. GCI as the composite index is formed as the arithmetic mean of each above mentioned pillars score.



countries which are according to a certain characteristic performances in this sector similar to Serbia. It refers to India and Brazil, which are similar to Serbia considering the structure of occupations in ICT sector which for these countries represent the significant source of export and employment. It is also important to emphasize that here we analyzed the growth rate of these indicators rather than the extent of growth.

Since the phenomenon analyzed in this manuscript is very complex and since there are many definitions of information technologies, it is necessary at the very beginning of this manuscript to give the definitions of the basic terms which characterize the topic of this research. It basically refers to the term information and communication technology and to the term employees in ICT industry.

Comprehension of the term information and communication technologies has been changing through time, from the beginning of the information era to the digital era with everything in our lives digitalized throughout our planet. One of the definitions mostly used today and which will be used as the base of this research is the following definition: information and communication technology is any device used for communication or application such as radio, television, mobile phone, computer and network hardware and software, satellite systems and so on, as well as various services and applications connected with them, such as video conferences and distance learning<sup>4</sup>. This definition is constantly updated with the new content since ICT is constantly developing. The short definition will be: information and communication technology comprises the technology that we use to collect, process, protect and save information and is connected to hardware, software and computer networks (Čelebić G. and Rendulić, D. I. 2012. p. 5).

The definition of the term employees and their classification in ICT sector is somewhat different and it depends on its usage, whether it is used in the statistics in the USA or in Eurostat, the official documentation body for the European Union. The first classification (used in the USA) depends on the type of the companies where people are employed, and they are classified in the following way: 1. IT occupations and 2. Employment within information technology companies.

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<sup>4</sup>It is very difficult to find the source of this definition in its original form. It is believed that Stevenson used it for the first time in his report sent to the British government in 1997 to promote the new national document curriculum for Great Britain in 2000.

Employees in IT industry are the technicians such as programmers, network engineers, experts for computer support and so on. There are also employees who work in ICT companies on some other accompanying jobs – in selling, marketing, HR, finances and general management.

The second classification, mainly used in this manuscript, is the specification of IT occupations according to the statistics of the European Union, based on the International Standard Classification of Occupations 2008 - ISCO<sup>5</sup> and is also classified into two main groups – ICT practitioner workforce and ICT mechanics and assembler (Hüsing, T., Korte Werner, Dashja E, 2015, p.7).

The group ICT practitioner workforce comprises the following areas:

- 1) Management, architecture and analysis,
- 2) Core ICT practitioners – professional level
- 3) Other ICT practitioners – professional level
- 4) Core ICT practitioners – associate/technician level
- 5) Other ICT practitioners – associate/technician level.

Each of these areas is further divided into subareas and they will be explained in detail later in this manuscript.

Employees in ICT mechanics and assemblers (not part of the ICT practitioner workforce) are:

- Electronics mechanics and servicers
- Information and communications technology installers and servicer
- Electrical and electronic equipment assembler.

From the perspective of the industrial classification, according which the classification of the firms and their employees is made, in 1998 OECD gave the internationally accepted definition of the ICT sector based on the activities. The accent on activities means that the manufacturing units (firms) are classified according to the prevailing activity in the manufacturing unit. According to this definition ICT sector comprises two segments: segment of ICT manufacturing industry and segment of ICT services (see in OECD, VPS II, 2003).

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<sup>5</sup>The ICT workforce is here defined according to occupational categories from the ISCO – International Standard Classification of Occupations 2008

## **Theoretical perspective of the impact of ICT on employment**

Among theorists who explore this field there are different ideas about the impact of the development of the information and communication technologies on employment. Certain, predominantly smaller number, but not less important of the researchers claim that in future, influenced by these technologies, greater number of occupations will disappear and that will lead to increased unemployment (Kelinger 2006). This mainly refers to the underdeveloped countries which do not possess enough material and human resources to help this general development (Adenutsi D, 2010).

However there are some opinions that the development of new, especially smart technology (self driving car, robot assistant and other intelligent machines) can endanger employees on the whole planet (Naughton, John, 2015, Fray and Osborn 2013). Still, the vast majority of researches and predictions of the impact of information and communication technology on employment are those whose authors think that the usage of the new technological discoveries is the threat to the unqualified employees and to those who are not willing to be additionally trained for the usage of these new technologies, while the technicians, engineers and other high skilled employees will have more chances to find well paid occupations (World bank outlook 2016).

To support this thesis there is the comprehensive review of the employment in England and Wales from 1871 to 2014, in which the authors (Debapratim, De, and Cole, 2014) tried to solve the old dilemma: whether machines take our jobs away or just facilitate them.

The characteristic example of changes in workforce from 70s of the century before the last one until today are the results obtained in the agricultural sector that show that in the starting year 1871, in England and Wales there were 6,6% employees while today the number of employees is only 0,2%. It is obvious that the huge number of employees for this physically very tiring occupation was replaced by machines, while on the other hand the job of the remaining employees in the agricultural sector is greatly facilitated and also the productivity is multiplied. There is similar example of the impact of technology on the employment in manufacturing where there is also the rapid decrease in the number of employees.

General conclusion is that the manual occupations were rapidly decreased, however that can be mainly applied on the occupations where mostly physical

power is used (muscle power). On the other hand the number of certain manual occupations has increased, mostly in the health and care sector, where the number of such employees increased from 1.1% in 1871 to 12.2% in 2011 and it is predicted that its increase will be continued in the future. For example, the number of employees in England and Wales for the occupations nursing auxiliaries and assistants in the past 3.5 decades (from 1992 to 2014) increased for the whole 909%, and there was the significant growth in the occupations like teaching and educational support assistants, management consultants and business analysts, Information technology managers and above (Stewart, Debatratim and Call, 2014). Review of occupations with the largest changes in the number of employees is given in the table 1.

**Table 1** *Fastest growing and fastest shrinking occupations since 1992*

Occupation	Employment in		Change since 1992
	1992	2014	
Total employment (000)	24.745.881	30.537.415	23%
Fastest growing occupations			
Nursing auxiliaries and assistants	29.743	300.201	909%
Teaching and educational support assistants	72.320	491.669	580%
Management consultants and business analysts	40.458	188.081	365%
Information technology managers and above	110.946	327.272	195%
Welfare, housing, youth and community workers	82.921	234.462	183%
Care workers and home cares	296.029	792.003	168%
Actors, dancers, and other entertainm. presenters	47.764	122.229	156%
Financial managers and directors	88.877	205.857	132%
Fastest shrinking occupations			
Footwear and leather working trades	24.009	4.961	-79%
Weavers and knitters	39.950	12.098	-70%
Metal making and treating process operatives	123.048	52.580	-57%
Typist and related keyboard occupations	90.476	43.181	-52%
Company secretaries	19.823	9.652	-51%
Farm workers	135.817	68.164	-50%
Metal machining setters and setter-operators	89.713	49.861	-44%

**Source:** Stewart I, Debatratim De and Cole A, *Technology and people: The great job-creating machine*, Deloitte 2014.

So far, general conclusion about the impact of the information and communication technologies on employment can be that the development of the employment is not slowed down. According to the already mentioned

study, there is the increase of the employment in the period between 1992 and 2014 of 23%. At the same time the population growth was 13.5%, which means that the growth of employment compared to the growth of workforce was twice as fast.

It is very difficult to predict employment trends in the future since it is impossible to predict the pace at which the information and communication technologies will develop and to what extent. No matter who is right – those who claim that employees will lose the battle against machines (Naughton, 2015) or the majority of those who claim that there will be occupation restructuring and that the great number of employees will have to learn new skills so as to enter the working world (Husing, Corte and Dashja, 2015). So far it is known for sure that the number of employees for ICT occupations will be increased since new technologies are the product of high skilled human work and that only high skilled workforce can operate and develop those technologies.

### **Workforce in ICT sector**

All the countries want to develop ICT sector due to its characteristic of so called cascading effect, i. e. adding the value for both firms in other sectors and for consumers. The effects of this technology facilitate the increased productivity and innovative development of the whole national economy, so it is valuable for every single person. The value of the global ICT market in 2015 was 3.7 trillion US dollars and according to the incomplete data from the year 2016, it reached 3.8 trillion US dollars. Thereof the largest share of 28% was achieved by the USA (Comptia, IT industry Outlook, 2016).

Due to its huge mostly economic but also social importance, indisputably ITC industry has both direct and indirect influence on employment. This influence is increasing and it is almost impossible precisely to predict its real effects in the future. However, the focus of analysis in this manuscript is the employment considering the occupations created in ICT sector, respectively in the previously mentioned two groups: ICT practitioner workforce and ICT mechanics and assembler.

By combining the statistics reports from different sources (Comptia – for the USA, Eurostat for the members of the European Union and World bank and World Economic Forum for the other countries), it can be concluded that the average number of people on global level who perform these

occupations is between 2% and 7%, that more than 85% are males and that the majority of employees have the high, tertiary level of education. Regarding the number of employees performing information occupations the majority of workers are in the USA<sup>6</sup>. According to data from the year 2014 in this country in IT sector there were 2.7 million employees, while in Europe only the UK with 1.6 million employees and Germany with 1.2 million employees have seven-digit number of employees. The overview of the total number of employees of certain occupations in ICT sector in the European Union and the percentage of its share of workforce is given in the Table 2.

**Table 2** *ICT workforce in certain European countries 2014. (in 000)*

R. br	Total	Share of workforce
UK	1.638.000	5.4%
DE	1.197.000	3.0%
PL	412.000	2.6%
SE	262.000	5.5%
BE	177.000	3.9%
CZ	172.000	3.5%
FI	144.000	5.9%
AT	139.000	3.4%
RO	136.000	1.6%
HU	128.000	3.1%
PT	121.000	2.7%
GR	52.000	1.5%
HR	39.100	2.5%
EU28	7.535.000	3.5%
Serbia	15.000	0,9%

**Source:** *Hüsing, T., Korte, W., Dashja, E. (2015).*

For the sake of comparison, the percentage of the employees in ICT sector in the OECD countries was 5.74% in total workforce while in the G20 group that rank is between 4.66 and 6.45%. In Brazil, for example, between 2010

<sup>6</sup>For China and India, it is difficult to find out the precise data regarding the number of employees in ICT sector according to ISCO standards. According to the research results given by Al Hilwa (2014), the number of directly employed people in this field in India reached 3.1 million, while it is estimated that the number of indirectly employed people is approximately 10 million. The number of direct employees in Chinese ICT sector is around 7.5 million people.

and 2013 there were 16% of occupations in this sector (World Bank group, 2015). It is expected that the influence of the existing and especially of the new types of intelligent technologies, like cloud computing, new smart techniques and so on will be more powerful in the next period. Their usage will make the working world more inclusive, global and flexible. Such a situation will give the opportunity to the big innovative companies which make and use these technologies for the rapid economic development which will be accompanied with the increased employment.

However, there is the question whether there will be enough skilled and highly qualified workers who will perform these technically very demanding occupations. Today it is estimated that only in the European Union in ICT sector there will be created more than 900000 occupations but there will not be enough qualified workers to be employed there. The lack of the appropriate employees and new occupations in this industry but without employees will be evident round the world. Because of all this, all the political and economic institutions must be engaged in solving the problem of the lack of the e-skilled employees, while on the other hand this situation will make it possible for the information firms and individuals from the underdeveloped countries to fill these positions performing remote work and other kinds of numerous works on network.

### **Analysis of the employment in Serbian ICT sector**

Increased usage of the available online IT technologies made it possible for IT experts from the underdeveloped countries due to their knowledge as well as to the lower costs of their services to take away many occupations from the employees from the developed countries. As previously mentioned, countries such as India and Brazil have already taken advantage of this opportunity and recently some small countries from Eastern Europe, including Serbia have done the same. Republic of Serbia due to huge difficulties in previous decades still has huge problems to stabilize and recover its economy which directly influence the high level of unemployment. The condition regarding employment has somewhat improved due to the sector of information and communication technologies which has lately been developed significantly and its level of services, employment and export has increased.

According to the officially analyzed data given by World Bank and published in the document ICT attractiveness survey 2015, ICT sector was one of the most successful. For example, the export in this sector in the

year 2008 increased from 96 million to 275 million in the year 2013, which is the increase of 165%. In that year it was the third export brand together with the leading products in decades – corn and raspberry. In the year 2014, the export was even higher and it reached 317 million US dollars. Apart from this, in Serbia there is increasing number of people who perform outsourcing occupations and application making. The fact is that in Serbia there are many people who work in the ICT sector but they are not formally employed, i. e. they work in the so called grey economy and because of that their number is not included in the official statistics of the employees. However, even if we observe only the official data concerning the number of firms and employees in Serbia in the period from the year 2011 to the year of 2013, it is obvious that the level of employment is high (Table 3 indicates the dynamic increase of the employment level).

**Table 3** Sector's key indicators (2011-2013)

	2011	2012	2013	2014	Share rate 2011/2014
Number of companies	1.496	1.638	1.786	2.200	47%
Number of employees	8.312	10.369	11.003	22.000	165%

**Source:** World Bank, *Ey attractiveness Survey, ICT industry in Serbia (2015) for 2011-2013.* and Matijević, M., Šolaja M. (2015) for the year 2014.

If these results are observed independently then they seem impressive; however if we want to check how impressive they are, we must compare them with the results from other countries, especially from the countries which are on the level of development similar to Serbia. The problem with the identifying the factors that are responsible for the ICT sector success in Serbia is in the fact that this country according to many relevant factors is far behind the huge number of the EU countries and its neighboring countries. In recent years only Bosnia and Herzegovina, Macedonia FYR and Albania have worse results in the economy and general competitiveness (but not in all sectors). With the intention to find out the factors that have the positive effect on the ICT development in Serbia the following table is given with the values of the most important development and competitiveness indicators for 22 countries of the different development levels with the wish to compare their data with the data for Serbia and to find the causal link (Table 4).



**Table 4.** Value display of the chosen development indicators for the certain countries in 2014.

Country Name	GDP (US \$ billions)	GDP (PPP) per capita (US\$)	Global competitiveness index		% Share of Work-force	% ICT in services export (2014)
			Rank	Index		
Albania	11,5	11.300,8	93	3,9	0,85	8,3
Australia	1.223,9	47.389,1	21	5,1	3,32	18,7
Austria	43.724,0	47.249,9	23	5,1	3,40	31,2
Bulgaria	49,0	19.097,3	54	4,3	2,50	21,1
BIH	15,8	10.491,8	111	3,7	0,63	7,1
Brazil	1.772,6	15.614,5	75	4,1	1,44	57,0
China	10.982,8	14.107,4	28	4,9	1,00	31,7
Germany	335,6	46.893,2	4	5,5	3,48	39,2
Finland	229,7	41.120,0	8	5,5	6,05	46,6
Greece	195,3	26.448,7	81	4,0	1,72	8,07
Croatia	48,9	21.581,4	77	4,1	2,50	12,0
Hungary	120,6	26.221,9	63	4,2	3,29	27,7
India	2.090,7	6.161,6	55	4,3	3,80	65,5
Macedonia, FYR	9,9	14.009,1	60	4,3	2,41	22,2
Philippines	292,0	7.254,2	47	4,4	3,80	70,4
Poland	474,9	26.455,3	41	4,5	2,42	30,7
Romania	177,3	20.786,9	53	4,3	1,60	37,2
Serbia	36,5	13.671,4	94	3,9	0,80	34,9
Slovenia	42,8	31.007,4	59	4,3	3,47	22,2
United Kingdom	2.849,3	41.158,9	10	5,4	4,75	35,3
United States	17.947,0	55.805,2	3	5,6	22,7	22,0
World	-	-	-	-	31,9	31,1

**Source:** for GDP, GDPP and Global competitiveness index, World economic forum: (30.12.2016.) <http://reports.weforum.org/global-competitiveness-report-2015-2016/economies/#economy>, and for ICT service export <http://data.worldbank.org/indicator/BX.GSR.CCIS.ZS?locations=AT>

From the displayed table we can conclude that Serbia, concerning all key competitiveness indicators, except the ICT service export, is far behind majority of the observed countries.

When these indicators are observed collectively, we can conclude that the direct and indirect factors of the ICT sector development in Serbia compared to the other observed countries are characterized by the following:

- Low level of GDP, regarding which Serbia is better than only 3 observed countries (Bosnia and Herzegovina, Macedonia and Albania);
- Low level of GDP (PPP) where compared to other observed European countries Serbia is better only than Albania and Bosnia and Herzegovina, and has higher level of this indicator than Philippines and India, although this comparison cannot be valid enough due to the huge difference between the level of GDP and population in these two countries;
- Low level of global competitiveness index regarding which Serbia is only better than Bosnia and Herzegovina.

To these results we should add the fact that on average Serbia has 1.6 engineers on 100 employees while in Croatia that number is twice as high and in Israel even four times higher. Apart from this, the investment of Serbia in R&D is only 0.9% of GDP which is three times lower than the European average (Matijević, M., Šolaja M., 2015). Observed per capita the country's investment in ICT sector is €60, while the European average is €800 per capita (Siepa, 2014).

Regarding everything above mentioned, there is the question how it is possible for Serbia to have such significant results considering the increased export of ICT sector and the increased number of firms and employees. The share percent of ICT sector in the service export in Serbia in 2014 was 34.9% and in 2015 it was 36.7% and according to this we can conclude that Serbia considering this fact is above the global average and that it is better than the majority of the European Union countries. Based on this Serbia is on the 40<sup>th</sup> position of the global exporters list, while according to the whole exporting results criteria it is on the 80<sup>th</sup> position. Also, as displayed in the Table 3, the number of firms and employees in this industry is constantly increasing and all that happens at the encouraging pace.

One of the presumptions for the positive increasing trend of ICT sector in Serbia is relatively low prices of services given by the employees on freelancing jobs, i.e. outsourcing. However, according to the analysis conducted by the largest global freelancer company Elance, which placed Serbia on the 5<sup>th</sup> position regarding the amount of money earned from the freelance work, the Serbian workers also have some other advantages when compared to the IT workers from other countries that are even

more competitive regarding the prices. Those advantages, as cited in the publication Serbia smart solution (Siepa, 2015) are the following:

- Highly skilled talents and competitive costs
- Cultural alignment with no language barriers
- Time zone / geographic position
- Safe and secure outsourcing position
- Growing IT industries.

We can conclude, based on the cited reasons that the employment of giving the computer services will be increased even more in the future and we can expect that the other ICT sectors will employ even more people in the future. This can be applied to the Java and PHP programmers, NET developers and software engineers since more than 30000 employees are needed. The pace at which the small firms of this type of ICT occupations are opened is currently 200 new business entities per year with a couple of thousands of new workplaces per year. Since the government of the Republic of Serbia stated one of its priorities in the year of 2017 the development of ICT sector, it is expected that the activities on its development will attract some large foreign companies and tens of thousands new workplaces are expected to be opened.

The problem can be not enough quality IT experts who are supposed to be employed there.

### **Conclusion**

The analysis in this manuscript can show that on one hand ICT sector makes new possibilities for the employment while on the other hand it is a big challenge how to keep the existing workplaces. These technologies cause some new occupations to appear, they change the structure and demands of the existing workplaces and at the same time they create numerous new occupations for technically trained employees. Apart from that, they change the way people work and so there are more occupations performed from home such as outsourcing and other online services. It can be concluded that the research has proven the hypothesis that ICT has the positive effect on employment, especially on self employment.

However, it is also expected, due to the characteristics of inclusivity and globalism, that many individuals and firms in less developed economies will grab the opportunity and show their innovativeness and be self employed or create their own small firms that will be connected to the

huge information labor market. The chance to survive in this business will have only the individuals who have high level of digital skills, who speak foreign languages and who are ready to improve their knowledge all the time.

The example of Serbia also displays this since, regarding the majority of relevant socio-economic factors it is far behind majority of the European countries, and yet it has significant results in the ICT sector. Those results despite the relatively low costs of the information services are based on the work of the talented individuals who have high level of professional skills, who are good at foreign languages and who have entrepreneurial potential. However, if we want ICT sector significantly to contribute to the general economic recovery and to the increasing employment it is necessary the development of this sector to be supported by the country. It mostly applies to the support in opening new small ICT firms as well as the direct investment in preparing the conditions for huge information companies to come to Serbia and to work here together with the huge number of small ICT firms and individuals who already work in Serbia.

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# CHALLENGES AND CONTROVERSIES OF THE GLOBALIZATION OF ARTISTIC MARKET

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## Abstract

*Globalization is seen as stretching the limits which lead to the free movement of people, goods, norms and institutions, information, along with the integrating power of operation. This is the process of linking financial and industrial activities in the world market, based on science and technology, information and communication revolution. As it is a process of social, political, cultural and economic operation, it is beyond a single state or nation, leading to the controversy of globalization of works of art. As an idea, it refers to the reducing the size of the world, but also raising the awareness of the world as a whole, where we are faced with various challenges. Artistic market globalization is based on the same assumptions. Many writers and artists have a critical attitude to these processes and consequences.*

*Great media and cultural and artistic conglomerates that dominate the world art scene and the world market determine the criteria of evaluation of the work of artists and artistic ensembles. National and local arts are becoming less common in the cultural life of most countries of Europe and the world, including our country. Of course, this does not apply to cultural segments which are the planetary centers of monopolized power. Reviews of art critics and connoisseurs of art are less important than the evaluations by marketing managers and financial experts, who assess and evaluate other values (relevant for them) placed upon art projects.*

**Keywords:** *Globalization, works of art, artistic market, distribution, culture, cultural industries.*

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## Introduction

Sale of the work of art to final consumer is the economic recognition of the authors and distributors that their work spent in production and marketing is socially useful and that the market has confirmed the usefulness and market value of the artistic product. This recognition comes from consumers themselves (the audience), the fact that the goods were purchased with the appropriate fee (cost), which has become an integral part of the total income of artists and arts organizations.

According to the “Confederation of Societies of Authors and Composers” study performed in 2013, it was estimated that the cultural industries make up more than 3% of the world’s gross national income. More than half of that income is created in the developed parts of the world, such as the EU and the United States (source no.7). In this paper, and generally in the methodology related to this topic, the cultural industry includes the following sectors: advertising, architecture, books, gaming, movies, music, newspapers / magazines, performing arts, radio, television and visual arts. Although this is a large part of the world economy, researches on the state of cultural industry are made mainly by UNESCO, national ministries of culture and associations of authors of individual disciplines. Therefore, we consider it necessary to cast an independent investigative look at the situation and the effects of globalization in this sector.

Formally, everyone has the freedom to start a business in the field of culture. However, even companies with significant financial and human potential find it almost impossible today to invest in distribution channels of culture. Estimation of the American political scientist Benjamin Barber goes in that direction (1996): “With few global conglomerates which control what is created, who distributes it, where it is shown and how is it subsequently licensed for further use, disappears the very idea of originally competitive market of ideas or images. “ (p.89) Oligopolistic access of a limited number of cultural conglomerates to all stages in the process of creating and explication of art, from the creative idea to final consumption, is now more than evident on a global scale. With ever more expressive globalization of the world economy, a key role in the cultural development of the world is played by hundreds of companies that dominate the sector.

The effects of globalization of the media suggest the possibility of continuous change and net positive effects - gradual introduction of globalization extends the audiences, and new technologies and channels maintain or



increase the diversity, neutralizing the tendency of centralization. Local and national media retain local character, selecting and downloading a program from the global media offer, and gradually change the systems of public broadcasters while maintaining pretty much the character and quality of public service.

For these reasons, this scientific research has been done in order to identify the degree of market globalization of works of art, as well as controversies present in commercialization of art.

### **Controversies caused by commercialization of art**

Artistic effort achieves in the market the status of a recognized social work, but the market is not always right and reliable place for adequate determination and valorization of artistic value of invested work. When it comes to, for example, the market of fine arts, Karel Teige (1977) has an interesting observation: “The development of the art market today has achieved such power that traders can strongly influence not only the production of images - if a painter, bound by contract, achieved one success with images of landscapes under the snow or female semi-nude painting, he will be forced, in order to preserve the favour of dealers, to fabricate winter landscapes or different poses of nude models - but also to direct the demand of the audience and impose to people (who are intending to buy lemonade kitsch) a more or less significant works of the avant-garde. “ (p.38)

The work of art, therefore, realizes its social recognition on the basis of two different and often mutually contradictory ways of social valorization: according to the level of their artistic value, and according to the price level that is realized in the market (Grandov and Djokic, 2011, p.27). The first appeal is mainly manifested through reviews of criticism and other recognitions, but it is also important for the artist to achieve a satisfactory material valuation, and the corresponding market price. Since different social recognitions for itself do not automatically entail a higher degree of material valorization of work, many artists tend to achieve evaluation of their work through the price that it achieved in the market, regardless of its artistic value. In this way, the creators can be found torn between: possibility to produce what they want according to inner emotional stimulation and possibility to choose to work for whom they assume will bring them the most money.

Considering this issue in the case of the market of fine arts, French art theorist Raymonde Moulin (1972) noted that in such situation artists are caught between two extreme types of coercion in the market, “crude coercion due to poor sales, which calls into question the realization of creative ideas, and insidious, cunning coercion, caused by commercial success. Commercial success, when it is too fast, can indicate that the contents of the artistic ideas are adjusted according to demand and the painter becomes a forger of his own work. We witnessed such occurrences during the period of feverish speculations of art “. (p. 18).

In the discrepancy between the two types of social valorization (socio-aesthetic and market), the artist must strive to both. However, he can tend predominantly to the first or predominantly to the second type. Mismatch of these two types of social valorization provides the artist not only with a moral consolation when they achieve the socio-aesthetic type of valorization, and do not achieve the market one, but also the material comfort when the situation is reversed. “Since there are many more minor, mediocre artist than significant and great ones, it is more likely that for many artists it is less important if the work created is really artistically worth, than how much it is paid. At the same time, the price that a minor or mediocre artist achieves in the market begins to serve as specific satisfaction of unfulfilled social and aesthetic recognition. “ (Rankovic, 1978, p. 23).

Today, unfortunately, the commercialization of art contributed to the fact that many artistic values are discarded if they cannot be cashed. “The single most important criteria of the ‘quality’ of art today are the number of sold books, prices at auctions, offers by amateurs and collectors, sold out halls in theatres and similar material and quantitative criteria.” (Teige, 1977, p. 33). High market valorization of a specific work, unfortunately, more and more often becomes the basis for claims for the high social and aesthetic evaluation too. This leads to the inversion of the original definition. The assertion that the artwork was originally socially significant because (and if) it is artistically worth, gets reformulation - artwork becomes socially significant because of the money paid. The argument is, essentially, the following assertion: “It can not be that this work does not have artistic value if it realized such a commercial success?” But it is known that the commercial success is achieved by less valuable works as well.

“The boundaries between ‘high’ and ‘low’ culture, between commercial design and art, to a large extent have been brought into question in today’s world. All the objects of everyday life are aesthetic, designed. Modern art is

trying, through sculptures from cheap materials, such as plastic, temporary settings - installations, and the conscious use of kitsch, to respond to the challenges of consumer society. “ (Kronja, 2002, p. 19). If a free artist wants to sell his products on the free market, he is forced to give them such a form and such a character, which can win the approval of customers. In this way, customers are encouraging certain types, ways and terms of art production, because they buy them, while others, with which they disagree, are rejected because they refuse to buy them as less valuable or worthless.

The process of aestheticization of everyday life reflects the very present world tendency that the entire cultural creativity is becoming part of the mass and mass-media culture that imposes attractive exterior which helps provide unlimited communication. The mechanisms of mass culture penetrate all the pores of society, tearing down fences between commercial and state of the art, and at the same time is sure to promote the commercial works of art.

This trend - at the turn of the century - was very clearly evident when it came to music. With the claim that classical music does not have equal treatment on radio and television, and with the desire to make it more accessible to a wide layer of listeners, and to naturally achieve greater promotional and financial results, a number of excellent musicians adapt their performance to mass market. Also, when it comes to recordings, it is worth mentioning that today is popular to cut down complex compositions to “tolerable” two or three minutes, and that these *digest* music releases can be compared with shortened versions of famous literary works.

Critics view these trends, which show that there is a growing convergence of art and popular culture, differently. While some believe that it represents the commercialization and lowering the quality of elite art (the strictest even estimate this as “the ultimate kitsch”), there are opinions that this is a democratization of art, i.e. that it is a new and progressive trend in pop culture (Božilović, 2006, p.230). It is obvious that the elite art is in this way transformed, but also popularized. This also provides much higher financial results.

### **Global channels of distribution of artistic work**

A few of global conglomerates control what is created, when it is distributed, where it is shown and how it is subsequently licensed for further use. American theorists of communication Gerald Sussman and John A. Lent (1991) state that actors of transnational companies and their “superpower

national insurers“ have superior cross-border communication equipment at their disposal, which provides them with a dominant monopoly position. These are: communication satellites, undersea cables, television shows, multimedia advertising and offices for public relations. They own organizations for creating movies, music, books, magazines and comics; have privileged and unrestricted access to business, technical and financial data; have digital and optical equipment for data transmission; dispose of the tourist chain communications and other communication infrastructure by which they transmit information and impressions on the “good things in life.” (p. 75). Analyzing the film industry as a big business, Benjamin Barber (1996) states: “Behind the industrial point of view, there is also the ideological one. The sound and image are always used for propaganda; a real battle at this point is lead about who will be allowed to control the world’s image and thus the sale of a certain lifestyle, certain culture, certain products and certain ideas.” (p. 82)

Globalization, in fact, means that we live in a time where things are happening simultaneously in several countries and international institutions that are accepted at the national and regional level regulate the mechanism of the world market. Economic activities are taking place in the international market, and decisions are made by the company, regardless of national interests (Grandov, 2009, p.28).

A global company that, in modern conditions, has the power in the field of culture and art, could be defined as “a company that is able to create its own cultural products in large quantities and without stopping, which can effectively distribute them in many parts of the world, which is in a position to convince a huge number of people that what it offers is what they want to see, buy or listen to, which knows how to transform all of these individual products into delicious soup experience that “must not be missed”, which is able to raise its international operations to a privileged position by horizontal expansion and by listening to new markets around the world, which is able to make vertical alliances at all levels and in all branches of the cultural market and is capable of attracting investment to drive all these activities - this cultural conglomerate has the power!” (Smiers, 2003, p. 49). This is not only the power to decide at the end of the process, when the transaction is signed and ends with the agreement on the client, viewer or listener, but also the power that extends to all he earlier moments. The power is also to select few artists and reject all others; and allow those who have been selected a large distribution and promotion. These key decisions limit and, very often, effectively create the

field of cultural options that many people see as the only ones, because, as an American publicist Robert Burnett (1996) observes: “Is it not a fact that people only want what they can get?” (p. 82). And in order for the audience to want something else, it needs a well-developed imagination and conviction that cultural life can offer more than what is being presented and what the seemingly inevitable massive offer is. The fact is, however, that the content of mass-produced and mass-distributed products does not stimulate the imagination nor encourages such belief.

Multinational corporations use their power to manage creativity, to choose artists, organize means of seduction, prepare desirable reception and produce a whole range of experiences around the prioritized singers, writers, dancers, directors, designers and their products (Smiers, 2003, p. 50). The neoliberal world order favours the concentration of cultural industries in the large conglomerates. These conglomerates have undoubtedly large production capacity, but more important is their oligopolistic control of most distribution channels and promotion of artistic creation, or what is in the public increasingly called entertainment.

In order for business conglomerate to be more profitable, mass audience across the world has to buy their books, watch their shows and purchase their other by-products. As Dutch culturalist and political Joost Smiers (2003) noted, we live in a time when people find it hard to “resist the dominant ideology which claims that happiness stems from buying the latest gadgets that are associated with ‘their’ favourite star.” (p. 93).

Every society becomes richer when, thanks to the distribution of cultural products, it is in contact with works of art that come from other parts of the world, in such a democratic way that no single culture has the domination. Of course it is pointless to insist exclusively on the local culture. What is needed is a multitude of different cultural elements, each of which should in a certain way contribute to building a fairer and more humane society as a whole. But in today’s global world most of the cultural products come from the same dominant cultural centers.

On the other hand, with the increasingly prominent globalization of the world economy, advertising plays a key role for hundreds of companies that dominate it. According to *The Economist* weekly, most of the advertising spending in different countries comes from the same companies. Marketing is a tactical weapon number one nowadays. In addition, the world’s advertisers benefit both in stagnant and dynamic global economy.

The development of the world's commercial broadcasters is one of the integral parts of creating the global market. The long experience of the United States of America best shows how commercial television suits the advertising. All the leading marketing and radio diffuse associations have set up a single global standard for the purchase and production of television commercials to foster global commercial development (Herman and Mc Chesney, 2004, p.88). It is expected that, in the foreseeable future, global marketing will grow at a rate higher than the growth rate of gross domestic product. Much of the cost of advertising goes on television and the Internet, while the proportion of advertising in newspapers and magazines as a whole decreases. The scope of services that agencies provide is quite wide so there are many choices and combinations (Grandov and Djokic, 2010, p.75).

### **Globalization of book market**

In the first half of the twentieth century, the production of books has reached major proportions. New printing technologies and increased demand for books have allowed the publication of about 5 million titles in this period. In 1950s, annually, an average of around 5 billion copies of books were printed and sold in the world (excluding periodicals - newspapers, illustrated magazines, scientific journals - which also experienced a major boom in tirage at that time). This number grew rapidly in the coming decades. Between 1950 and 1970, world production of books doubled the number of published titles. The circulation of books grew more and more, not only literary, political, memoirs and other similar titles, but also scientific, historical, philosophical, religious and other content (Stipčević, 2006, p. 657).

Developing countries, which are home to 70% of the population of the world, participated in the twentieth century with less than one fifth of the world's editions of books. In countries where publishing was the strongest (US, UK and other highly developed industrial countries) commercial releases on average reached 10,000 to 15,000 copies per title. At the same time, cheap, popular editions in paperback in the US and in some European countries were printed even in 200,000 copies in average. The emergence of cheap paperback editions can be labelled as a real revolution in production, but even more in the distribution of books, because the price of these softbound books was lower than the average price of a meal. For a relatively small amount of money anyone could create a home library in which were represented all the major works of world literature.

In modern conditions, the sale of books has become a very important and lucrative business. Bookshop network, for example, today successfully distribute annually as many books as their predecessors failed to distribute over the centuries. Only thanks to their good organization and modern methods, bookstores can perform an important role of intermediaries between producers and buyers of books at a time when the number of new books and periodicals grows at great pace.

During the twentieth century, booksellers developed very effective methods in accordance with the requirements of the customers: the propaganda of books available on the market and the rapid acquisition from publishers of those books that the market demanded. Network of stores increased and they perfected other ways to sell books too, so the way of the book from the publisher to the customer was very shortened and speeded up, reaching a peak with the emergence of e-book editions.

Propagation of new releases is not, of course, only the task of bookstores, but they have actively participated in this business by printing book catalogs and other promotional materials and sending this material to interested institutions and individuals, organizing book presentations and panel discussions on them in the very bookstores, radio, television or over the Internet. The question of the success of a book on the market exceeds the interest of bookstores, but often it is their merit that sometimes not such a good book “finds its way” to many customers.

Booksellers were in fact never just traders, intermediaries between producers and buyers of books, especially not in modern times when the mass media may well affect the placement of a particular edition. One way this is achieved is compiling a list of best-selling books - bestsellers. These lists are created at certain time intervals (weekly, monthly, annually), based on the data of sold books in one country, province or city, sometimes in a single bookstore. These types of lists are followed with great interest not only by potential buyers, but also by the authors and publishers. The first list of this kind appeared in the American literary magazine *The Bookman* in 1895, and since 1912 in the United States it has regularly been published in weekly magazine *Publishers Weekly*. Globally the most accurate records are made in the US and the UK.

The list of best-selling books of all time in the world, with the exception of fiction (Table 1), cannot be completely accurate, since there are no detailed statistics. According to the Guinness Book of Records (source no. 3), as well as many other sources, the Bible is considered the best-selling and

most widely used book, with over 5 billion units sold. But on the other hand, *The Quotations of President Mao Zedong*, also known as *The Little Red Book*, has certainly been sold in over a billion copies, while some sources claim that more than 6 billion copies have been published (Cook, 2014, p.13). The same applies to the *Quran*, for which we also do not know exact numbers of sales and distribution, but it is calculated that there are about a billion copies in circulation.

Overall the bestseller lists, or best-selling books, do not include books of religious or ideological nature, because it is difficult to determine how many were really purchased. When it comes to best-selling fiction of all time, at the global level, the top ten are listed in Table 1.

**Table 1** – *Top fiction bestsellers of all time*

Rank	Author and title of the book	Number of sold copies (estimation)
1.	Miguel de Cervantes: <i>Don Quixote</i>	500 million
2.	Charles Dickens: <i>A Tale of Two Cities</i>	200 million
3.	J.R.R. Tolkien: <i>The Fellowship of the Ring</i>	155 million
4.	J.R.R. Tolkien: <i>The Two Towers</i>	150 million
5.	Paulo Coelho: <i>The Alchemist</i>	150 million
6.	J.R.R. Tolkien: <i>The Hobbit</i>	140 million
7.	Antoine de Saint-Exupéry: <i>The Little Prince</i>	140 million
8.	J.R.R. Tolkien: <i>The Return of the King</i>	140 million
9.	J.K. Rowling: <i>Harry Potter and the Philosopher's Stone</i>	107 million
10.	Agatha Christie: <i>And Then There Were None</i>	100 million

**Source:** [http://en.wikipedia.org/wiki/List\\_of\\_best-selling\\_books](http://en.wikipedia.org/wiki/List_of_best-selling_books)

As for the book series, by far the leading position on the bestseller list in the world is taken by the series of Harry Potter, by the British author J. K. Rowling. Since 1997, when she published the first novel until 2007 when the last one was printed, over 500 million copies of the series have been sold worldwide.

Agatha Christie and William Shakespeare are considered the best-selling authors of all time. It is difficult to determine the exact figures, but in both cases we can speak of between 2 and 4 billion copies sold (source no. 17).

Overall, the price of books is much lower now than in the earlier times. For comparison, a copy of a book in paperback in the United States after



World War cost between 5 and 25 cents, after World War II that price went up to around 50 to 60 cents, and in the seventies the price of such books was about \$ 2. If these data are compared with the movement of the US dollar in the reporting period, as well as with the increase in purchasing power (this also applies to a number of other countries), there is no doubt that today books are much cheaper than at any time in history.

All of the presented facts clearly indicate that the distribution of books today is an area with a very large market share. This is supported by the fact announced by the Federation of European publishers (source no. 9), that in 2015 in this area there was a revenue at the level of 22.3 billion Euros.

During the nineties, distribution of books of all genres was intensified thanks to the online sale. Online distribution of books includes the electronic editions market. Under the e-books we consider monographs that also exist on paper and on the Internet, or only on the Internet, or books that are readable on computer screens, mobile devices or specific devices for this purpose. The essence of e-books is in their digital form, easy exchangeability and the ability to be read on multiple devices. There are more names for such publications: electronic books, online books, e-books, digital books, etc. Already in 2000, at the Book Fair in Frankfurt, every fourth book was in electronic form. Also, there is the example that in March 2000, the famous American writer Stephen King published a book *Riding the Bullet* only in electronic form. It is a short story that in the first 48 hours after its release reached the virtual circulation of 500,000 units sold, or better said, copies downloaded.

Today, the largest and most popular web bookstore, the American company *Amazon.com*, was among the first to sell their products on the Internet. Customers on the site *Amazon.com* can find three and a half million titles, printed and electronic. There is no classic bookstore in the world with such an offer, moreover, classical bookstores consider *Amazon.com* to be their greatest enemy, because, for example, in the United States, it holds 65% of the sales of electronic books (Bercovici, 2014). Their slogan “The largest selection on Earth” shows that it is the largest in this field and known to the vast majority of Internet users. In addition to this company, over the past decade, a number of commercial companies at the global level also dealt with the distribution of books over the Internet, as for example: *Alibris.com*, *Abebooks.com*, *Barnesandnoble.com*, *Biblio.com*, etc.

The market of electronic books in the world is increasing permanently, despite occasional crises affecting the sectors based on information technologies. Along with the development of electronic publishing and distribution, and due to the rise of piracy, different systems of protection of electronic titles were developed. Today, almost all programs for reading sold copies of e-books have a system of protection, which is based on a password, or the serial number of hardware components, i.e. binding the books purchased to a specific computer or e-book reader. One of the steps in the fight against electronic piracy is the policy of low prices, which discourages average users to go looking for pirated books.

### **Globalization of fine arts market**

Auctioneers are key actors in the decision-making process in determining the price of works of art. Other important actors are great collectors, galleries, corporations that buy works of art and curators. A few big sellers at the international level essentially control the trade of art works that belong to the cultural heritage. The main customers are wealthy individuals (collectors or traders who buy as intermediaries), institutions and enterprises. Most of today's museums aren't financially strong enough to buy the most admired works of the most eminent artists.

Auctions, therefore, represent one of the most representative distribution channels in the field of fine arts. Already in the eighteenth century two of today's most famous auction houses in the world started working: British companies Sotheby's and Christie's. Their continuous operation during three centuries made them institutions of great trust. Since 1960, the two auction houses started expanding their business into the United States, they opened a representative office in New York, and later in many other cities of the world. The two companies today represent the places of sale of the most exclusive items, collections of antiques and paintings.

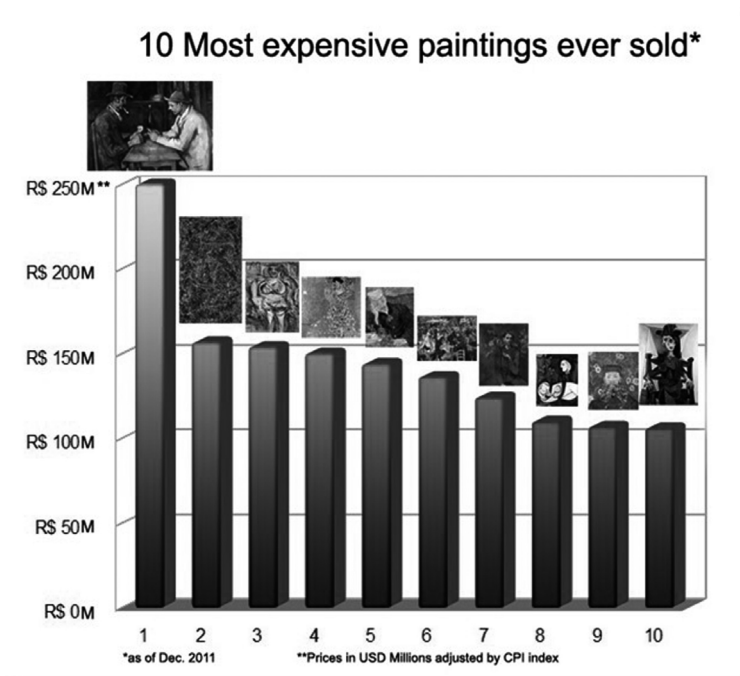
At the end of the twentieth century, art became the most prominent and most profitable goods sold at auctions, because of spectacular price increases. However, in the end the price depends on the final competition of two buyers, their desire to have a specific work, as well as their purchasing power. Given all this, it is largely unpredictable. Painting by Paul Cezanne *Card Players* was in 2011 sold to Qatar for 250 million dollars and became the most expensive work of art sold until then at public auction. In 2015, the painting *Interchange* by Willem de Kooning exceeded this for the record 303 million dollars. The authors who achieved the highest rates of

sales in the world are Vincent van Gogh, Pablo Picasso, Andy Warhol and Mark Rothko. Some of the world’s highest paid paintings can be seen on the Graphic 1.

Until the advent of the Internet, auctions had a closed character. The first auction house that appeared on the Internet with its offer was the Japanese *Aucnet* in 1995. From then on, this field of Internet shopping business is experiencing explosive growth.

Auction houses try, by selling on-line, to increase potential demand socially and geographically, to reduce structural costs of logistics, to diversify the commercial circulation, but also to win over the jagged commercial clientele. The world’s leading auction houses took a leading market position in this area too. In addition to these, well-known companies of e-commerce of works of art are *Ebay.com* and *Artnet.com*. A great bank of data and prices of fine arts that are offered for sale is located on the site of a trading company *Artprice.com*. However, for now, the most valuable works of art are still not sold through e-commerce.

**Graphic 1** – *The most expensive paintings sold at auctions until 2011*



**Source:** <http://mrussoart.blogspot.com.es/2012/03/10-most-expensive-paintings-ever-sold.html>

Artists and analysts mostly agree in the assessment that in Serbia there is virtually no works of art market, mainly due to poverty and poor purchasing power of the population. Purchase of works of art today for most represents the privilege of the few. It is notable that the *nouveau riche* prefer buying copies of antique furniture and very expensive cars, but not works of art. And even if the market raises a work of art that can cost as much as car, it resembles an absurd to most. Valuable collections in Serbia today, as a rule, occur away from the public eye. A detailed overview of these treasures can usually only be reached by “trustees” of collectors: art historians and museum curators, who often advise those who build up their collections.

Increasingly developed artistic production and a growing number of artists and institutions in the field of fine arts, is not accompanied by adequate commercial infrastructure nor modern placement politics. Trivo Indić (1983), art critic, also estimates that our art market is “uncontrolled, local, unpredictable, closed, monopolistic, disorganized.” The main market participants are private individuals, and the contact between the artist and the buyer is carried out largely without galleries or the services of qualified gallerist. Actors in the market are insufficiently linked, uninformed, and exposed to the vagaries of shifting administrative and fiscal status of fine art. There is also the unfair competition, the pressure of informal groups, as well as the presence of the work of dealers. This situation in the market of art directly affects the existence and work of visual artists, and is the basis of many misunderstandings that accompany art market where there is a conflict between developed fine art and low art culture (p. 204-211).

One of the most expensive painters in the Serbian market today is Sava Šumanović. A painting by Šumanović in our country reaches the price from 40,000 to 120,000 Euros. Šumanović’s paintings are also sold abroad, so in a recent auction in the largest French auction house Drouot in Paris Šumanović’s painting “Village” was sold for 46,000 Euros. High prices at auctions are also realized in the work of painters: Petar Dobrović, Jovan Bjelić, Stojan Aralica and Pedja Milosavljevic. However, in the words of art historian Nikola Kusovac, the richest art collections are still found in the Old and White Palace, residences of Aleksandar and Pavle Karadjordjevic.

An important aspect of art work placement in Serbia during the eighties of the twentieth century, in addition to the auctions, was the purchase from the current exhibitions. Purchase of art works has been conducted by the

museums, the commission of the Ministry of Culture of Serbia, while the companies were allowed tax exemption for the amount invested in the purchase of works of art. Most commonly during the annual art salon held by the art associations, as well as during the auctions, a number of well-off enterprises in Serbia (among them mostly banks) would invest funds in the purchase of art works and forming their own collection of valuable art.

## **Conclusion**

The process of binding financial and industrial activities in the global market on the basis of science, technology, information and communication revolution encourages globalization. Globalization of the work of art market is based on the same assumptions. In global terms, there was a concentration and centralization of capital asserted for art and entertainment, followed by the concentration of media and financial power. The centers of that power are mostly located in the United States, which have placed the so-called cultural industries under control and developed to a climax.

Globalization of the work of art market has both good and bad sides. The main positive side is that it is responsible for the development of cultural industries. Great media, cultural and artistic conglomerates that dominate the world art scene and the world market determine the criteria of evaluation of work of artists and artistic ensembles. National and local arts are becoming less common in the cultural life of most countries of Europe and the world, including our country. This does not apply to cultural segments that the planetary centers of power have monopolized and that became universal.

The value of art projects and works of art, in modern conditions, has a prominent financial, or profit, focus of observation. Mass audiences especially prefer the works that are glamorous and aggressively advertised. Many authors and artists have developed a critical attitude towards processes of excessive commercialization of artwork and the negative consequences it has on art. The artistic quality of the work, if not adequately advertised, usually stays in the background. Art criticism, opinions of admirers and their comments are less important than the assessment by marketing managers and financial experts, who assess other (relevant for them) values of work of art. Artistic value of the projects and works is primarily evaluated in terms of merchantability and realized profit, which is the result of that merchantability.

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# DEVELOPMENT STRATEGY IN THE SURROUNDINGS AND ENVIRONMENT OF COMPANIES IN SERBIA

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## Abstract

*Contemporary economic flows are becoming more dynamic and forward directed coordination of economic policies of countries. In contrast to Europe, where industrial development is of the utmost strategic importance linking it with technological developments, the today's Serbia only reveals the role and importance of the industry in the development of a modern society. The paper analysed the period of de-industrialization of Serbia, which has caused a general decline in economic activity, high unemployment and difficult problem of sales of manufactured goods, due to the very low level of purchasing power of domestic companies, local governments, state and especially the population. The aim of this paper is to show that macroeconomic indicators show the chances for improving the performance of enterprises in Serbia. Within the case studies of presented business enterprises in services as well as the majority of companies in Serbia are characterized by vulnerability and erosion of potential growth.*

**Keywords:** *knowledge, innovation, industry, technology development.*

## Introduction

The changes encountered by businesses at the beginning of this century result from the influence of globalization, causing the increase in both the exchange and availability of new products and services as well as a growth in competitiveness, investment mobility and circulation of people. The influence of modern communication technologies provide a quick access to new ways of communicating (at a low cost) which lead to opening new markets for

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consumers by connecting national economies into a united whole and bringing about changes in the relationship producer-consumer. It is in this sense that the world economy is usually referred to today, that is the economy of transnational companies which control over 50% of the world production, 2/3 of the world trade as well as 3/4 of international technology transfer with the rising tendency. Contemporary economic flows are becoming increasingly dynamic and they are directed in advance through the coordination of economic policies of countries within regional integrations. The complexity of the environment also affects the concept of business management since a market-oriented business is dependent on the environment and a considerable amount of changes within its internal configuration takes place together with the change of the ways in which it is connected with the environment. In the 25-year-long deindustrialization period Serbia created an environment characterized by: general downfall in economic activity, high unemployment rate, unfavourable demographic trends as well as a knotty problem of produced goods sales due to a rather low level of purchasing power of domestic companies, local government, state and particularly common population. All the stated problems generated negative expectations and a low level of trust in the system in which a general lack of opportunity prevails. At the same time, the largest obstacle for conducting a business in Serbia is the level of development of institutions, this being a precondition for a stable economic growth. According to the book by D. Acemoglu and J. Robinson, *Why Nations Fail: The Origins of Power, Prosperity and Poverty*, the fundamental reason for failing of nations are the very institutions – political and economic. The primacy is given to good economic institutions as the basis of economic growth and development. However, economic institutions are modelled by political institutions. Authors emphasize that bad institutions hamper economic growth, limit competition, favour the elite by preventing other economic subjects to enter the market through various barriers and in this way allow appropriation of dividends by the elite. For the given reasons, most companies in Serbia are in the advanced stages of strategic and operational crisis. Strategic crisis is characterized by endangered growth potential as well as its erosion whereas indications of operational crisis are high expenses, lack of input and endangered liquidity.

### **Development policy**

The beginnings of modern development theory are characterized by reducing economic development to growth in the sense of rapid and continuous increase in real income per head. The increase in real income (product) per head is followed by other economic, technological, demographic, political and cultural changes in the society. It was believed that there

was no difference between the increase in domestic product per head and the overall increase in individual and collective well-being. Accordingly, in 1969 Dudley Seers defines the development through economic growth, which involves life conditions expressed through the reduction in population income inequality. The concept of development through GDP growth doesn't allow for the even spread of the results of growth, hence the wealthier social groups will appropriate the increased social product as they have privileged access leading to even greater inequality in income distribution. When production structure is set on unequal income distribution, it becomes extremely difficult both economically and politically to direct it later on to greater equality. (Ocić, 2014) At the same time, the assumption is that GDP growth will automatically affect the lower income strata as well, and then economic policy measures will contribute to poverty decrease or figuratively speaking: the cake should be baked first and made larger so that it could be shared more evenly. Re-examining the concept of development in 1977, Dudley Seers redefines the concept of development in which the key tasks of a country would be "property and production in leading economic sectors; patterns which save up on foreign currencies, institutional capability for scientific research and international negotiations as well as cultural objectives of the country".

The main driver in poverty reduction is industrialization as a social concept of economic development representing the concept that effectuates the transformation of all social segments, rapidly encourages employment, improves economies' growth and development, which implies the growth of both GDP and citizens' standard. Beside the economic task that the question of employment has, it also has an important social task which in modern conditions of material well-being of highly industrialized countries is becoming increasingly significant. Together with the acceleration of economic and social development which is reflected in a more complete satisfaction of population's need overall, the importance of industrialization is also reflected in a more dynamic change of the economy. Dynamic development of industry also opens up a space for rapid development of other business activities which have a significant feedback effect on the industry development. Employment rate growth and production capacities expansion create necessary preconditions for the increase in workforce productivity and efficiency of resources, i.e. the rise in material production, which creates an additional space for employment growth and production capacities. Higher levels of industrialization require considerably heavier reliance on scientific and technical progress, more significant level of openness towards the surroundings and diversification of production structure. As Dani

Rodrik puts it, the industrial policy of the 21<sup>st</sup> century has to be based on a sophisticated partnership between private businesses and industrial policy agents as business knows better than the state in which way to grow, whereas the state has at its disposal mechanisms and resources to support achieving the set aim. Fast changes caused by scientific and technical progress are one of the key factors of development as 90% of all inventions that the humanity has at its disposal has been designed in the last two centuries and that has been, as we all know, the time of accelerated industrialization(Savić, 2014). Natural comparative advantages have lost the significance they used to have in recent past. Modern understanding of development is dominated by the achieved comparative advantages, rapidity of introducing innovations and capability of the economy to turn the acquired theoretical knowledge into inventions and new technologies. The key determinant of national wealth today is the ability to gain new knowledge, ideas, innovations and technologies, the presumption of which is creating human capital and ways of handling it. The thesis about the necessity of the renaissance as the new industrial policy of the EU has been adopted accordingly, the aim of which is to realize that industry and the connected services should take the central place as generators of business, employment and growth as well as the increase in competitiveness in other areas. The new concept of development opens a door for strong reshaping of industrial basis in the sense of increased involvement of industry in its GDP as well as a radical and necessary twist towards the EU competitiveness increase, from the still dominant model of low-cost competitiveness to the innovation-based or knowledge-based model. Other policies are also mentioned, such as regional and demographic policies and especially policies the aim of which is to slow down the emigration of young people from Europe to the USA, China and other countries(Vujošević, Zeković, 2014). The USA have been a “magnet for highly educated migrants” and it is known that in the period from 1901 to 1990, the most wanted prize for the results achieved in scientific research, the Nobel Prize, was awarded to about a hundred researchers from the USA. However, it is far less known that almost a half of these Nobel Prize winners were either scientists born abroad or they pertained to the first generation of immigrants (Paral, Johnson, 2004).

### **Knowledge as the key factor of development**

Knowledge and innovation provide the opportunity for the growth in productivity in companies, which strengthens the competitiveness of national economies. Economy competitiveness is a reflection of its individual parts' overall development, that is to say, economic branches

in which a large number of successful companies do their business, achieving full employment and providing opportunity for high living standards for population. Institutional conditions and microeconomic policies create a business surroundings in which companies do their businesses whereas microeconomic policy ensures safety and stability of business environment and it provides the economy development with its direction (Filipović, Nikolić, Ilić 2015). As a result of the new theory of growth, the value of non-material assets of modern companies goes between one half and two thirds of their market value and the rest refers to nonmaterial resources (Vujović, 2014). In that sense, the knowledge-based growth is transferred to business through a synergy of knowledge and skills based human capital as well as employee's motivation and structural capital expressed through intellectual property, organizational processes and organizational structure, this way taking part in creating values referring to (relational) external capital as well as numerous external relations with various interested parties and their perception of the company. The relationship between knowledge, innovation and knowledge-based economy is complex and interdependent since knowledge facilitates the development of new innovations whereas innovations change and build a knowledge-based society. National innovation capacity is not a term used only for denoting the accomplished level of innovativeness, but also basic conditions, investments, choice of policies for creating surroundings convenient for innovativeness as well as wholeness of relationships and connections among various companies and institutions which build and improve innovation culture. With a view to improve innovation activities as well as overall economic development of Serbia, the Law on Innovation Activity<sup>3</sup> was passed and at the same time the Fund for Innovation Activity was founded in order to encourage the innovativeness of national economy. According to the data of the World Economic Forum 2016, Serbia ranks 108<sup>th</sup> out of 138 countries for innovativeness. The achieved level of development of high technology sector is a good indicator of the extent to which the economy is based on knowledge. Lower incidence of high technology sectors compared to most countries in the EU as well as neighbouring countries implies Serbia's falling behind in building modern knowledge-based economy. Serbia is essentially closed for science and innovation although in national strategies its main competitive advantage is stated to be the knowledge which will be used through the education reform with the focus on research and innovation application as well as faster development of new information

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<sup>3</sup>The Law on Innovation Activity, 2010. Official Gazette RS, no.110/2005 and 18/2010

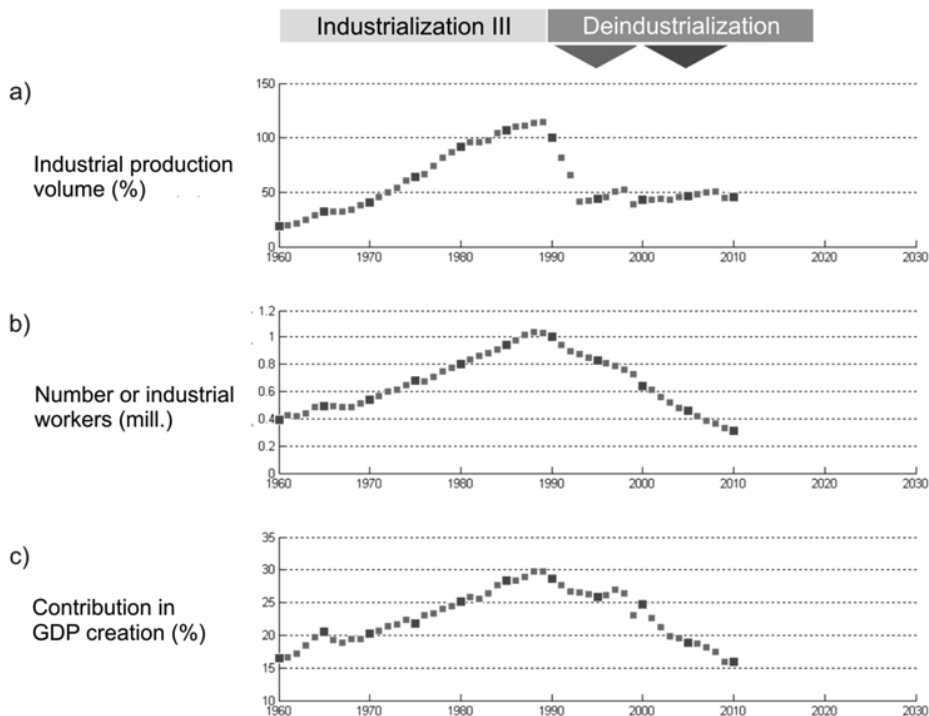
and communication technologies. However, the resources allocated for research and development are insignificantly low, under 0.4% of GDP in 2012 while the investment by the economy amount to less than 0.1% of GDP, which suggests how much importance is attached to this issue. OECD member countries allocated about \$645 billion for research and development in 2000, which is 2.3% of gross domestic product. According to the World Trade Organization estimate (2004), about 70% of this amount was allocated precisely by business companies (Grečić, 2014). The need for increasingly higher investment in research and development is imposed accordingly. Conducting the development strategy in Serbia through the implementation of knowledge reminds us of Njegoš's "let it be what men thought could never be" in which even the suppliant himself doesn't believe in the positive outcome of his plea and he isn't doing anything to make it happen. At the same time, almost without exception, factories set up through foreign investment realize their developmental component outside Serbia's economic space. Corporate managers who run business systems in Serbian factories for the greatest part deal with basic existential questions, building their competitive position based on the reduction of costs, especially in the domain of workforce, and designing the business system in such a way that the human resource is dominantly directed towards work intensive processes.

### **Serbia's development policy**

Contemporary world is characterized by various discrepancies, uneven development, the world economic crisis, which lead to new challenges, risks and threats the effects of which are reflected not only on a global but also regional level as well as the level of individual countries, like the Republic of Serbia. Looking up to Europe, Serbia declared itself a knowledge-based society. Unlike Europe where industrialization is of utmost strategic importance and connected with technological development, Serbia today is just discovering the role and significance of industry in the development of a modern society. Creating a vital and globally competitive industrial system is a very long and complex process which requires extensive investment in building infrastructure as well as adequate regulation and institutional framework. At the same time, industrial progress requires long-term planning of technologic development and the development of adequate human resources through permanent and higher education. After the war, rapid industrialization was set as the highest national priority in Serbia, achieving this way an average annual growth rate of 7.7% in the period from 1955 to 1990, which

contributed to Serbia being in the group of medium-developed industrial countries at the end of the '80s of the last century. As a result of a range of strategic projects ran by domestic industry and domestic science as well as through programmes of international cooperation, domestic experts were created, highly specialized for the field of CNC technologies, robotics, mechatronics and a wide spectrum of application of information communication technologies in industrial production and managing business systems. Developmental and educational activities were followed by putting up highly specialized research and development laboratories, new technology centres, whereas leading industrial companies formed specialized research and development units including institutes within their business systems. One of these institutes was Lola Institute set up within Lola Corporation as a specialised research and development unit for the field of numerical and flexible production technologies (Petrović, 2014). Industrial centres as agents of development employed about 1.1 million workers, creating 44% of GDP. Serbian industry was caught in crisis in the last decade of the 20<sup>th</sup> century achieving an average annual production rate of 6.6% with a downward trend. In year 2000 industry employed 765 000 people, whereas the industrial share in creating GDP amounted to 29%. Most industrial centres were in deep economic crisis. After the October changes the agony of Serbian industry continued. From 2001 to 2011 a rather modest average annual industrial production growth rate of 0.7% in total was achieved. Industry's contribution to GDP was only 18.1%. In 2013 industry employed just 275,000 workers the same as way back in 1955. In 1990 year in Belgrade, 245,000 people were employed in industry, whereas in 2014 the number comes to only 14,000. During the nineties Serbia entered an intensive process of deindustrialization with extensive undoing of the accumulated knowledge and physical infrastructure, namely factories and industrial production machines. What is characteristic is that certain fields and industrial branches, especially in the area of high technologies and medium high technologies during the 25-year-period of crisis almost completely disappeared. The industry in Serbia no longer produces machine tools, industrial robots and transfer lines for automotive and other metal processing industries, which are the engine of industry development as well as a significant component of technological independence and long-term stability of Serbian economy. At the same time, the production of this type of goods contributed significantly to the export and the reputation of Serbian industry on a world scale (Petrović, 2014).

**Picture1** *Industrialization-deindustrialization of Serbia*



**Source:** *The Academy of Engineering Sciences of Serbia (AESS) National Technological Platforms of Serbia (NTPS) 2011)*

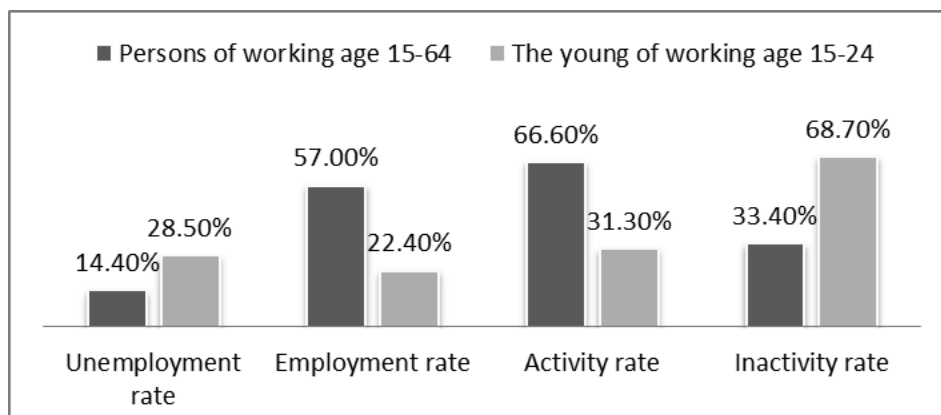
Tercialization of economy (picture1) deformed completely the economic structure leading to numerous misbalances brought to surface by the global economic crisis. In collapsing of Serbian industry, a special place is taken by the model of privatization which was not utilized for restructuring and revitalization of industrial capacities as the agents of economic development, employment and export in the previous period. It is possible to induce the damage caused by development discontinuity from the '90s of the last century through a dynamic component of human resources development, that is to say the accumulation of industrial workers. In the 30-year period, about 18,000 people were employed annually on average, which lead to an accumulation of over half a million industrial workers. The continuity of this process suggests a constant accumulation of productive technological knowledge in Serbian industry, creating networks and diversifying over time through complex cooperative processes inside industrial tissue, which makes up the essence of development of industrial system competitiveness on sustainable basis. Dynamics of the period indicates the real capacity of Serbia in generating human resources for industrial production. The crisis

period is manifested through erosion prices of enormous proportions, the intensity of which was double the intensity of accumulation process. In 20 years Serbia lost almost 700,000 workers, i.e. 34,000 workers annually on average. With quantitative changes came qualitative changes as well. Statistical data from 2011 indicate that qualification profile of the remaining industry workers is rather unfavourable, showing a small number of employees with tertiary education (for comparison's sake, strategic commitment of Europe is to reach 40% of industrial employees with tertiary education at the age of 30-40 by 2020). Age structure in Serbia, especially in the field of development is quite unfavourable; the average is estimated to be over 55 years old (Petrović, 2014). There is also a completely unjustified belief that Serbia has quality workforce. Hence, it came as quite of a surprise when at the beginning of December 2010 a representative of German companies who invested in Serbia as well as the ambassador of Germany stated that Serbia doesn't have quality workforce that they need. It came as even bigger surprise when the director of Srbijagas declared that in Serbia there aren't enough skilled workers needed for the realization of construction works of the South Stream. An owner of fashion clothing line also stated that she wasn't able to provide adequate workforce. Clothing manufacturers from Arilje too, complain that they can't procure qualified workers. These and many other indicators cast doubt on the possibility of achieving dynamic growth of economy as the quality of human capital has been deteriorating for years and there is a real threat of the trend to continue further on (Kovačević, 2014). Today, after 25 years of intensive deindustrialization, a new context is gradually being created with a critical mass of social needs and the political will for the new wave of industrialization that derived from them. In the economic space of the EU, analyses show that two additional work positions in the sector of technologically high quality services are connected with every work position in the industry (Petrović, 2014). Therefore, economic sustainability of a production system is the key for sustainability of the economic system overall, especially for the increase in employment which is one of the most significant social problems faced by Serbian economy. According to the data by the Statistical Office of the Republic of Serbia, in the Republic of Serbia 57% of the population aged 15-64 were employed in the third quarter of 2016; this is one of the lowest employment levels in Europe. An especially unfavourable feature of the unemployment in Serbia is its lengthiness, the reason being that as much as two fifths of the unemployed have worked longer than 5 years and only a fourth shorter than a year, leading to the conclusion that this is not a cyclical unemployment, but structural, which gives very small chances of finding



an employment again. The consequence of long-term unemployment is that people lose a part of the acquired knowledge which leads to the risk of getting into the state of hopelessness and social exclusion. International experience shows that probability of finding a job reduces relative to the length of unemployment, which can lead to permanent exclusion from the labour market and increased risk of poverty. Unemployment is especially prominent with younger population between 15 and 24 years of age, to whom in most cases it takes years to be able to integrate in the labour market which leads to both severe work and psychological consequences, considering the fact that biological and sociological maturation is in correlation with the process of involvement of an individual in the social community. The process of involvement in the social community itself lasts until an appropriate level of social autonomy, responsibility and independence is reached.<sup>4</sup> According to a research published in the Great Britain, it was determined that longer periods of unemployment cause the people to have lower income by 9-21% for as long as 20 years after starting work, compared to people that find an employment immediately after finishing their education. Data provided by the Statistical Office of the Republic of Serbia (SORS) (Picture 2).

**Picture 2** Rates of activity, employment, non-activity and unemployment



**Source:** SORS-3rd quarter, 2016

“Brain drain” is a phenomenon that emerged as a consequence of highly educated young workforce’s inability to find employment in their own country, which is why they leave it and find a job abroad.

<sup>4</sup>National employment strategy for the time period 2011-2020 (20.02.2017), <http://www.gs.gov.rs/strategije-vs.html>

Numerous factors affect this decision: inability to find employment, insecurity and lack of perspective, inability to move forward in career, inability to earn one's income, not being able to solve housing problem, ethical reasons, etc. Some research show that the key factor for emigration is "...unstable economic situation combined with bad state government and corrupted oligarchic state structure which strives to eliminate undesirable elite". Serbia experienced the first major "brain drain" during the nineties due to the wars, economic crisis and international isolation. After the year 2000, the same trend continued, pacing up since 2008 until today. As far as the structure of migrants is concerned, the highest number of highly qualified professionals who left the country belongs to the technical and natural sciences. When it comes to age structure of emigrants, in 75% of the cases they are persons aged 15 – 54 (Pejanović, Šovljanski, Vujkov, 2015).

Unfavourable demographic trends also contributed to deterioration of labour market basic indicators in the Republic of Serbia. According to the results of census in 2002, more than 900,000 people in Central Serbia and about 300,000 in AP Voivodina (which makes about one sixth of the population) is 65 or older, which puts the Republic of Serbia in the group of the oldest countries in the world.<sup>5</sup> From an economic point of view, the influence of age structure on the economic structure of population as well as workforce structure is particularly important. As a consequence of negative population growth, that is population aging, working age population was shrunk by 4.5% in the time period 2005-2010, whereas at the same time active population was reduced by as much as 13%, so that the number of active population aged 15-64 totalled 2,851,000 persons, which makes only 59.1% of total working age population. This working age population activity rate in the Republic of Serbia is significantly lower compared to the average of 27 EU countries which totals 71.3%.

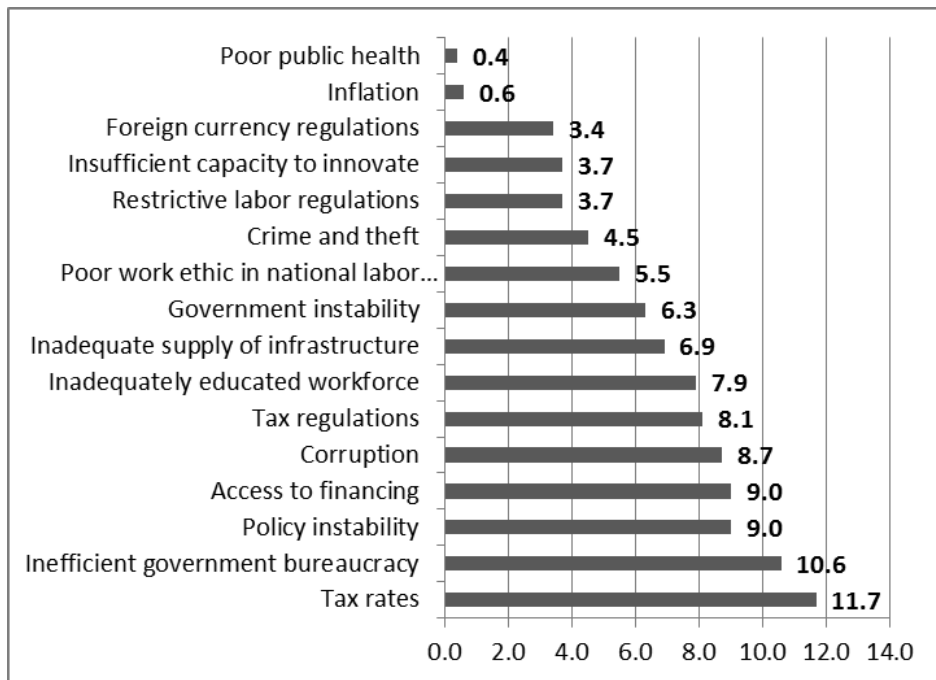
An enormous limitation on the part of Serbian economy, especially its industry is a severe problem of produced goods sales due to a quite low purchasing power of domestic companies, local authorities, state and especially common people. According to the study carried out by Purchasing Power in Europe 2013/1, Serbia is placed 34<sup>th</sup> in Europe with the purchasing power of 3,032 euros per head. At the same time average purchasing power of European population amounts to €12,890 which is 4.25 times more than the average in Serbia. Apart from the limitations

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<sup>5</sup>Birth incentive strategy (20.02.2017) <http://www.gs.gov.rs/strategije-vs.html>

stated, there are a large number of indicators which make Serbia an unattractive investment destination (picture3).

**Picture 3** *The most problematic factors for businessdoing in Serbia 2016*



**Source:** *WEF.GCR 2016-2017*

According to thereportby the World Economic Forum from 2016, the main obstacles for conducting business in Serbia, besides tax rates and governmentbureaucracy inefficiency, are political instability, access to sources of financing and corruption. Apart from the stated, the following should also be pointed out: for the quality of roads Serbia ranks 115<sup>th</sup>, for the quality and functionality of ports it takes the unfavourable 118<sup>th</sup>place, for the organized criminal it takesthe high 107<sup>th</sup>place, forthe relationship between public debt and GDP the rather uncomfortable 111<sup>th</sup> position, for the intensity of local competition the 128<sup>th</sup> position, for the level of domination, i.e. market monopolization the 129<sup>th</sup> position, for the quality of employee training in companies as low as 127<sup>th</sup>postion, etc. These indicators, as well as a range of others, discourage foreign and domestic investors to invest in the region of Serbia.

## Case study

After the political changes in October 2000, the citizens that were completely impoverished during the nineties had great expectations for rapid improvement of living standard. Due to dramatic decrease in economic activity, Serbian economy was characterized by obsolete technology and superannuated equipment, especially in industry, lagging behind the requirements of the world market according to all standards. Economic growth and development was running in the attempt to achieve the growth of personal and public consumption at the same time, the reason being that changes in personal consumption reflect on the general state of national economy, they influence the perspective of growth or recession as well as the increase or decrease in employment. At the same time, through market reforms, privatization and the inflow of foreign investment, institutional and material assumptions for stable development are created.<sup>6</sup> However, the achieved results are half-way at best, because of insufficient GDP growth, unfavourable growth structure and the use of GDP, which led to the increase in foreign trade misbalance due to growing foreign trade deficit as well as current payment deficit. The main components of economic growth were services as activities in which a business could be set up with modest financial resources. At the same time, production activity requires more substantial material investment, especially in the period from two to four years, and only after this period the investment may generate stable income, return the investment and create profit. Besides substantial investment, production activity requires certain knowledge and skills in the given production area. In the period of industrialization, the knowledge of production processes which had been gathered for decades and represented significant scientific and professional resource of the society faded rapidly. Simultaneously, the period of industrialization caused fewer opportunities for becoming a part of industrial sector supply chain, regarding that small entrepreneurs should have been first partners in business and producers for large industrial systems. As large production systems disappeared, small entrepreneurs disappeared with them losing their market. One of the examples of ideal business environment is the period of industrialization in which I would single out Zastava Group as the largest industrial conglomerate in the region of the former Federal Republic of Yugoslavia, which comprised 47 companies and 432 co-

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<sup>6</sup>Poster crisis model of economic growth and development in Serbia 2011-2020, (20.02.2017) [www.kss.org.rs/doc/1102\\_makroekonomska\\_proj\\_razv\\_Srbije\\_2011-2020.pdf](http://www.kss.org.rs/doc/1102_makroekonomska_proj_razv_Srbije_2011-2020.pdf)

operators, out of which 220 directly dependent ones. The estimate says that around 500,000 people all over the country were involved in the production of ZastavaAutomobiles, directly or indirectly<sup>7</sup>.The work in large production systems created skilled personnel as well as business opportunities which were recognized by enterprising individuals for creating their own businesses. In this way, industrial sector generated entrepreneurs of allied manufacturing activities; by commencing cooperation they created security in business as well as performance which enabled stable growth and development of the company. The '90s crisis, besides major downfall of living standard, caused a boost in entrepreneurial spirit which individuals who worked in large erosive systems recognized as an opportunity to start their own businesses. Hence, a large number of business entities originated from this period, especially in the domain of services which made use of the weaknesses of large business systems and take over the market share. Hereinafter we will present running of a company in the domain of services in customs clearance.

Business name: "Špedial", Limited Liability Company for Trade and Services

Legal form: Limited Liability Company

Headquarters: Industrijska bb, Novi Sad

"Špedial" LLC was founded on March 15<sup>th</sup>, 1993 with the basic activity of intermediation in customs procedures and conducting freight forwarding services. The company recorded growth in the earlier stages of conducting business, so they employed 10 people with branches in Sremska Rača, Sremska Mitrovica and Novi Sad. Today this company has one employee in the capacity of the founder, manager and agent with the headquarters in Novi Sad. Reduced or almost non-existent domestic production activity is causally connected to freight forwarding companies. These are the reasons why many once state (today joint-stock companies or limited liability companies) freight forwarding companies like Jugošped, Vojvodinašped, Tranšped do their businesses holding small market shares. The existence of a large number of freight forwarding companies led to a drastic drop in service prices whereas at the same time business costs are on the constant rise. The companies that used to be production giants and were located on the territory of the municipality of Novi Sad such as: Novokabel, Pobeda,

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<sup>7</sup>Zastava Automobiles (09.01.2017)

<https://newhive.com/madacki/zastava-automobili?q=%40madacki%20%23cars>

Agrohemand others, reduced their production activity to a minimum and most of them stopped doing their businesses. They were replaced by large trade companies as well as import-export companies. By carrying out business in a market-based way, most large production and foreign trade companies have their own freight forwarding service as well, (like for example FKL-Temerin) or a freight forwarding company that can follow through the given volume of business in terms of both logistics and credit (by means of bank guarantees). A precondition for carrying out freight forwarding services is passing the agency exam in Customs Administration by which a person (customs declaration applicant) acquires the professional title of customs agent. Applicant (declarant), based on work order received from the instructing party (importer/exporter), submits customs declaration for the goods which are the subject of the procedure in written and electronic form (import, export, temporary import, etc.). The submitted documentation (customs declaration) has to be in compliance with the goods that are the subject of customs clearance in terms of quality and value, which customs agent who is in capacity of authorized person confirms with his/her seal and signature. In case that the submitted documents don't comply with goods, customs officer can initiate a customs offence proceeding against the authorized person (declarant) as well as authorized freight forwarding company; depending on the seriousness of offence, the proceeding may lead to goods confiscation, fine (for legal person and authorized person) as well as losing licence, that is agency. Špedial LLC didn't have major customs offences in its operations. The most severe limitation in this company's business is the bank guarantee, the value of which amounts to million dinars and hence doesn't allow clearance of goods of higher value. A bank guarantee is issued by a commercial bank based on balance sheet, profit and loss account, volume of sales and other financial indicators and in most cases based on the company's assets as well. Considering that Špedial LLC is a company without assets, located in a commercial building of Vojvodinašped as a user (contractor) of office space and with modest financial indicators, the stated company is not able to obtain a higher value guarantee. The guarantee received by the commercial bank is submitted to Customs Administration ECE (Electronic Computer Centre) which certifies and records the guarantee amount in its data basis, permitting the company to carry out customs clearance for its customers in the amount that doesn't surpass the given guarantee. A bank guarantee postpones paying customs and VAT for the goods that are subject of customs clearance for the period of 8 days, which is significant for the importer. After completing the clearance, the value of bank guarantee of freight forwarding company is reduced by the amount of customs fees

and VAT until the moment of customs debt settlement. This practically means that the value of bank guarantee (customs guarantee) should cover for the amounts of customs bills on a weekly basis, regarding the fact that importers most often settle their customs accounts on the 8<sup>th</sup> day and it isn't unusual for them to miss the deadline permitted by law. In that way freight forwarding company credits its customer-importer for the amount of customs duty and customs tariffs, which creates major difficulties in business doing. There are cases when the importer doesn't settle his/her customs accounts and customs tariffs and in that case the freight forwarding company needs to discharge the obligations of importer as a guarantee. Špedial LLC has had cases of importers' not paying customs and customs tariffs, which caused difficulties in company liquidity maintenance; in spite of this, the company has never been blocked.

### **Conclusion**

Modern economic flows are getting increasingly dynamic and they are directed in advance through the coordination of economic policies of countries within regional integrations. The complexity of the environment also affects the concept of business management since a market-oriented business is dependent on the environment and a considerable amount of changes within its internal configuration takes place together with the change of the ways in which it is connected with the environment. In the 25-year-long deindustrialization period Serbia created an environment characterized by: general downfall in economic activity, high unemployment rate, unfavourable demographic trends as well as a knotty problem of produced goods sales due to a rather low level of purchasing power of domestic companies, local government, state and particularly common population. Massive disturbances in demographic development, depopulation and intensive process of population aging are not only the questions of demographic sustainability, but also the questions of general social and economic development affecting present and future generations. At the same time, the inability of advancing in career, inability to earn the income, not being able to solve housing problem and ethical reasons are some of the factors that cause negative migration trends. All the stated problems generated negative expectations and a low level of trust in the system in which a general lack of opportunity prevails. In Serbia prevail entrepreneurs who started their businesses for existential reasons, not because of perceived business opportunity. The largest obstacle for conducting a business in Serbia is the level of development of institutions, this being a precondition for a stable economic growth. In the case

study, we presented a company from the field of services in customs intermediation. The mentioned company was founded at the beginning of nineties, the period characterized by the downfall of economic activity, instability of prices reflected in hyperinflation as well as introducing sanctions. Even with the stated limitations, the company was in the stage of growth which led to opening new branches. Tercialization of the economy that characterized the period after political changes facilitated the rise of the number of business entities in the field of services in customs intermediation which together with growing costs added to the decline in business activity of the company in question. For the stated reasons, most companies in Serbia are in the advanced stages of strategic and operational crisis. Strategic crisis is characterized by endangered growth potential as well as its erosion whereas indications of operational crisis are high expenses, lack of input and endangered liquidity.

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# THE IMPACT OF ECONOMIC FREEDOM ON MARKET PRICES IN THE VISEGRAD GROUP COUNTRIES

*Ivana Brkić<sup>1</sup>*

## Abstract

*The aim of the paper is to present the empirical analysis of impact of economic freedom on market prices of basic food products in the Visegrad Group countries. The relationship between the variables has been tested via correlation and panel analysis. The results indicate that economic freedom is not one-dimensional, so that its elements have a different impact on various food products. Although the concept of economic freedom is not new in economic theory, its indicators are, so it is important to have more studies on this topic in order to determine the influence of different aspects of economic freedom to various (micro)economic categories.*

**Keywords:** *Economic freedom, Market prices, Visegrad Group, Panel Data*

## Introduction

The Visegrad Group countries - Czech Republic, Hungary, Poland and Slovakia, so-called V4, are former socialist countries that transited from centrally planned economies to market economies. They are all full European Union (EU) members since 2004. All these processes have caused several changes in the field of agriculture. In this paper I want to investigate, did it (if it did), and in what extent, economic freedom had influence to prices of some basic food products.

Economic freedom is innovative indicator of the level of economic liberalization, attempt to quantify what is qualitatively expressed in purpose of measuring its impact. Several studies, which have included V4 group, have examined the impacts of economic freedom in different transition counties (Pääkkönen, 2009; Próchniak, 2011; Piątek, Szarzec and Pilc, 2013; Kovačević and Borović, 2014). However, all these studies were mostly focused

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on impact or causality of economic freedom on macroeconomic indicators - economic growth, the level of GDP, productivity, etc. The examination of the impact of economic freedom on the microeconomic indicators was not the subject matter, so this paper has a scientific contribution to that topic.

### **Economic freedom in the Visegrad Group countries**

The Heritage Foundation (HF) annually publishes report about state of economic freedom in the world in form of Index of Economic Freedom (IEF). This is a numerical indicator that ranges between 0 (the lowest degree of economic freedom) and 100 (the highest degree of economic freedom). Index of Economic Freedom is composed from 10 sub-indexes grouped in four pillars: Rule of law, Government size, Regulatory efficiency and Open markets.

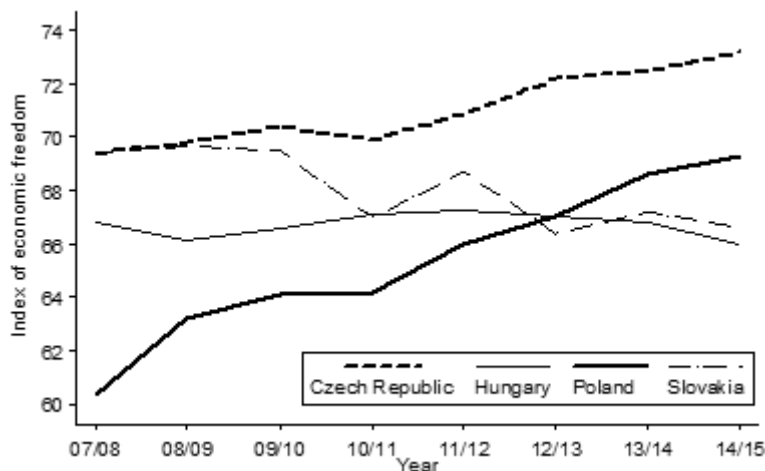
The world average of the economic freedom index over the period from middle 2007 to middle 2015 was 59.89. The average level of freedom during this period in V4 countries was 67.78, which was about European score average (66.7). This result puts V4 countries in the group of “moderately free countries”. The highest degree of economic freedom of 73.2 points was assigned Czech Republic in 2014/2015, and lowest country in the region was Poland in 2007/2008 with the score of 60.3. By criterion of elements of IEF, the highest score of 87,32 points has achieved trade freedom in V4 countries, and the worst situation is in the field of government spending (42.2). This is also characteristic of the European countries average – the highest position has trade freedom (85.62) while the lowest score has government spending (42.62). The weakest aspects of economic freedom for all members of V4 group are: property rights, freedom from corruption, government spending and labor freedom, while notable successes countries was accomplished in aspects of open market, (especially trade freedom, but also investment and financial freedom) and monetary freedom.

*As shown in Figure 1, Poland has started on the lowest level, but then has achieved the largest improvement in the region, since its economic freedom score was advanced by 9 points (from 60.3 to 69.3). On the other hand, Slovakia’s economic freedom peaked in 2006/2007 and has been on a downward trend ever since (from 70 in 2006/2007 to 66.6 in 2014/2015), mostly due to declines in freedom from corruption, business freedom, labor freedom, and the management of public finance. Czech Republic is the only V4 county that is “mostly free” (69.4 in 2007/2008 to 73.2 in the report*

from 2016 which covers period from middle 2014 to middle 2015 year). This trend was led by improvements in investment freedom and property rights, but also because of better fiscal discipline. Although “moderately free” status was driven by good improvement in trade freedom, financial freedom, monetary freedom, fiscal freedom Hungarian government has been struggling with budget deficits that continuously raise public debt.

The analysis also covers the period from 2008 to 2009, which are the years of the beginning and the most expressed effects of world economic crisis. Poland was the only country in Europe to escape recession in 2009, while other V4 countries experience some downturn in economy. According to Miller, Holmes and Feulner (2012), a period of stable and robust economic expansion came to a stop in 2009 in Czech Republic. The global financial crisis mostly hurt economic growth and increased public debt in Hungary while Slovakia has rebounded relatively quickly from the global economic slowdown, but its economic freedom begins downward trend ever since.

**Figure 1** Index of economic freedom in V4 countries in the period from middle 2007 to middle 2015

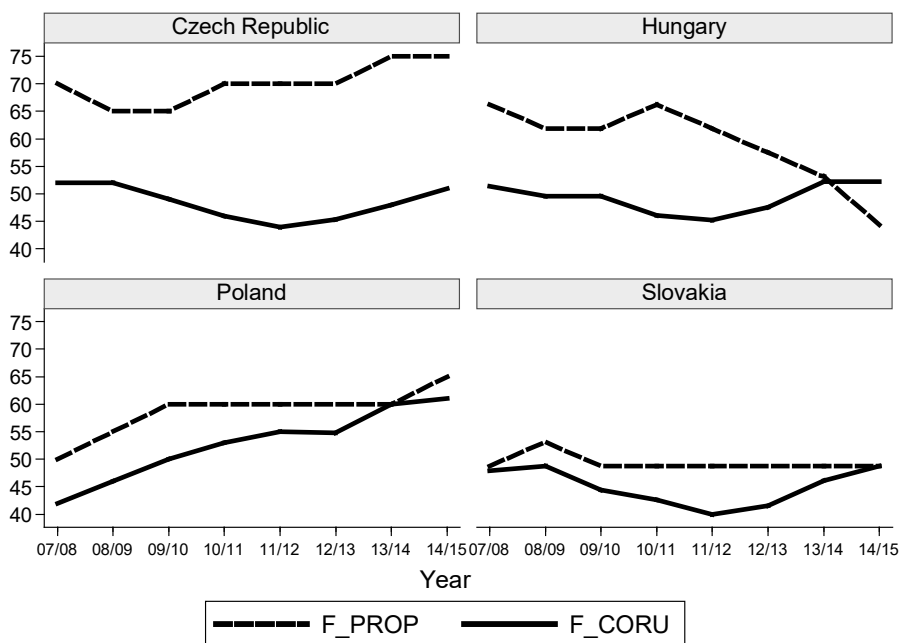


**Source:** Autor, adjusted according to data from [www.heritage.org](http://www.heritage.org)

The pillar of economic freedom named Rule of law consists of subindexes property rights and freedom from corruption. This segment of economic freedom troubles V4 countries the most, and shows little improvement over time (Figure 2). Corruption especially affects health care, the judiciary, and education in Slovakia, while intimidation of judges, a significant backlog of cases, political interference and years that takes to make court decisions

hurts property rights in this country that is the lowest-ranking country among V4 to criteria of pillar Rule of law. Although Czech Republic has the highest level of property rights, corruption is its weakness that adds to the cost of conducting business. *Fight against corruption* has increasing trend in Poland while the judiciary is independent in this V4 country but slow. Corruption is a serious problem in Hungary. According to the HF report (Miller and Kim, 2016), it was estimated that firms routinely pay bribes of up to 20 percent of a project's value and the judicial independence is increasingly threatened. Since this pillar of index of economic freedom has a lot room for improvement, it continues to be a concern.

**Figure 2** Pillar Rule of law, composed of property rights (*F\_PROP*) and freedom from corruption (*F\_CORU*) in V4 countries in the period from middle 2007 to middle 2015 year

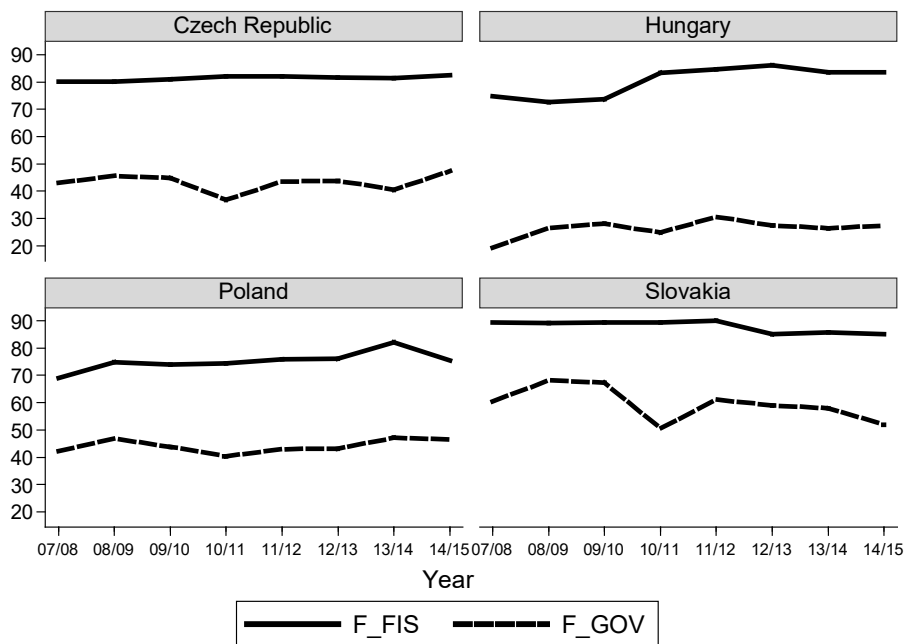


**Source:** Author, adjusted according to data from [www.heritage.org](http://www.heritage.org)

The second pillar of IEF - Government size, expresses the limitation of the state on the side of government revenue and government expenditure. In many years, and for all countries of the V4, the government budget has been in deficit, driving public debt to an unallowed zone. Fiscal consolidation and better management of public finance are needed to curb a growing debt burden caused by excessive spending (Miller and Holmes, 2011).

Fiscal discipline and budgetary balance so are priority to V4 countries in future period in order to foster economic stability and growth.

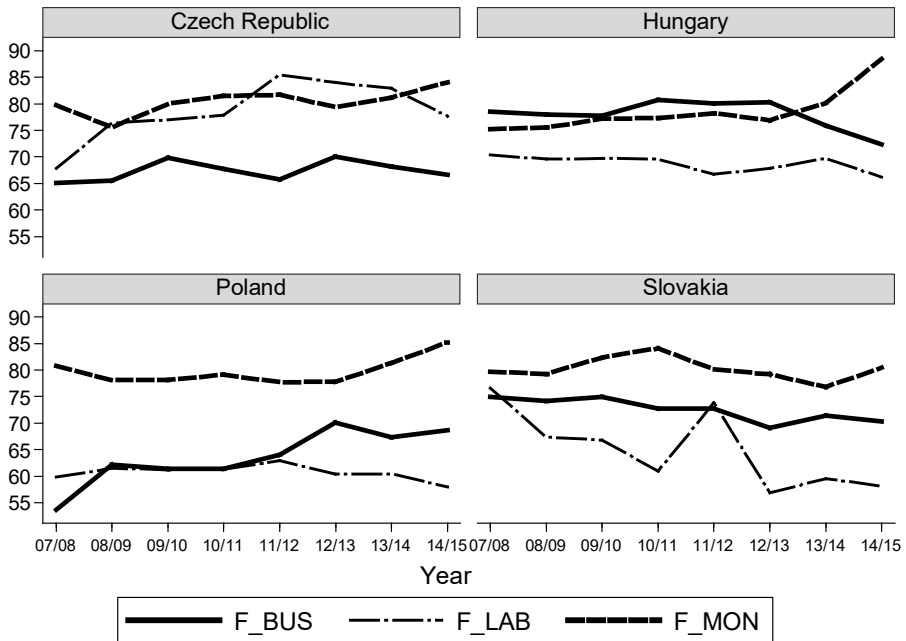
**Figure 3** Pillar Government size, composed of fiscal freedom (*F\_FIS*) and government spending (*F\_GOV*) in V4 countries in the period from middle 2007 to middle 2015 year



**Source:** Author, adjusted according to data from [www.heritage.org](http://www.heritage.org)

As Figure 3 illustrates the fiscal freedom has high position for all V4 countries due to competitive and relatively low tax rates. Corporate tax rates are flat 19 percent in all V4 countries in the most years. From a relatively high income tax in Hungary, it has been cut in half to a flat 16 percent which we see as a grow in fiscal freedom in this country in 2010/11 year. The overall tax burden in this country is around 40 percent of total domestic income. The top individual income tax rate has risen from 19 to 25 percent in Slovakia in 2012/13, while in Poland it remains relatively high - 32 percent; the lowest is in Czech Republic and it amounts 15 percent. Other taxes include a value-added tax (VAT), a property tax, a gift tax, but also the an inheritance tax in Poland and a real estate transfer tax in Czech Republic.

**Figure 4** Pillar Regulatory efficiency, composed of business freedom (F\_BUS), labor freedom (F\_LAB) and monetary freedom (F\_MON) in V4 countries in the period from middle 2007 to middle 2015 year



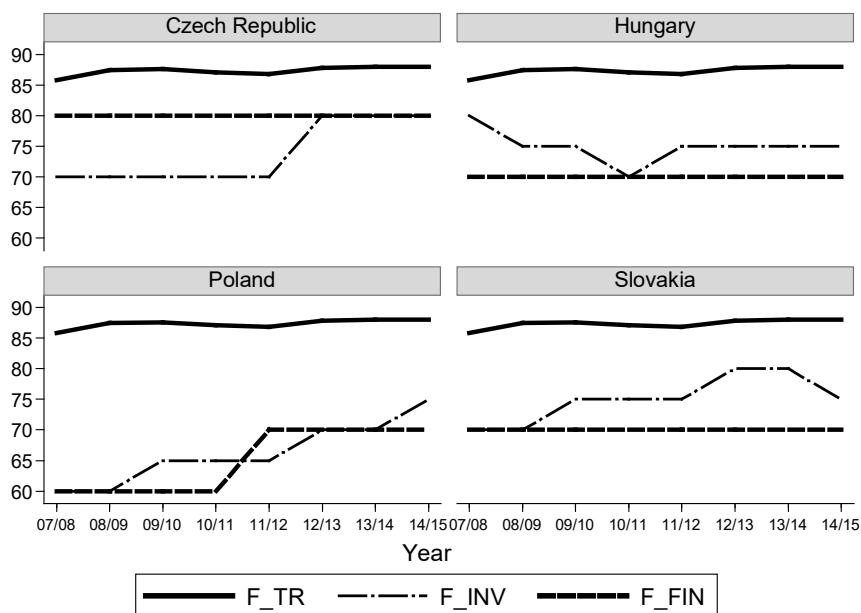
**Source:** Author, adjusted according to data from [www.heritage.org](http://www.heritage.org)

The biggest interest for our analysis is fact that all countries are participants in the EU's Common Agricultural Policy, so the government subsidizes agricultural production. This distorting the prices of agricultural products. We see that as a lack of monetary freedom, although it is just one component that this element of freedom measures. The other one is price stability, and it could be said that in all V4 countries the inflation has been under control. In many countries it is also present regulation of prices for energy, telecommunications services and subsidies for pharmaceutical products, among others. Poland is the largest recipient of EU subsidies, although the government's transformation of Poland's coal mining sector into a commercially viable industry was pronounced "a textbook case of success in reducing politically sensitive subsidies" (Miller, Kim and Holmes, 2014, p.358). But "...in 2015, due to losses from Russia's food import ban, the government asked the EU to loosen rules on state subsidies for inefficient coal mines and to reinstate export subsidies to Polish pork and milk producers" (Miller and Kim, 2016, p.345).



The labor market lacks flexibility, resulting in an unemployment rate in Slovakia, while Unions exercise considerable influence in Poland. Hungary's restrictions on work hours are rigid and all countries including Czech Republic have high non-salary cost of employees.

**Figure 5** Pillar Open markets, composed of trade freedom ( $F\_TR$ ), investment freedom ( $F\_INV$ ) and financial freedom ( $F\_FIN$ ) in V4 countries in the period from middle 2007 to middle 2015 year



**Source:** Author, adjusted according to data from [www.heritage.org](http://www.heritage.org)

The last one, fourth pillar - Open markets, is the best ranked aspects of economic freedom for the V4 countries (Figure 5). The common for all V4 countries is low trade-weighted average tariff rate with other members of the European Union, but also the layers of non-tariff barriers that increase the cost of trade. Poland's financial sector is one of the region's more advanced, and Slovakia is one of the most popular destinations for foreign direct investment in Europe. The competitive banking sector offers a wider range of financial products in all countries, and foreign and domestic investors are generally treated equally. Nevertheless, in 2012, the Hungarian government amended the constitution to prohibit people from selling their agricultural land to foreigners and since 2010, commercial banks have suffered from higher taxes in this V4 country. All these segments of economic freedom may affect the changes of market prices in the V4 countries, so in the next part of the paper it will be examined their relationship.

## Data and methodology

To conduct panel model it was used economic freedom scores from the Heritage Foundation's (HF) Index of Economic Freedom (IEF) and price data for a set of consumer products from a Detailed average prices reports published by Eurostat for Visegrad Group countries (V4). Since actual HF reports from current year, e.g 2017, covers period from the middle of 2015 to the middle of 2016 year, I choose to put IEF in a relationship with the prices from Detailed average prices reports from 2016 year. Following this analogy, the IEF covers period from middle 2007 to middle 2015 (based on the HF reports of economic freedom from 2009 to 2016), while the price data are collected for specific year from 2008 to 2015. The period has been chosen because of the availability of data. All examined prices of goods were presented in a single currency - euro, while IEF is in range from 0 to 100 where the larger number represent the higher level of economic freedom. In the present study, panel data analysis approach was adopted for testing the effect of economic freedom on market prices of basic food products in V4 countries. Analysis included 10 independent and 10 dependent variables, presented and described in Table 1. Before performing panel analysis, it was calculated correlation coefficient in order to provide a priori (but not definite) information concerning the direction of the relationship between variables.

Panel data has two dimensions, combining cross-section and time-series form. Panel data in this research are strongly-balanced that consists of time-series observations ( $T=8$ ) pertaining to countries ( $N=4$ ). For the purpose of making a selection among three basic estimators (pooled ordinary least squares method – OLS, fixed effects model – FE and random effects model – RE) F test, Breusch and Pagan's LM test and Hausman test were used. A Hausman specification test was used in order to verify the choice of FE or RE model, while Breusch and Pagan Lagrangian multiplier test was employed in order to decide between RE or OLS model.

**Table 1: Presentation and description of dependent and independent variables**

Dependent variables		Independent variables	
Name/Label	Description	Name/Label	Description
Wheat flour <b>Flour</b>	Type: plain, white, all-purpose flour; Q: 750 - 1000g R.Q.: 1000 g	Property rights <b>F_PROP</b>	Ability of individuals to accumulate private property, secured by laws fully enforced by the state.
Loaf of white bread <b>Bread</b>	Type: Made with min. 90 % wheat (white flour) Q: 400 - 800 g R.Q.: 1000 g	Freedom from corruption <b>F_CORU</b>	Assessment of the presence of corruption in business. Included corruption governmental, legal, judicial and administrative corruption.
Pork, cutlet ('escalope') <b>Pork</b>	Type: without bones, fresh (not frozen) R.Q.: 1000 g	Fiscal freedom <b>F_FIS</b>	Fiscal burden on economic activity through heavy taxation.
Whole chicken <b>Chicken</b>	Type: without head and feet, fresh (not frozen) R.Q.: 1 kg	Government spending <b>F_GOV</b>	Level of consumption by the state and all transfer payments related to various entitlement programs as a proportion of GDP.
Fresh milk, unskimmmed <b>Milk</b>	Type: fresh (pasteurized); Fat content: - 2.8 - 4.0; Q: 0.8 - 1.5 l R.Q.: 1 l	Business freedom <b>F_BUS</b>	Individual's right and ability to freely conduct entrepreneurial activities.
Chicken eggs <b>Eggs</b>	Type: Class A; Size - L (large) Q: 6 - 12 eggs R.Q.: 10 eggs	Labour freedom <b>F_LAB</b>	Ability of workers and businesses to interact without restriction by the state.
Butter <b>Butter</b>	Type: not salted Q: 200 - 250 g R.Q.: 250 g	Monetary freedom <b>F_MON</b>	Stable inflation and market-determined prices.
Vegetable oil <b>Oil</b>	Type: for cooking; in bottle Q: 0.5 - 1 l R.Q.: 1 l	Trade freedom <b>F_TR</b>	The absence of tariff and non-tariff barriers that affect international trade in goods and services.
White sugar <b>Sugar</b>	Type: fine, granulated Q: approx. 1000 g R.Q.: 1000 g	Investment freedom <b>F_INV</b>	Free flow of capital in both domestic and international investment.
Coffee <b>Coffee</b>	Type: roasted, blend Q: 200 - 300g R.Q.: 1000 g	Financial freedom <b>F_FIN</b>	Ability of diversified savings, credit, payment and investment services to individuals and efficient financial intermediation.

**Source:** Eurostat's Detailed average prices reports for dependent variables and Chang, Kim and Kim (2015), according to Cebula (2011), Gassebner, Gaston and Lamla (2011) and Peláez (2009) for independent variables; Q – Quantity; R.Q. - Reference quantity;

## Empirical results

Summary statistics of dependent variables was presented in Table 2, namely: number of observation, mean, standard deviation, minimum and maximum values.

**Table 2:** *Descriptive statistics for dependent variables*

Variable	Obs	Mean	Std. Dev.	Min	Max
Flour	32	.4915625	.0860648	.32	.69
Bread	32	1.014375	.1722702	.71	1.27
Pork	32	4.141875	.61894	2.89	5.15
Chicken	32	2.344063	.3892247	1.64	2.97
Milk	32	.7596875	.1058143	.57	.96
Eggs	32	1.289063	.2976072	.92	2.14
Butter	32	1.58	.4000081	.86	2.25
Oil	32	1.599063	.2045666	1.3	2.06
Sugar	32	.8490625	.1744366	.53	1.21
Coffee	32	9.528125	1.571142	5.27	12.22

**Source:** *Authors' calculations*

Table 3 reports Pearson correlation coefficients among all independent variables. The correlation analysis is performed in order to identify the variables that are highly related to each other. Since there is no correlation that exceeds 0.80, it could be said that there is no multicollinearity. The correlation analysis between dependent and independent variables is presented in Table 4. Positive and significant correlations is found between fiscal freedom and dependent variables pork, oil and sugar (0.3900, 0.4682, 0.4014, respectively), as well as between business freedom and pork (0.4920), chicken (0.6694) and butter (0.6393). Highly positively correlated are investment freedom and pork (0.6247), chicken (0.7242), butter (0.6424) and coffee (0.4336). Pork, chicken and coffee also have positive correlation with financial freedom (0.4341, 0.4509, 0.3923 respectively). Negative correlation coefficients are found between independent variable property right and dependent variables bread (-0.6166) and eggs (-0.5004). Freedom from corruption also accomplish negative correlation with pork, chicken, milk, eggs, oil and sugar (-0.5111, -0.3753, -0.5272, -0.3766, -0.456, -0.6129, respectively). Government spending correlates negatively with flour (-0.3503) and labor freedom with bread (-0.5412), which also have negative correlation with financial freedom (-0.3835). Flour (-0.3750) and sugar (-0.3804) are in negative correlation with trade freedom.

**Table 3:** Correlation coefficient between sub-indexes of Index of economic freedom<sup>2</sup>

	F_PROP	F_CORU	F_FIS	F_GOV	F_BUS	F_LAB	F_MON	F_TR	F_INV	F_FIN
F_PROP	1.0000	0.2486	0.5216	<b>0.0195</b>	0.5172	<b>0.0001</b>	0.4391	0.8127	0.4053	<b>0.0005</b>
F_CORU	0.2100	1.0000	0.1345	0.1462	0.8167	0.3252	0.5969	0.1650	0.7986	0.9471
F_FIS	-0.1176	-0.2704	1.0000	<b>0.0009</b>	0.4300	0.1023	<b>0.0489</b>	0.3397	0.0997	<b>0.0037</b>
F_GOV	<b>-0.4109</b>	-0.2628	<b>0.5578</b>	1.0000	0.0287	0.5447	0.2080	0.6917	0.6739	0.9470
F_BUS	0.1188	0.0426	0.1445	-0.3868	1.0000	0.5654	0.0620	0.5349	<b>0.0007</b>	0.2855
F_LAB	<b>0.6235</b>	-0.1796	0.2941	-0.1112	0.1055	1.0000	0.7426	0.4940	0.3630	<b>0.0000</b>
F_MON	-0.1417	0.0971	<b>0.3510</b>	0.2287	-0.3337	0.0604	1.0000	0.2554	0.8902	0.3595
F_TR	-0.0436	0.2515	0.1744	0.0729	0.1139	-0.1254	0.2071	1.0000	<b>0.0445</b>	0.5970
F_INV	0.1523	-0.0470	0.2963	-0.0774	<b>0.5679</b>	0.1663	0.0254	<b>0.3576</b>	1.0000	<b>0.0056</b>
F_FIN	<b>0.5768</b>	-0.0122	<b>0.4983</b>	0.0122	0.1947	<b>0.7220</b>	0.1675	0.0971	<b>0.4784</b>	1.0000

Source: Authors' calculations

<sup>2</sup>In Table 3, p-values are represented by the upper triangular matrix while the correlation coefficients are presented in the lower triangular matrix.

**Table 4: Correlation coefficient between independent and dependent variables <sup>3</sup>**

	F_PROP	F_CORU	F_FIS	F_GOV	F_BUS	F_LAB	F_MON	F_TR	F_INV	F_FIN
Flour	0.1670	0.0995	-0.2467	<b>-0.3503</b>	-0.0495	-0.2466	-0.0946	<b>-0.3750</b>	-0.1540	-0.2685
	0.3611	0.5878	0.1735	<b>0.0494</b>	0.7881	0.1737	0.6066	<b>0.0345</b>	0.3999	0.1374
Bread	<b>-0.6166</b>	-0.2506	0.2837	<b>0.5392</b>	0.0635	<b>-0.5412</b>	-0.0170	-0.1642	0.0913	<b>-0.3835</b>
	<b>0.0002</b>	0.1666	0.1155	<b>0.0015</b>	0.7297	<b>0.0014</b>	0.9265	0.3693	0.6191	<b>0.0302</b>
Pork	-0.0143	<b>-0.5111</b>	<b>0.3900</b>	-0.0499	<b>0.4920</b>	0.3366	-0.1765	-0.2845	<b>0.6247</b>	<b>0.4341</b>
	0.9379	<b>0.0028</b>	<b>0.0273</b>	0.7863	<b>0.0042</b>	0.0596	0.3338	0.1146	<b>0.0001</b>	<b>0.0131</b>
Chicken	0.1493	<b>-0.3753</b>	0.242	-0.3191	<b>0.6694</b>	0.3366	-0.2167	-0.1109	<b>0.7242</b>	<b>0.4509</b>
	0.4147	<b>0.0343</b>	0.1821	0.075	<b>0</b>	0.0596	0.2336	0.5458	<b>0</b>	<b>0.0096</b>
Milk	-0.0973	<b>-0.5272</b>	0.1795	-0.1018	0.1913	-0.026	-0.0525	-0.1556	<b>0.5411</b>	0.1308
	0.5963	<b>0.0019</b>	0.3257	0.5795	0.2943	0.8875	0.7754	0.3952	<b>0.0014</b>	0.4756
Eggs	<b>-0.5004</b>	<b>-0.3766</b>	0.2098	<b>0.3499</b>	-0.0066	-0.4277	-0.0939	0.0945	0.3177	-0.172
	<b>0.0035</b>	<b>0.0336</b>	0.2491	<b>0.0496</b>	0.9715	0.0146	0.6093	0.6071	0.0764	0.3467
Butter	-0.3359	-0.2748	0.1193	-0.2188	<b>0.6393</b>	-0.2293	-0.1635	0.0511	<b>0.6424</b>	-0.0715
	0.0602	0.128	0.5154	0.2288	<b>0.0001</b>	0.2068	0.3713	0.7813	<b>0.0001</b>	0.6974
Oil	-0.3003	<b>-0.456</b>	<b>0.4682</b>	<b>0.3438</b>	0.2817	-0.1517	-0.1145	-0.0185	0.2357	-0.056
	0.095	<b>0.0087</b>	<b>0.0069</b>	<b>0.054</b>	0.1183	0.4072	0.5326	0.9199	0.194	0.7609
Sugar	-0.06	<b>-0.6129</b>	0.2945	0.0446	0.2221	0.0473	-0.2805	<b>-0.3804</b>	0.061	0.0042
	0.7445	<b>0.0002</b>	0.1018	0.8083	0.2218	0.797	0.12	<b>0.0317</b>	0.7403	0.9819
Coffee	0.1947	-0.2765	<b>0.4014</b>	0.1813	-0.0731	0.1698	0.221	0.093	<b>0.4336</b>	<b>0.3923</b>
	0.2856	0.1255	<b>0.0228</b>	0.3207	0.6911	0.3529	0.2242	0.6129	<b>0.0132</b>	<b>0.0264</b>

**Source: Authors' calculations**

<sup>3</sup>In Table 4, correlation coefficients between variables are in upper row while p-values are placed in second row for each variable.

In next section data will be analysed by using an econometric panel data model. *An appropriate way of carrying out evaluation of price determinants for Flour, Milk, Eggs, Butter, Oil and Sugar was pooled ordinary least squares method (OLS) according to LM test, while Hausman specification test results have indicated fixed effects model (FE) for the variable Bread, Pork, Chicken and Coffee (Table 5).*

**Table 5: Hausman test and LM test**

Model	Dependent Variable	Hausman test		Models for the panel analysis	LM test		Models for the panel analysis
		chi2 (10)	Prob > chi2		chibar2 (01)	Prob > chibar2	
Model 1	Flour	15.97	0.1005	Random	0.00	1.0000	OLS
Model 2	Bread	26.77	0.0028	Fixed	/	/	Fixed
Model 3	Pork	19.24	0.0373	Fixed	/	/	Fixed
Model 4	Chicken	56.83	0.0000	Fixed	/	/	Fixed
Model 5	Milk	3.19	0.9765	Random	0.00	1.0000	OLS
Model 6	Eggs	12.94	0.2271	Random	0.00	1.0000	OLS
Model 7	Butter	15.85	0.1039	Random	0.00	1.0000	OLS
Model 8	Oil	11.34	0.3319	Random	0.00	1.0000	OLS
Model 9	Sugar	7.66	0.6624	Random	0.00	1.0000	OLS
Model 10	Coffee	23.27	0.0098	Fixed	/	/	Fixed

**Source:** Authors' calculations

The panel data models for analyzing the effect of economic freedom on price of chosen basic food products in V4 countries are presented in following tables (from Table 6 to Table 15). Regressions are computed using the OLS and FE techniques. For all models, the coefficients F-statistics indicating (in)significance of the coefficient at 5%.

**Table 6: Model 1 (OLS) – dependent variable Flour**

Flour	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	.0067503	.002343	2.88	0.009	.0018776	.0116229
F_CORU	.0006281	.002981	0.21	0.835	-.0055713	.0068274
F_FIS	.0134391	.0049838	2.70	0.014	.0030748	.0238033
F_GOV	-.0045295	.0017083	-2.65	0.015	-.0080821	-.0009769
F_BUS	-.0058498	.003501	-1.67	0.110	-.0131305	.0014309
F_LAB	-.0058185	.0024136	-2.41	0.025	-.0108378	-.0007992
F_MON	-.0004888	.0048607	-0.10	0.921	-.0105972	.0096196
F_TR	-.0603535	.0192095	-3.14	0.005	-.1003019	-.0204052
F_INV	.0041416	.0033831	1.22	0.234	-.002894	.0111772
F_FIN	-.0083369	.0041114	-2.03	0.055	-.016887	.0002131
cons	5.587407	1.586109	3.52	0.002	2.288912	8.885902
F (10, 21) = 3.46		Prob > F = 0.0079			R <sup>2</sup> = 0.6224 AdjR <sup>2</sup> =0.4426	

**Source:** Authors' calculations

According to the F test, Model 1 (Table 6) fits the data ( $F=3.46$  and  $p<0.0079$ ).  $R^2$  is 0.4426, which means that this model covers 44.26% of the variance of the dependent variable Flour. The variables F\_PROP, F\_FIS, F\_GOV, F\_LAB and F\_TR contribute significantly to this model ( $p = 0.009, 0.014, 0.015, 0.025, 0.005$  respectively), although F\_GOV, F\_LAB and F\_TR have negative impact.

Table 7 presents regression computed by OLS technique, where dependent variable is Bread. Model 2 covers 69.88% of the variance of the dependent variable Bread ( $R^2$  between = 0.6988).<sup>4</sup> Only F\_PROP ( $p=0.047$ ) positively and F\_TR ( $p=0.037$ ) negatively influence the dependent variable Bread.

**Table 7: Model 2 (FE) – dependent variable Bread**

Bread	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	.00769	.0036134	2.13	0.047	-.0000986	.0152814
F_CORU	-.0029501	.0035675	-0.83	0.419	-.0104452	.004545
F_FIS	.0096733	.0050839	1.90	0.073	-.0010075	.0203541
F_GOV	-.0051429	.0034614	-1.49	0.155	-.0124151	.0021293
F_BUS	-.0059361	.0071437	-0.83	0.417	-.0209444	.0090722
F_LAB	-.001907	.0027878	-0.68	0.503	-.0077639	.0039499
F_MON	.0024577	.0048695	0.50	0.620	-.0077727	.012688
F_TR	-.0491725	.0218706	-2.25	0.037	-.0951209	-.0032242
F_INV	.0026051	.0040451	0.64	0.528	-.0058934	.0111036
F_FIN	.0081836	.0074139	1.10	0.284	-.0073924	.0237596
_cons	4.020764	1.856103	2.17	0.044	.1212356	7.920293
F (3, 18) = 8.35		Prob > F = 0.0011			R <sup>2</sup> (within) = 0.5862 R <sup>2</sup> (between) = 0.6988	

**Source:** Authors' calculations

Examination of the impact to price of pork is presented in Model 3 (Table 8). The explanatory power of the Model 3 is 84.30% ( $R^2$  within). Variable Pork depends positively and statistical significantly from independents F\_FIS ( $p=0.018$ ) and F\_INV ( $p=0.000$ ), and have strong negative effects from F\_TR ( $p=0.000$ ) but also from F\_GOV ( $p=0.007$ ) and F\_MON ( $p=0.010$ ).

Fixed effect Model 4 has much larger part of the variation in prices within countries, so the value of  $R^2$  (within) is 0.8248 meaning that model covers 82.48% of the variance of the dependent variable Chicken (Table 9).

<sup>4</sup>Since the regression model explains a much larger part of the variation in prices between countries, it is presented the value of  $R^2$  (between).



**Table 8: Model 3 (FE) – dependent variable Pork**

Pork	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	-.0150151	.0086707	-1.73	0.100	-.0332316	.0032014
F_CORU	-.0113215	.0085607	-1.32	0.203	-.029307	.0066639
F_FIS	.0317603	.0121994	2.60	0.018	.0061302	.0573903
F_GOV	-.02534	.0083062	-3.05	0.007	-.0427906	-.0078894
F_BUS	-.017519	.0171422	-1.02	0.320	-.0535334	.0184953
F_LAB	.0095093	.0066896	1.42	0.172	-.004545	.0235637
F_MON	-.0334391	.0116849	-2.86	0.010	-.0579882	-.00889
F_TR	-.3266842	.0524812	-6.22	0.000	-.4369431	-.2164253
F_INV	.0524479	.0097068	5.40	0.000	.0320546	.0728411
F_FIN	.0005337	.0177905	0.03	0.976	-.0368428	.0379103
_cons	32.09683	4.453955	7.21	0.000	22.73942	41.45424
F (3, 18) = 5.74		Prob > F = 0.0061			R <sup>2</sup> (within) = 0.8430 R <sup>2</sup> (between) = 0.7526	

**Source:** Authors' calculations

Dependent variables F\_FIS (p=0.018), and F\_INV (p=0.000) are found to have a significantly positive effect on Chicken, while F\_CORU, F\_GOV, F\_BUS, F\_MON and F\_TR (p= 0.012, 0.017, 0.011, 0.046, 0.005, respectively) is showing negative relationship with dependant variable (Table 9).

**Table 9: Model 4 (FE) – dependent variable Chicken**

Chicken	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	.0068494	.0044193	1.55	0.139	-.0024353	.016134
F_CORU	-.0121786	.0043633	-2.79	0.012	-.0213455	-.0030118
F_FIS	.0161901	.0062178	2.60	0.018	.0031269	.0292533
F_GOV	-.011112	.0042335	-2.62	0.017	-.0200063	-.0022177
F_BUS	-.0247519	.0087371	-2.83	0.011	-.0431078	-.006396
F_LAB	.0039534	.0034096	1.16	0.261	-.0032099	.0111166
F_MON	-.0127403	.0059556	-2.14	0.046	-.0252526	-.0002281
F_TR	-.0844432	.0267488	-3.16	0.005	-.1406402	-.0282461
F_INV	.0255508	.0049474	5.16	0.000	.0151568	.0359449
F_FIN	.0161043	.0090675	1.78	0.093	-.0029459	.0351545
_cons	8.569364	2.270104	3.77	0.001	3.800052	13.33868
F (3, 18) = 13.81		Prob > F = 0.0001			R <sup>2</sup> (within) = 0.8248 R <sup>2</sup> (between) = 0.3125	

**Source:** Authors' calculations

Model 5 (Table 10) fits the data ( $F=9.36$  and  $p<0.0000$ ) and it covers 81.68% of the variance of the dependent variable Milk. As in previous model (4), only  $F\_FIS$  ( $p=0.021$ ) and  $F\_INV$  ( $p=0.000$ ) are found to have a significantly positive impact on dependent variable Milk, while  $F\_CORU$ ,  $F\_GOV$ ,  $F\_BUS$ ,  $F\_TR$  and this time  $F\_LAB$  is showing negative relationship with dependant variable ( $p=0.001$ ,  $0.001$ ,  $0.004$ ,  $0.006$ ,  $0.040$ , respectively).

**Table 10:** *Model 5 (OLS) – dependent variable Milk*

Milk	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	-.0004236	.0020064	-0.21	0.835	-.0045962	.003749
F_CORU	-.0099716	.0025527	-3.91	0.001	-.0152803	-.0046628
F_FIS	.0106605	.0042678	2.50	0.021	.0017852	.0195358
F_GOV	-.0056318	.0014629	-3.85	0.001	-.008674	-.0025896
F_BUS	-.0096266	.002998	-3.21	0.004	-.0158614	-.0033919
F_LAB	-.0045234	.0020668	-2.19	0.040	-.0088216	-.0002252
F_MON	-.0043118	.0041624	-1.04	0.312	-.012968	.0043444
F_TR	-.049857	.0164498	-3.03	0.006	-.0840664	-.0156477
F_INV	.016383	.0028971	5.65	0.000	.0103581	.0224079
F_FIN	-.0011603	.0035207	-0.33	0.745	-.008482	.0061615
_cons	5.240542	1.358248	3.86	0.001	2.415912	8.065173
F (10, 21) = 9.36		Prob > F = 0.0000			R <sup>2</sup> = 0.8168 Adj R <sup>2</sup> = 0.7296	

**Source:** *Authors' calculations*

The explanatory power of the Model 6 (Table 11) is 72.96%, and it fits the data ( $F=4.17$  and  $p<0.0028$ ). In model 6,  $F\_INV$  have positive and statistically significant coefficients ( $p=0.010$ ),  $F\_LAB$  has negative effect on dependent variable Eggs ( $p=0.049$ ), while other variables are not significant throughout specification.

**Table 11: Model 6 (OLS) – dependent variable Eggs**

Eggs	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	-.0086634	.0076279	-1.14	0.269	-.0245266	.0071997
F_CORU	-.0160512	.0097048	-1.65	0.113	-.0362335	.004131
F_FIS	.017477	.0162249	1.08	0.294	-.0162645	.0512186
F_GOV	-.0017675	.0055614	-0.32	0.754	-.0133331	.0097982
F_BUS	-.0209177	.0113977	-1.84	0.081	-.0446204	.0027851
F_LAB	-.0164407	.0078575	-2.09	0.049	-.0327814	-.0001001
F_MON	-.0279989	.0158243	-1.77	0.091	-.0609074	.0049096
F_TR	-.0221287	.0625377	-0.35	0.727	-.1521829	.1079255
F_INV	.0311984	.011014	2.83	0.010	.0082935	.0541032
F_FIN	.0017209	.0133848	0.13	0.899	-.0261142	.0295561
_cons	5.628304	5.163674	1.09	0.288	-5.110145	16.36675
F (10, 21) = 4.17		Prob > F = 0.0028			R <sup>2</sup> = 0.6653 Adj R <sup>2</sup> = 0.5060	

**Source:** Authors' calculations

Four sub-indexes have shown significant impact on dependent variable Butter (Table 12). That are F\_PROP (p= 0.006), F\_CORU (p=0.034), F\_GOV (p=0.003) and F\_INV (p=0.000), but just last one has positive influence. Model 7 fits the data (F=17.0 and p<0.0000) and the explanatory power of the model is high 83.77%.

**Table 12: Model 7 (OLS) – dependent variable Butter**

Butter	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	-.0178518	.0058765	-3.04	0.006	-.0300726	-.005631
F_CORU	-.0169048	.0074765	-2.26	0.034	-.0324529	-.0013566
F_FIS	.018222	.0124995	1.46	0.160	-.0077721	.0442161
F_GOV	-.0144229	.0042845	-3.37	0.003	-.023333	-.0055129
F_BUS	.0114567	.0087806	1.30	0.206	-.0068037	.029717
F_LAB	-.0080958	.0060534	-1.34	0.195	-.0206844	.0044928
F_MON	-.0081127	.0121909	-0.67	0.513	-.033465	.0172396
F_TR	-.0954486	.0481783	-1.98	0.061	-.195641	.0047438
F_INV	.0479047	.0084851	5.65	0.000	.0302591	.0655503
F_FIN	-.0098287	.0103115	-0.95	0.351	-.0312726	.0116152
_cons	8.617843	3.978039	2.17	0.042	.3450578	16.89063
F (10,21) = 17.00		Prob > F = 0.0000			R <sup>2</sup> = 0.8900 Adj R <sup>2</sup> = 0.8377	

**Source:** Authors' calculations

Just two sub-indexes have statistically significant coefficients: F\_CORU ( $p=0.073$ ) and F\_FIS ( $p=0.062$ ) in relationship with the dependent variable Oil. Model 8 (Table 13) fits the data ( $F=2.87$  and  $p<0.0200$ ), but the explanatory power of the model is rather small 37.66%.

**Table 13:** Model 8 (OLS) – dependent variable Oil

Oil	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	.0044764	.0058898	0.76	0.456	-.007772	.0167249
F_CORU	-.0141199	.0074934	-1.88	0.073	-.0297034	.0014635
F_FIS	.0247471	.0125278	1.98	0.062	-.0013059	.0508001
F_GOV	.00207	.0042942	0.48	0.635	-.0068602	.0110002
F_BUS	.0076803	.0088005	0.87	0.393	-.0106215	.025982
F_LAB	-.0074306	.0060671	-1.22	0.234	-.0200478	.0051865
F_MON	-.0076034	.0122185	-0.62	0.540	-.0330132	.0178064
F_TR	-.0265725	.0482875	-0.55	0.588	-.1269919	.073847
F_INV	.0053113	.0085043	0.62	0.539	-.0123744	.0229969
F_FIN	-.0103213	.0103348	-1.00	0.329	-.0318138	.0111711
_cons	3.225921	3.987054	0.81	0.428	-5.065612	11.51745
F (10, 21) = 2.87		Prob > F = 0.0200			R <sup>2</sup> = 0.5777 Adj R <sup>2</sup> = 0.3766	

**Source:** Authors' calculations

In Table 14 is presented Model 9 that examines impact of 10 sub-indexes on the dependent variable Sugar. While F test shows that model fits the data ( $F = 4.31$  and  $p<0.0023$ ), the model covers 51.60% of the variance of the dependent variable Sugar. Variables F\_CORU and F\_TR have negative sign, while F\_FIS positively impact on dependent variable.

**Table 14:** Model 9 (OLS) – dependent variable Sugar

Sugar	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	.0056758	.0044251	1.28	0.214	-.0035268	.0148784
F_CORU	-.0185983	.00563	-3.30	0.003	-.0303065	-.0068901
F_FIS	.0265049	.0094125	2.82	0.010	.0069306	.0460792
F_GOV	-.0048851	.0032263	-1.51	0.145	-.0115946	.0018244
F_BUS	-.0002884	.0066121	-0.04	0.966	-.0140389	.0134622
F_LAB	-.0071041	.0045583	-1.56	0.134	-.0165837	.0023755
F_MON	-.0132496	.0091801	-1.44	0.164	-.0323406	.0058414
F_TR	-.0792955	.0362796	-2.19	0.040	-.1547431	-.003848
F_INV	.0013419	.0063895	0.21	0.836	-.0119458	.0146295
F_FIN	-.0058605	.0077648	-0.75	0.459	-.0220083	.0102874
_cons	8.335299	2.995572	2.78	0.011	2.105667	14.56493
F (10, 21) = 4.31		Prob > F = 0.0023			R <sup>2</sup> = 0.6721 Adj R <sup>2</sup> = 0.5160	

**Source:** Authors' calculations

The last one, Model 10, shows positive and significant effect of four elements of economic freedom on dependent variable Coffee (F\_PROP, F\_FIS, F\_INV and F\_FIN), and three sub-indexes (F\_CORU, F\_GOV and F\_BUS) affect it negatively (Table 15). The model with the greater R-squared value is „within“, so it covers 75.65% of the variance of the dependent variable Coffee.

**Table 15:** *Model 10 (FE) – dependent variable Coffee*

Coffee	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
F_PROP	.1511996	.052992	2.85	0.011	.0398676	.2625315
F_CORU	-.1759892	.0523198	-3.36	0.003	-.2859089	-.0660694
F_FIS	.204833	.074558	2.75	0.013	.0481926	.3614735
F_GOV	-.1308874	.0507639	-2.58	0.019	-.2375383	-.0242364
F_BUS	-.311204	.1047661	-2.97	0.008	-.5313094	-.0910987
F_LAB	.0259248	.0408842	0.63	0.534	-.0599698	.1118193
F_MON	.0003736	.0714135	0.01	0.996	-.1496605	.1504077
F_TR	.2089335	.3207441	0.65	0.523	-.4649248	.8827918
F_INV	.1274308	.0593241	2.15	0.046	.0027955	.2520661
F_FIN	.3432781	.1087287	3.16	0.005	.1148476	.5717085
_cons	-33.53672	27.22079	-1.23	0.234	-90.72548	23.65203
F (3, 18) = 7.16		Prob > F = 0.0023			R <sup>2</sup> (within) = 0.7565 R <sup>2</sup> (between) = 0.3429	

**Source:** *Authors' calculations*

## Discussion and conclusion

In this study, the effect of economic freedom on market prices of basic food products was tested for four *Visegrad Group countries* over the period from middle 2007 to middle 2015 by utilizing panel data. Carried out based on index of economic freedom by Heritage foundation, the fixed effects model and *pooled ordinary least squares* estimation coefficients exhibit different signs and the variables are not significant in all models regressions.

While protection of property rights showed different effects, the increase of freedom from corruption would lower the price of food products (and vice versa), what already has been indicated from the correlation analysis. Confirming the results of the correlation analysis, fiscal freedom has shown to has a significant positive effect on most food products. This result was expected, considering that lower taxes burden means lower prices of goods. The second element of the pillar government size, government spending,

was found to have negative impact on prices of six products. The high level of government spending, that is characteristic of all V4 countries, means a lower level of economic freedom, that is shown to affect negatively on prices of basic food products. In both analysis, correlative and panel, elements of the pillar regulatory efficiency, did not show statistically significant results. One sub-index of that pillar – monetary freedom, has indicate to have negative and statistical significant effects on prices of meat, meaning that rise of monetary freedom affect prices of meat to go down. This is not surprise at all, considering that lack of monetary freedom means price control by the state including subsidies that lower prices. Trade freedom has negative sign in regressions with prices of six food products. This means that openness of market and absence of tariff and non-tariff barriers are foundation of Visegrad and European union are manifested in drop of the prices of most of food products in grouped counties. On the other hand, investment freedom accomplish positive effect on prices of six food products, meaning that rise of investment freedom leads to higher prices in V4 countries. To conclude, most susceptible to different (positive and negative) impact of economic freedom are chicken, milk and coffee (seven elements of economic freedom affects them).

In the scientific community, it is (still) a big dilemma whether economic freedom is positive or negative category. This requires more research in order to prove and provide relevant evidence of impact of economic freedom especially on the microeconomic indicators.

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**THEMATIC SECTION II**

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***THE IMPLEMENTATION OF ICT  
IN ECONOMIC DEVELOPMENT***



# E-LEARNING MATERIAL FROM THE EFFECTIVENESS TO THE ECONOMICS

*Marjan Krašna*<sup>1</sup>

## Abstract

*More than a decade has passed since we first introduced e-learning materials at the university level education in Slovenia. Contemporary student population consists of grown up “digi-kids” who are familiar with the e-learning materials. Up until now lecturers used LCMS for communication and document sharing. But it has become evident that this is not enough and the upgrade of e-learning material is required. It is evident that this process will take time and should be efficient from all perspectives (didactically suitable, cheap, and fast). In the last year e-learning materials have been prepared for students to identify what suits them the most. A lecture for a whole course was prepared with the different composition of text, sound and video. The article presents the learning materials specification, expected didactical results, aesthetical considerations, individual preferences (visual, audio, kinaesthetic). The student workshop was prepared to provide the didactical analysis of the learning materials to find out the best one and the good-enough one. We have discovered that a simple addition to the slides can enhance students’ performance, it is cheap, and does not require more elaborate ICT skills from lecturers.*

**Keywords:** *distance education, e-learning, learning materials, design, verification and validation*

## Introduction

More than two decades have passed since we started to prepare web learning materials (Krašna & Gerlič, 1999). We have learned a lot to become proficient in the preparation of e-learning materials. Enthusiasts who want to learn something always pave the way for others. However, the all-out production, necessary for the paradigm shift, cannot be done like

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pilot projects. Production is not just a digitalization of the learning material (Hutchings, et al., 1992). Close work with the authors and developers need to be established and ideas negotiated (Bresciani & Lima, 2004) (Vovk-Korže, 2010). Afterwards the learning materials should be used according to the predefined plan and regular maintenance is necessary for quality assurance; technology acceptance; and user satisfaction (Navimipour & Soltani, 2016). The economics, generally omitted in the pilot project, becomes a constraint. What are the incentives for lecturers to start using e-learning materials? We know that any new course requires huge effort to establish it. Sometimes it takes hours to find the errors/faults in the manuals for a few second long explanation during the lectures. The multimedia materials production is labor intensive and demanding (Kaaip & Defelice, 2009). Rarely lecturers have knowledge and skills to do it by themselves. The methodology to evaluate lecturers' work is still based on contact hours, in the classroom, in front of the students. Even students know that this is an obsolete criterion but the legislators are reluctant to change anything. Therefore additional work of the lecturers is not paid.

Could less work in the next years lecturing be the incentive? Many old lecturers express reasonable fear and doubt. If they prepare self-explaining, user friendly, and complete learning materials, they are not needed any more. We know that this is not entirely true but they will definitely not be paid for their production and later they will be paid less because each repetition does not require the same amount of effort as traditional lecturing. The headmaster may lower the contact hours for lecturers who have good learning materials because they need less contact with students for the same learning outcomes. The learning materials produced for the educational institution are intellectual property of the lecturer but the material rights are benefits of the institution.

The change therefore requires mass scale production of learning materials and willing lecturers. Contemporary employment structure is generally insufficient (Chapman, 2010) and therefore this is just a glimpse of the brighter future. Despite shortcomings, something can be done and the rest of the article is dedicated to present the plausible outcomes and plans.

We ought to be always one step ahead in the anticipation of what is going to be technologically feasible and acceptable by students. We are well aware of the students' ICT paradox (Kaučič, Ramšak, & Krašna, 2011). The older the students are, the less they are familiar with the technology, and more they are conservative in their preferences.

Today the ICT infrastructure enables us to use video in education (Krašna, Bratina, & Gerlič, 2003)(Krašna & Bratina, 2004)(Krašna & Bratina, 2006)(Bratina & Krašna, 2008). Combination of information streams in the learning materials can produce the information overflow (Krašna & Gerlič, 2002). What was once inherent aesthetic achievement is now considered dull and unsuitable for learning and aesthetic principles need to be applied to the production of learning materials (Riaz & Mushtaq, 2016).

In 2008 European Social Fund and Ministry of Education and Sport of Slovenia (E-environmental studies for Primary schools (slv. E-spoznavanje okolja za OŠ), 2008) funded projects for development of e-learning materials for primary and secondary schools. The team was established and project started with tight schedule and various technological constraints. We have managed to prepare e-learning materials for primary and secondary schools and discover many pitfalls of distance education. Learning material was not enough for successful distance learning. Two years later (2010) the production of e-learning materials was refined and more suitable for all participants in the educational processes – especially for teachers (Vovk-Korže, 2010). We have learned that the success of the learning materials depends on the teachers' will to acceptance them.

In the meantime, the university level education had no such projects to introduce e-learning materials to their study programs. Everything was left to the individuals who wanted to do something more than regular lectures. The acquired knowledge and skills cannot be directly transferred from the lower level of education to the university level. The need to specify the students' are therefore in order.

### **Introduction: students' description**

It is our educational goal to achieve the best possible outcome for our students during their university education. University level students are not the same as the students in the lower levels of education. Individual characteristics should be used for the analysis instead of the mean value of measurement gathered with the survey (Cochran, Campbell, Baker, & Leeds, 2014). They know that there is no need for them to finish their studies and they are in the final stage of educational processes. Today they are all member of the “digital kids” generation and they are proficient ICT users. The lectures are not the same. They accepted ICT in their later years

and some still have problems with the fundamentals. Therefore, we have now generations of students who experienced all. From highly blended electronic courses to the traditional textbook based courses. But the steady growth of courses in the LMS (Moodle) is unstoppable process. In our plan for the future we therefore set goals in different levels of achievements for lecturers:

- use of Moodle for the communication purposes,
- use of Moodle for the dissemination processes,
- use of Moodle for the repository of the students work, and
- advanced use of Moodle.

We now have full spectrum of the lecturers' positions in the levels of achievements. Mostly in the first two levels though.

Students use all sorts of portable devices (laptops/tablets/phones) in our halls and corridors during their free time. Inside the classroom, we see that students rarely use a computer and they write far less notes than before. Students admit that they type faster than they write text by hand but our classroom equipment, especially electric outlets, did not follow new needs; batteries still do not last for a whole day. Implicitly they only listen to the lecturers and access learning materials on the web later. We have acquired deep insight to the different groups of students from general pedagogy, art education and elementary education (Krašna, Duh, & Bratina, 2014). Despite students of different groups are different in the use of ICT, they are proficient enough to use it in the daily communication, social networking and educational activities. They all want e-learning materials and they want them all in one place.

During the laboratory work in computer room, they access the learning materials in the LMS but the number of accesses increases before the exam and seminar work submission deadlines. Students use computers for word processing and communication. Much less computers are used for preparation of multimedia elements, learning materials and use of LMS (Moodle) for their study and pedagogical practice but the steady increase is perceived in last few years (Bratina, 2017). We suspect that the new version of Moodle may have the positive effect on that.

For formal communication with the lecturers e-mails are used. Informal communication between colleagues and other acquaintances is done in social networks and mobile communication (phone calls or SMS).

## **E-Learning Materials Production**

Our students are accustomed to the use of LMS Moodle and different types of learning materials. But those materials are generally all in separate files. We want to break this tradition and prepare learning materials differently. From the review of courses in our Moodle it is clear that courses mainly have learning materials in PDF, Word and PowerPoint files. Much less often additional types of learning materials are used (Excel, SPSS, images, and animations outside PowerPoint). Rarely lecturers use video learning materials and video lectures. Video in education may be didactically controversial. A link to the YouTube video that lasts for an hour where the important part of the video for the students is only five minutes somewhere in between is not favourable in the eyes of our students. Right composition and volume of data is crucial. In the past we discovered that we need to use different types of e-learning materials to boost the assimilation level but we need carefully orchestrated environment not to trigger information overload (Krašna & Gerlič, 2002).

Most of the students start their study from the PowerPoint presentations and some students regrettably even stay there (they do not use any other materials). PowerPoint should be used as a reminder and table of content of the lecture. The knowledge behind the slides is presented by the lecturer and/or can be found in the textbooks. But some lecturers prepare their PowerPoint presentations with the full text. Despite the bad taste of such presentations students actually like them. To pass the exam they often need no additional literature, web sources, journals and textbooks. From aesthetic perspective, such presentations are rubbish and bad didactical practice. From practical viewpoint, they should be banned because some students actually think that this is the “right way” to produce presentations. This bad influence can be seen at the diploma theses presentations.

Our task was therefore not only to prepare learning material that is suitable for students but also present the good practice how to prepare e-learning materials and slides. We know who will use our learning materials therefore we could make a mental modelling of the intended users.

We have decided to prepare learning materials in blended learning paradigm. Blended learning materials is good for those who attended the lectures and want additional explanations. In some occasions, they can be used for self-study but little less successful without additional learning materials.

One would argue that with the better learning materials we make students even more passive than they already are but the efficiency is the only thing that counts. If it is hard for students to switch from one learning material to another due to different reasons why not ease this step. Regarding the research that shows increased efficiency in working with a larger monitor or two monitors (Core Communication, 2010) due to more visible information on the screen; we therefore decide to prepare *integrated learning materials*.

In the preparation of integrated e-learning materials we wanted to address different aspects: technical, practical, didactical and aesthetical.

Simple procedure and use of known tools were desired because we would need to support many courses.

### **Learning materials: Technical aspect**

In recent years, there are shifts in the computer market. Number of sold PCs declines and number of different tablets sale raises. Therefore, our learning materials should be available for computers, tablets and smart phones.

Previous available technology, Adobe Flash technology, is not supported anymore and the new technology HTML5 has some drawbacks. We still have to figure out how to made resizable viewport for equal presentation of learning content on different screen sizes. The browsers are generally HTML5 compatible but there are some differences in the presentation of media content.

### **Learning materials: Practical aspect**

Reusability is the key principle in the software development, highly criticized in the texts (due to plagiarism), but economically justifiable in the production of e-learning materials. Reusability of “old” learning materials is not easy since authoring tools for HTML5 are scarce and manual work is expensive. Conversion from PowerPoint to HTML5 is getting better but results still lack some features. Hype authoring tool for HTML5 works on MacOS only and the produced HTML5 is hard to change outside the tool.

The research among our students shows that they are fairly satisfied with the PDF files of presentations therefore we do not need to pay too much attention



to the dynamic part of the presentation. Static presentations simplify our job significantly. Specific post processing is performed later only on the parts that require special attention. This compromise enables us to reuse already made learning materials. Authors upgrade their existing PowerPoint presentations with the notes text. This PowerPoint can later be transcoded to HTML5. We managed to prepare the two hours blended learning materials in less than 2 hours if all multimedia components were available.

### **Learning materials: Didactical aspect**

We deal with the students who already have highly developed studying principles and we do not need to teach them how to study. In the preparation of e-learning materials we need to consider time constraint – topics should not require more than 15 min to process and we need to provide clear and unambiguous explanations. We can add outside sources and links to additional materials but for the time management it is still desired to include the most important components into the package.

From the feedback of the students about the learning materials, we discovered they do not care much about the form of learning materials. They are happy with PDF files but switch to additional materials is distracting for them. Either they skip the additional materials when reading the text and study it later; or they do go visit other materials and have problems returning. Even if they are using web daily they still have problems with browsing. By design the author can open a link in the same window or in the new window. Browsers in general do not allow opening a new window rather they open a new tab instead. In the process of high concentration users too often close the window after reading the content of the tab and not only the current tab. In these occasions they cannot get back to the text they are supposed to study further. These findings show that additional effort is required to ensure the position where to continue to study. Such unwanted pauses lower the efficiency of the study process.

Though we have not yet fully tested the new e-learning materials we have tested the components. We know that video is good for teaching skills. Sound is quite effective because it can be used where other types of learning materials are less appropriate (busses and walking). Text can be read on mobile phones. On the other hand, we discovered that even if we record the lecturer in the classroom and upload the video on the web students rarely watch such videos (Krašna, Duh, & Bratina, 2014). The length of a video recording should therefore be limited to 5 min.

## Learning materials: Aesthetical aspect

In the e-learning materials each screen needs to be designed according to the multiple parameters: technical, didactical, and aesthetical. Creatively designed e-learning materials must have the following characteristics: (Krašna, Duh, & Bratina, 2014)

- *Applicable value* – assessed in pedagogical and didactical review;
- *Novelty* – new fresh idea, rarity, unusual and positive motivational impact;
- *Appropriateness* – material must meet the problem based teaching.

High quality visualization is not important only for aesthetic pleasure. It provides the integrity of the materials and learning for better processing of knowledge from e-learning materials. Contemporary upbringing and education build on the concept that activates auditory, haptic and visual perception. Those concepts therefore need to be fundamental parts of e-learning materials. Through long observation we perceived preference shift toward visual perception. It is known that processing of the same amount of information delivered through verbal messages takes more time than delivered through visual messages (Schuster, 2000). Therefore it is reasonable that authors extensively use visual perception activation concept in their e-learning materials design. The use of e-learning materials attracts visual capabilities. It requires an organized observation, mental, emotional and other activities for processing the visual stimuli. The text takes much more time for processing and visuals are therefore more effective (Berger, 2008).

Some authors (Duh & Krašna, 2009)(Neuhauser, 2010) recommend that designers of e-learning materials should prepare the answers to the following questions before they set the design concept:

1. What is the overall structure of the e-learning materials?
2. Is the content didactically appropriate and sufficiently reasonable?
3. How the information flows between screens from user perspective?
4. Can e-learning materials be used intuitively?
5. Which media elements are going to be used for the visualization of individual content?

Additional multimedia elements have broad cognitive, educational, cultural, technical and social functions. Didactically suitable structured e-learning materials have to be technically flawless and aesthetically pleasing in order to achieve pedagogical objectives. (Krašna, Duh, & Bratina, 2014)

## **Learning Materials and Student's Feedback Analysis**

E-learning materials for a course of 15 ECTS was made (15 hours lectures and 15 hours laboratory work). Apart from the lectures and laboratory work we also provide Moodle quizzes for self-assessment. Due to huge workload we did not provide the same topics in a different composition but we prepared different topics in a different composition (text, audio, video and integrated learning materials). Different compositions allow us to test the differences in human preferences on learning materials. In the LMS we uncovered links to the learning materials as we progressed through the course. Therefore, students have used all types of learning materials and could provide some personal feedback (time of study, suitability, personal preferences toward such type of learning materials, student's opinion on how to enhance the quality and suitability of learning materials). At the end of the course, we prepared the workshop where in an open discussion different types of learning materials were analyzed and different opinions were tested with arguments pro and against different aspects of learning materials. The outcomes of such workshops were the foundation of our research.

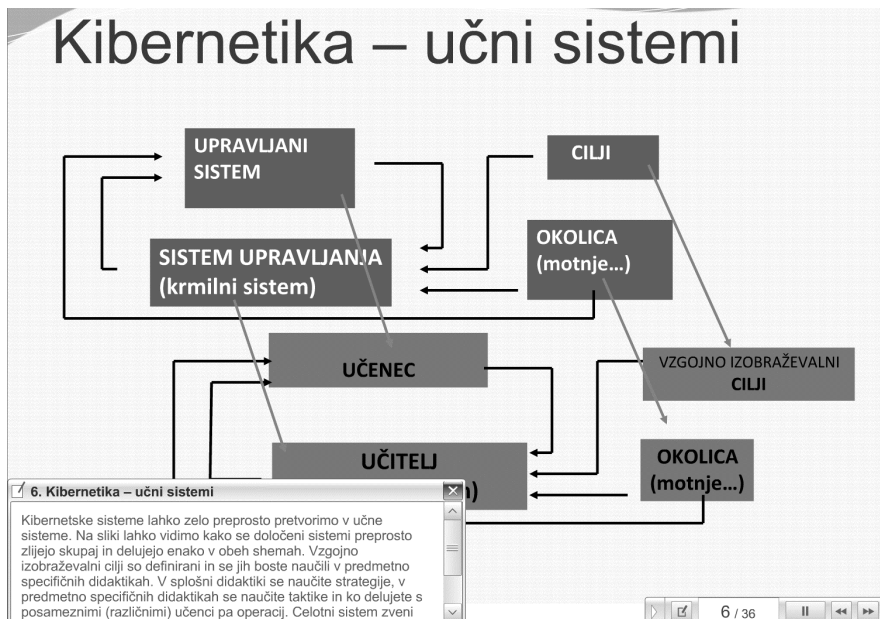
### **Learning materials description: Presentation and narrative text**

Two types of presentation and narrative text were available to the students:

- Flash presentation where narrative text is displayed on demand (
- Figure 1), and
- PDF where each slide is accompanied with the narrative text (
- Figure 2).

In these two types of e-learning materials we have tested students' preference toward text learning materials and different formats. Interestingly the students have opted for the PDF learning materials. In their eyes they are much cleaner and can be printed and later used for the notes. Some students, who were not at the lecture, did not find the additional text in the Flash learning materials altogether.

**Figure 1** Presentation and narrative text – Flash technology



**Figure 2** Presentation and narrative text – PDF file



Čeprav danes veliko govorimo o prostorskem zvoku je zanimivo to, da lahko zelo dober prostorski učinek dosežemo že s pomočjo stereo zvoka. Seveda moramo v takšnem primeru snemati tako kot bi slišali – s pomočjo umetne glave. Posnetek je neverjetno dober, doživeti pa ga je mogoče le z uporabo slušalk.

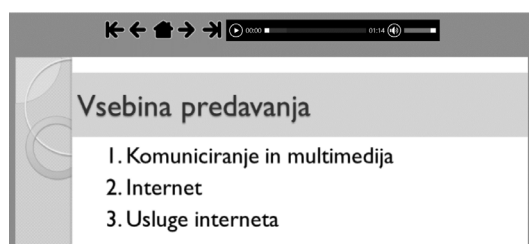
V prostoru namenjenem za več ljudi je potrebno posvetiti pozornost ozvočenju. Odvisno od velikosti prostora in števila poslušalcev je potrebno razmišljati o geometriji postavitve zvočnikov in jakosti zvoka posameznih zvočnikov.

## Learning materials description: Presentation and audio

Each slide in this presentation is accompanied with the audio that narrates the slide (Figure 3). To emphasize the value of audio we prepared slides with text only. This type of presentation has some advantages because everything is on one screen and no scrolling is needed. Students get feedback about the length of the audio on the audio control slider.

Students have a mixed feeling using this type of learning materials. Some loved them but generally, they are not accustomed to listen to the voice recordings while studying. It is wise not to record more than 5 minutes for one slide.

**Figure 3** *Presentation and audio narration*

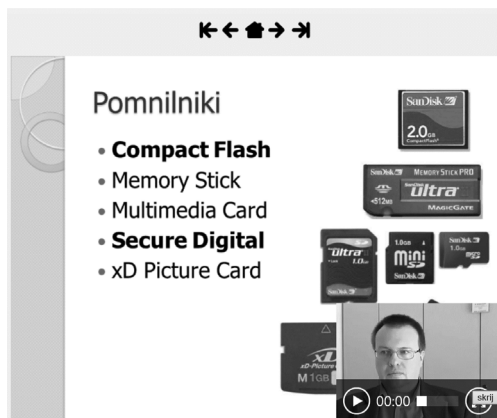


## Learning materials description: Presentation and video

Video was added to narrate each slide (Figure 4). Since video occupies space and covers the part of the slide we added the control to hide the video. Hidden video still plays sound and enables students to hear the narrated voice of the slide. We have prepared this type of presentation based on the observation of students' behavior. They would never watch the whole video but in this occasion it is cut to the smaller chunks that covers only one slide. All videos are in the time span of less than 5 minutes.

Students have the same feelings about the videos as they have them with the audio. Some students completely overlook the button to hide the video and they complained that video covered some parts of the slides when they have learned from the materials.

**Figure 4** Presentation and video narration



### Learning materials description: Integrated multimedia learning materials

This is probably the most favored type of learning materials (Figure 5). Its drawback is in scrolling. Reviewers who have experience with the design and development of e-learning materials give higher score to this type of e-learning materials. Such materials are probably easier to implement since we do not need to record the lecturer. The only thing we need is the narrated text and additional learning elements for the slides.

Students picked this type of learning materials as the best type for them. Despite they liked such type of learning materials they rarely visited the links for additional information below the presentation.

**Film**

Trak sličic (8, 16, 35, 70 mm)

Digitalno ali analogno?

1 mm2 filma  $\approx$  240 x 240 pixlov  
35 mm film = 35 x 24 mm2  $\approx$  50 Mpixlov

Zapiski:

Zgodovinsko gledano je film trak sličic skoraj povsem enak kot trak za fotografije. Kasneje so dodali še prostor za zvok pri filmskem traku. Odvisno od velikosti projekcijske slike lahko imamo filme različnih velikosti. Za domače predvajanje so imeli 8 mm trak, v kinu pa uporabljajo še danes 35 mm trak (velikost sličice 24x35mm), za izjemno velike projekcije (*preko vidnega polja človeka - IMAX*) pa uporabljajo 70 mm filmski trak.

Danes smo na prehodu iz analognega v digitalno filmografijo. Katera je boljša je še zmeraj debata. Nekateri režiserji imajo raje trak, drugi pa digitalno snemanje. Vsekakor pa je jasno, da ločljivost, ki je primerna za HD TV ni primerna za kino. V bodočnosti bo najverjetneje vse v digitalni obliki, ker imamo v filmih vedno več posebnih efektov, ki jih naredijo z računalniki (digitalno). Če je vse v digitalnem svetu potem ni velikih problemov pri pretvorbah.

**Figure 5** Integrated multimedia learning materials

## **Results: students' responses analysis**

Students in this experiment were the master degree students of special didactics disciplines (pre-service teachers). After the students studied all types of the learning materials, we had analytical discussion about learning materials. In a debate they all agreed that text narrated learning materials are more suitable for them because they are more similar to the traditional learning materials. Integrated multimedia learning materials with links to the additional materials and embedded (short) video was the best for them and they proved the concept. Video lectures and video narrated learning materials were time consuming despite some students advocates them. Students admit that watching the video lectures was difficult because they often find themselves in the state of daydreaming. The same thing happens in the classroom too but lecturer can detect students' fatigue and he has the ability to make a necessary break with the distraction elements that wakes them up.

The latest findings among younger students have shown that students are not fully satisfied with the PDF presentation of the lecture slides. They would rather have the slides in the text editors so they could type their own text. They type much faster than they write by hand.

## **Results: Work effort**

Lecturers who prepare slides use approximately the same amount of time to make text narratives or record themselves and insert media elements to the lectures. The text narratives are simpler because every teacher can do it. For multimedia learning materials special skills and some practice are needed. It can be done with the help of ICT support personnel if they are available. The time needed for the recording and preparation of learning materials is huge (Hotrum, 2015). Practically no one is able to record one lecture in a strait continuous process. Therefore, the video or audio narrations are made slide by slide. In our case, we have measured that we need from three (3) to 10 hours for 45-minute lecture (depending on the complexity of the learning topics) without postproduction.

## **Results: Effects of the multimedia learning materials**

The effect of high quality learning materials means also less attendance of students in the classroom. When students discovered that almost all the required knowledge were available to them online they started skipping

lectures and eventually started skipping their regular study of the materials too. This inevitably lowers the students' performance since they were unable to study all the materials before the exam. Their sense of time and their discipline is not yet developed to the extent that they would be able to start studying on time. It is therefore wise to use e-learning materials as blended learning and not as the replacement of the traditional teaching.

## **Conclusion**

University level students are highly skilled learners with established preferences in learning. Today students are known as digital natives. They type better than they write and they use ICT throughout the whole day for different purposes. They are accustomed to different types of learning materials and only the lack of handy portable devices still bound them to the paper.

University level education has never been funded for the production of e-learning materials. E-learning materials were therefore limited to most common types of files (PDF, Word, and PowerPoint) and students are accustomed to them.

In an effort to enhance e-learning material and achieve better students' studying performance we prepared different types of e-learning materials. To test students' preferences we combined presentation and different narration types (text, audio and video) and prepared the integrated multimedia learning materials. The latest – integrated multimedia learning materials were the best graded by the students but required the most human effort to design and develop. It is therefore impossible to prepare such learning materials for all courses upon a short notice. We should regard the transition not as a project but as a long-term program that can take even a decade. From the economic perspective, we know that we do not need perfect learning materials but good enough will do. Students are capable of studying from PDFs (slides and text) and with a little extra effort these PDFs can be upgraded. It is possible to add the description text to the PowerPoint slides and export them as PDF. Students have confirmed that such materials would enhance their learning outcomes. It would join study materials with the presentation and minimize the potential shortcomings of the lack of students' notes. The most important is that every lecturer would need very little additional ICT skills for a big step forward in the e-learning materials production.



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# COUNTRY POSITIONING WITH ICT – A CASE STUDY OF “E-STONIA”<sup>1</sup>

Árpád Papp-Vary<sup>2</sup>, Dragan Ilić<sup>3</sup>

## Abstract

*Several country branding organizations have been established over the last few years, and such organizations have been created in almost all countries. Although a lot of countries have started to brand themselves around the world, only a few of them have achieved breakthrough success. The essence of branding is distinction, but only a few countries have managed to actually position themselves, and present the features that distinguish them from others. However, there are some good examples. One of these countries is Estonia which in the early 2000s decided to become an “e-country”, i.e. a digital society. The leaders of the country even considered changing the name to E-stonia. Although the official name of the country remained the same, and the hyphen was not included in the English name, that “E” has become a dominant factor in people’s life: essentially all communication and developments are connected with electronics and information technology. As surprising as it may seem, there is also a chance that the concept will enable the country to increase the number of its residents to 10 million within a decade (compared to the current population of 1.3 million).*

**Keywords:** *country branding, marketing, positioning, ICT, Estonia, case study*

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<sup>1</sup>The publication has been created in the Budapest Metropolitan University subproject “*Versenyképesség a közszolgálatában*” (“*Competitiveness in public service*”) in the framework of the project *A jó kormányzást megalapozó közszolgálat-fejlesztés (Public Service Development Establishing Good Governance)* within the Közigazgatás- és Közszolgáltatás-fejlesztési Operatív Program (Public Administration and Public Services Development Operative Programme), KÖFOP-2.1.2.-VEKOP-15, coordinated by the National University of Public Service.

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## **The increasing importance of country branding**

In recent years, country image centres and country brand councils have been created all over Europe and the world. Their role is the same everywhere: to position the country, that is, to distinguish the country from its "competitors", create a uniform brand strategy, and harmonize various messages about the country.

Several sources state that Simon Anholt was the first who put the concepts of "nation brand" on paper in 1996, when, according to his own account, he was getting bored with spending his life making already rich companies a little bit richer (Rendon 2003) Therefore Anholt, having been engaged in the marketing of multinational companies (Coca-Cola, Nescafé), decided to start a completely new venture: he decided to specialize in this area. It does not mean that the theory or practice of nation branding (country branding) had been an overlooked topic before 1996, but its name was different at the time.

In 1993, a textbook on place marketing was published, which also dealt with countries: "Marketing Places: Attracting Investment, Industry, and Tourism to Cities, States and Nations". whose most important author was who else than Philip Kotler. However, if we take a broader perspective, national identity had always been mentioned in political geography, international relations, political science, cultural anthropology, social psychology, political philosophy, international law, sociology and historical science. Rather interestingly, university marketing experts and researchers had not devoted their attention to country brands, but brands from specific countries, that is, the "country of origin effect". For example, Papadopoulos and Heslop (2002) counted 766 significant CoO-effect publications from the previous 50 years, but also pointed out that there had not been appropriate surveys on the image of individual countries.

The great breakthrough was achieved by the Journal of Brand Management, which devoted a special issue to "nation branding" in 2002 (see Anholt 2002), with the publications of rewnowned authors such Philip Kotler, David Gertner, Nicolas Papadopoulos, Louise Heslop, Wally Olins, Fiona Gilmore and Creenagh Lodge. In November 2004, a separate academic journal named Place Branding was launched– today it is also called Place Branding and Public Diplomacy. Several books followed: Simon Anholt wrote three books, Brand New Justice (2005), Competitive Identity (2007), and Brand America (2004) co-written with Jeremy Hildreth. In 2008 a more "academic"

book titled Nation Branding was published, edited by Keith Dinnie. The field has also developed dynamically ever since, and books focusing on Central and Eastern Europe have also been published, for example "Branding Post-Communist Nations: Marketizing National Identities in the "New" Europe" edited by Nadia Kaneva, published in 2014.

Why do we need country branding or nation branding anyway? Mostly because "Nowadays nations are in fierce competition with each other in several fields including investments, export, and tourism. This is a new phenomenon. In the course of history, tourism has not been of great importance, investments have been limited to a relative narrow range of companies, and the export has covered generally only those national products which have been transported for a long time to the traditionally formed markets. Globalisation has reshaped the rules of the game here as well", Olins says (2004, p. 176). Yes, the struggle of countries is much more multifaceted than it was about 100 years ago. Meanwhile, the number of countries significantly increased, and – from an economic point of view – we can say that an increasing number of competitors appeared in the market. While the United Nations had 51 member states in 1945, their number is 193 today! (<http://www.un.org/en/sections/about-un/overview/index.html> 2017).

If we do not only mention the increase in the number of countries, but also consider that:

- democracy is gaining ground worldwide, which makes the work of governments more transparent,
- the role of international media is increasing, which also increases transparency: people are more well-informed than ever,
- travel costs are decreasing, while purchasing power is increasing,
- investment in other countries is becoming easier, you can "outsource" several activities,
- specific products may come from any countries worldwide,
- the demand for "brains", the most qualified workforce is increasing; moreover, countries are also competing for students,
- certain international organizations provide resources for states that are in need and "lobby" appropriately,
- mass media, telecommunications, and internet created the global village: we may receive a lot of information about a place immediately with a Google search,
- therefore borders disappear in a sense; the expressions "foreign country" and "foreigner" lose their meaning; everything is like visiting our neighbours in the neighbourhood...(Papp-Váry 2009)

We can also say that there is a new era in the competition of nations. Although military clashes are still common in certain regions of the world, in most places warfare is not carried on through traditional weapons, but tools of marketing (van Ham 2002b). The battlefield is no else than the mind of consumers. (Ries-Trout 1997).

This is the scene where each country tries to gain dominance and occupy as much area as possible, because this means tourists, investors, and more consumers purchasing the products of the country. Anholt and Hildreth (2004), Plavsak (2004), Vicente (2004), and Anholt (2005) call countries with a brand a "soft power", as opposed to previously established, revulsive "hard power" which is based on authority and violence. Therefore it is no accident that countries take over well-established global corporate strategies, because 51 of the 100 strongest economies in the world are not countries, but companies (Lindsay 2000, Wint-Wells 2000, Kyriacou-Cromwell 2001, Gilmore 2002). This is why they start to use country marketing and country branding.

### **The aims of country branding**

The primary aims of country branding are economic. The three main ideas are:

1. The promotion of tourism, and the attraction of tourists to the specific country.
2. The encouragement of investment coming in the country.
3. The development of export, and improved sales of the country's products on foreign markets.

Now let us examine these in a little more detail.

#### ***The promotion of tourism***

This is perhaps the most obvious aspect "because – in most cases – an attractive image of the country is the first step when choosing a destination" (see "Eladni az országot", Kreatív 2001). Therefore many people identify country branding with advertisements for foreign tourists (see Anholt 2005a, and Jenes 2005). Nevertheless, the system and aims of country branding and country image building are much more complex. This is also reflected in the expressions used in professional literature: the term "destination branding" used in tourism is part of "country branding" or, in an even broader sense, "place branding" (Anholt 2005b, p. 118.).

In fact, the industry of peace is increasing by 9% each year (Olins 2004a, p. 178.), and according to the World Travel Tourism Council (WTTC) it already produces 12 per cent of the world's GDP. A report by WTO says that 898 million people travelled to another country in 2007, and the number of people visiting other places in the world may be doubled by 2020. For many countries, tourism is actually the only way to rise. (For further statistics and contexts see: Kotler and Gertner 2004, WTO 2008).

Economically speaking, we have to point out that the most important aspect is not the number of tourists, but the amount of money they spend in the country. If a country is not only cheap, but can also develop into a real consumer brand "*laying greater emphasis on its art, culture, history, cuisine, architecture, landscape, and all other unique aspects*", it may result in less tourists visiting the country, but "*people coming here will spend more money*" (Olins 2004a, p. 179.).

As 70% of inbound tourism is divided among 15 countries, the other countries are in tough competition for the remaining 30%. Therefore branding is (also) essential for them: instead of an "outspend" strategy, that is, spending more than their competitors (what most of them are incapable of) they must use an "outsmart" strategy (Anholt 2005a, p. 88., Vicente 2004, p. 20.). One of the most useful promotion tools is the Internet, which provides global exposure for all countries at low costs (see Morgan, Pritchard and Pride 2004, p. 8.).

### ***The encouragement of investment***

Foreign investments also play an extremely important role in the rise of a country. It can also be clearly seen that this is all closely connected with branding, because "*an economy can only develop if investors arrive, but investors only arrive if they have a view of the country.*", says Olins (2004a, p. 183.).

It is no wonder that the World Bank publishes a 200-page guideline study each year (Marketing a Country: Promotion as a tool for attracting foreign investment), and the United States of America has also been publishing a similar publication titled Investment Promotion for quite a while. However, as Papadopoulos and Heslop point out (2002), only a few scientific publications have discussed the context between the country image/brand and decisions on foreign investments.



This would also be important, because, as Van Ham says (2002a, p. 5.), *"The emerging brand states of Europe realize that they all offer the same "product": territory, infrastructure, educated people, and an almost identical system of governance. Assertive branding is essential to stand out from the crowd."* Communications plays an extremely important role in the presentation of the brand as described above. As Burgess (1982) says (quoted by Ashworth and Voogd 1997, p. 233.), *"the most important factor in installation is the quality and nature of information about the areas in question"*.

### ***The development of export***

The most popular topic of professional literature, mentioned several times as country of origin effect, country of origin image, or made-in label. This is a field with a close connection between country brands and traditional commercial brands. Here and now it is worth to highlight that there are countries where the connection is clear: Coca-Cola and Nike are American, and Mercedes is German.

*"At the same time, there are several big and well-known countries with which we cannot associate any brands, for example, Canada, Turkey or Brazil, although these countries have considerable manufacturing industry, export a significant amount of goods, and are present on the international services market."* (Olins 2004a, p. 178.).

### ***Coordination***

If we examine the aims mentioned above, we may note that there is a "country branding" organization for all these purposes in each country. However, the root of the problem is that there is no central organization that would coordinate the activities mentioned above.

It can best be illustrated by the example of crabs caught from the sea. Fishermen have known for several hundred years that they can put crabs into an open basket, and leave them on the ship or the seashore. Although the crabs could crawl out with a little help from each other, they try to get out individually, and never manage to escape.

Some countries have already noticed this. For example, in Scotland, an umbrella organization called Scotland the Brand was created with the cooperation of the Scottish Tourist Board and the marketing organization

responsible for international commerce (Scottish Trade International, a division of Scottish Enterprise) (See Baker and Ballington, 2002, p. 164-166.). Later the campaign itself also used this name (see a writing by Vicente (2004, p. 11.) and the [www.scotlandthebrand.com](http://www.scotlandthebrand.com) website). Latvia also created a similar organization, the Latvian Institute, and (had it been created) the Country Brand Council of Hungary would also have had a coordinating role.

Nevertheless, these organizations also have difficulties with resolving a few contradictions. For example, each group may have a different view of the country image. One of the most important differences is that a country can be 'sold' to tourists with rural, old-fashioned, traditional photos, but investors look for an emphasis on high-tech, youth and dynamism.

Anyway, as Olins (2001) points out, you do not have to communicate something else, but the same thing a little differently. (*"You don't say different things, you say things a bit differently"*).

### ***Further benefits***

But let us return to aims. The Hungarian and international professional literature touches upon the fact that the above-mentioned three aims do not only stand up to scrutiny in an international sense.

The primary aims of country branding can also be interpreted in a domestic sense:

- The promotion of tourism also includes domestic tourism. The more attractive our own image of the country is, the more likely we will travel domestically.
- Investments can also be interpreted in a sense that national enterprises should stay in the country, and not relocate their seat and capacities, for example, to a neighbouring country. As Anholt (2005a, p. 85.), Papadopoulos and Heslop point out (2002, p. 302.), in several places foreign enterprises enjoy greater benefits than domestic ones. This is not necessarily a good strategy in the long run.
- The sales of a country's products should not only be increased in the international market, but domestically as well. There are two extremes in this regard: while Jaffe and Nebenzahl (2001) think that these campaigns are rarely effective, Baker and Ballington (2002) strongly claim that the "Buy Domestic" attitude does not only develop

the domestic market, but these brands gain momentum, and, having become stronger, achieve international success.

It is also important to point out that although the most important aims of country branding are economic, good country brands may have other additional effects. The international professional literature usually mentions two of these aspects.

### ***A greater role in international organizations and foreign policy***

Several authors do not include this point in the aims (and results) of country branding, because they think that this depends more on the size of the country and the population, economic recognition, etc. However though, there is a noticeable connection between the two: the perception of the country (that is, the brand image) may play a significant role in the accession to international organizations. *"The creation of a brand is not only desired from an economic point of view. It also has significant political and strategic implications that even affect the pace of NATO and EU enlargement."* – says van Ham (2002a, p. 5.).

### ***Improving the well-being of citizens***

This is an aspect that many people forget, although it may be the most important one: people living in a country should be proud of the country and feel great there. In this context, some authors go as far as to state that if people are involved in the branding process, it *"promotes the development of social dialogue"* (Ashworth and Voogd 1997, p. 78.), increases *"internal social national cohesion"* (Demos 2006), and strengthens democracy itself (Kyriacou and Cromwell 2001a).

### **Positioning: How to be different**

Positioning is perhaps the most frequently mentioned idea in connection with branding, whose point is to define how the brand is unique among others. Many people think that this means a definition of qualities different from rivals, but the real aim of positioning is to create a situation where the brand has no rival, it is the "only one"(Papp-Váry 2013)

In order to achieve this, brands must affect the ideas in consumers' minds first. As the subtitle of the book "Positioning" by Ries and Trout says, it is "The battle for your mind". The influence of the book is represented by

the fact that the book finished in the first position by a wide margin in a readers' poll organized by Advertising Age, the most famous advertising magazine in the world – in 2009, the magazine asked readers about the most influential marketing and media book of all time. Ries and Trout explained significant ideas such as (1997, p.29.): „To succeed in our over-communicated society, a company must create a “position” in the prospect’s mind. A position that takes into consideration not only its own strength and weaknesses, but those of its competitors as well.”

The adaptation of this idea for places, and, in this case, countries, means that positioning greatly depends on the following three aspects:

- 1) What is the strength, or what are the strengths of the specific country?
- 2) What do ”customers” need? What is the sensible advantage for locals, tourists, investors and other stakeholders?
- 3) What is the positioning of competitors, that is, other countries? What do they communicate as their competitive advantage? (Our country must be different, or, at least, say something different.)

Good positioning can be characterized by the following attributes (Papp-Váry 2011):

- 1) It distinguishes: Many countries fall in the trap that they look at what others do, and copy them. This is the so-called ”me too” way of thinking, although you have to be different: this is the way a country can become a focus of attention, increase the number of tourists and investors, raise media interest, and feed the pride of local people. Countries must find some unique and specific attraction that other countries do not have, or at least is not communicated. Research has proved that several thousands of messages are received by an average person in our overcommunicated society each day, so there is no chance to stand out if you are not original.
- 2) It is relevant: That is, it is interesting for people – tourists, investors, and, even more importantly, locals. Well-defined positioning also helps to communicate and clarify the aims and efforts of the state.
- 3) It is true: There must be facts behind positioning, and they must be based on existing capabilities and values agreed on by the majority of the country’s citizens. If we say something that is not true, it will kick back, because, as they say, ”the quickest way to kill a bad product is a good advertisement”. There must not be a gap between promise and experience, and communications must not divorce from reality. At the same time, you also have to use it as smartly as possible. As the slogan of the McCann-Erickson advertising agency says, ”Truth well told”. This must be our guideline.

- 4) It is concrete: The definition of a specific example of positioning always involves some kind of narrowing: you must choose a specific thing, be the best in that field, and communicate it. In the long run, less is more.
- 5) It is motivating: It affects the mind and the heart at the same time, creates positive emotions, and people want to be involved in it. Therefore logic and creativity are equally necessary to find it.
- 6) It is strategic: It is something that may affect the operation of the whole country, not just its communication. It can be adopted to each function of a country. It shows the way for the country in the long run.

The process of positioning is actually very similar to Michelangelo's words on his own statues, stating that he just quarried the stone, and realized what had always been included in it. Therefore we are often surprised to see an example of good positioning: "Why didn't we think of that before?"

Countries can be positioned or distinguished from various aspects, including:

- characteristic architecture
- unique sights
- natural environment
- weather
- history
- legend
- culture
- event
- cuisine
- wine
- people
- celebrity
- night life
- sport
- scientific achievement etc.

The most important point is that positioning should be as specific as possible, something that "competitor" countries do not mention in their self-descriptions, and use an argument that is important for "customers": the stakeholders of the country.

According to the famous American brand expert, Jack Trout (2004), marketing is nothing else than a "coherent strategic direction". If the

positioning is good, then all middle-term and long-term plans etc. must follow from it logically.

### **Unique country positioning: Estonia having become "E-Stonia"**

Let us see the case of Estonia in the light of the abovementioned theoretical approach. Estonia is one of the smallest countries of the world and Europe considering its territory, and its population (1.3 million in total) including 68% Estonians and 25% Russians. Although the territory has a long historical past, independent Estonia has only existed between the two world wars, and since the collapse of the Soviet Union.

As the head of the country image centre of Latvia, a neighbouring country, Ojars Kalnis explained, (see Papp-Váry 2005): the process had three stages in the case of Baltic states. In the early 1990s, they had to be introduced to the world: "we are here". Then they had to demonstrate that their nation is just as normal as others: „we are normal". In the case of Estonia this also meant that they suggested that they are one of the top students of the European Union. The third phase could only take place when they were already discussing what characteristics distinguished the country from others. This was (and is) the era of "we are special".

Interestingly, the starting point of the latter stage in Estonia was a discussion of a possibility to change the name of the country. What happened in 1994 was that a ferry named Estonia sank on the way between the Estonian capital, Tallinn, and the Swedish capital, Stockholm. The tragedy claimed the lives of 852 people, and there are still several conflicting stories on the sinking of the ferry to its watery grave. Some say that it was a revenge of the soldiers of the former Russian empire, who had to leave Estonia for ever in 1994, and they therefore placed explosives on the ship. A film starring Donald Sutherland was also produced on the story later on – it was titled *Estonia* (aired in Hungarian cinemas with the title *Baltic storm*). As a result of the occurring events, Estonian leaders were seriously considering to replace the name Estonia with Estland, hoping that foreigners would not associate this German-sounding name with the ferry accident. (Papp-Váry 2016)

### **The E-stonia vision**

The the "baltic storm" subsided, and the name Estonia remained. At least for a while. In the early 2000s, another idea to change the name of the

country arose: Estonia should become E-stonia! The starting point was that the government realized that Estonia only had forests, timber industry and some machinery industry, but the latter was not too competitive. Therefore they defined new areas including electronics and information technology as the possible way out, and the first results were achieved soon. According to research by McConnel International, Taiwan and Estonia took the first and second positions in the e-climate world rankings in a few years. The development of internet penetration was faster than in Germany, and free wi-fi was even launched in sparsely populated places (Baltic States City Paper 2001).

Although the name of the country was left unchanged again, E-stonia became an existing vision that could be translated into concrete actions and communication.

They even found its historical roots and ideology: Estonia was the first place in the Soviet Union where computer education was started in 1965 (!), using the famous Ural-1 model. Another reference is that most Western countries provided support for Estonia by donating computers after the restoration of independence in 1991, which were then used by Estonians with great enthusiasm. (Bucsky 2016)

Another important factor in the quick spread of computerization was that paper-based bureaucracy had not been built up before, because Estonia was just "too small" for this within the Soviet Union. Therefore they did not have to replace something in the nineties, but build and launch something new. This was especially true for the bank system, which they had to build up from scratch – they launched a system with state-of-the-art IT technology. This attitude is also characteristic of their government: since 2000, there is no actual use of paper in the sessions of the government and the parliament. Moreover, the right to internet access was also included in their constitution (!) as a significant channel of democracy. (Torontáli 2016)

Nevertheless, the most important innovation is undoubtedly the digital personal document system which was greatly admired by people from the Hungarian government following its launch in 2002.

ID-kaartis functioning as an identity card, an address card, a passport within the EU, a health insurance card, a tax card, an identifier for bank transactions, a digital signature, and a ticket/pass in Tallinn and Tartu. It

provides access to government databases, and also allows citizens to buy prescription drugs. All at the same time. (Torontáli 2016)

We may also ask how many people use the system. A suggestive number could provide an answer: in the 2015 parliamentary elections more than 30% of votes were cast online from 116 various countries.

Other indicative data prove that filling in tax returns only takes 3-5 minutes with the system, but there are also quick formulas that enable citizens to perform this in 1 (!) minute, because they only need to check the numbers provided by the system. It is no wonder that 95% of Estonians fill in their tax returns online.

The eesti.ee government portal, launched in 2003, allows citizens to manage more than 160 kinds of their affairs. These are all matters that should also be managed online in other Central and Eastern European countries. For example, citizens can apply for child care benefit, unemployment benefit, or other social benefits by the state online, and they do not have to gather information or statements registered by the state again multiple times, or visit government offices for this reason.

E-healthcare may be the most outstanding point of the novel system, and there are opinions that it is the best e-healthcare system of the world. Doctors see the whole patient journey including all prescribed drugs and performed examinations, and they also have access to X-ray, lab tests, MRI data and images. Patients may also authorize their relatives to access some of their personal information. Due to the sensitive nature of patient information, they log everything in the system, and there is a strict monitoring of permissions to access these data. Patients may consult doctors and make appointments via e-mail, telephone or Skype (!). Another useful feature is the digital medicine system: there are no prescriptions, and citizens can get their medicines in the drugstores with their ID card. They can also request their regularly used medicines via e-mail, and they do not have to visit their doctors for this purpose (Bucsky 2016).

In the meantime, important international organizations also created their centres of digital operations in Estonia: the NATO Cooperative Cyber Defence Centre of Excellence was established in Tallinn in 2008, and the European IT Agency of the EU responsible for IT development within the Union was built here in 2011. Two years later, the UNESCO World Summit on Information Society honoured Estonian e-Annual Reporting as



the decade's best e-Government content – among other things, the system provides assistance in the start of businesses. In Estonia, the documentation of the latter can be completed in 18 (!) minutes (Századvég Alapítvány 2015)

### **Digital citizenship**

As a result, it is no wonder that Estonia is a "startup nation", especially regarding the number of new enterprises in correlation with the population, 1.3 million people. This is also supported by the fact that Estonian children study programming from the age of 7. All this is part of the so-called Tiigrihüpe (Tiger leap) programme.

The small country has also provided the world with great brands. The most famous example is Skype, which has become a standard communications tool on the computers and phones of companies and individuals. Playtech, a digital gaming, online poker and casino company belonging to the FTSE250 index of the London Stock Exchange, also has Estonian roots. In 2016, TransferWise helped users to perform international financial transfers worth 800 million pounds each month, which saved 30 million pounds a month as compared to traditional inter-bank transfers. DreamApply is the most popular online application system for people who would like to study in higher education institutions abroad. According to the feedback, universities introducing the system increased the number of their applicants by 20-300 (!) per cent. Taxify, a competitor of Uber (trying to walk in the footsteps of Uber alternative taxi service in places where it has been banned), is also Estonian. Lingvist, an application for language learning is also an Estonian development, which enables us to develop our skills in multiple languages. This is also special because Estonian is a language only spoken by a small number of people around the world – maybe this is one of the reasons studying and teaching languages are important for them.

However though, the brands mentioned above "forgot" one thing that would be important from a country branding point of view: none of them communicate their Estonian roots directly. Just imagine that every time you use Skype, you see that it is an Estonian brand – it would increase awareness regarding Estonia, and develop the image of the country.

In comparison, a much less effective, but undoubtedly important solution is that there is a showcase room in Tallinn presenting the success of the

E-Stonia concept: the far-sighted government, the proactive information technology sector, and the population open to innovation. The 360 square metre exhibition has received delegations from more than 120 countries, who got an insight into topics such as the development of digital society, digital and mobile identity, cybersecurity, smart city projects, transparency, or the Big Brother phenomenon. And, of course, there are a lot of e-topics: e-citizenship, e-government, e-healthcare, e-justice, e-taxation, e-police, e-schhol and so on. (<https://e-estonia.com/e-estonia-showroom/>, 2016)

If we examine the influence of this smart E-stonia positioning on Estonian economy, we realize that the result is outstanding: at least one third of the 700% Estonian GDP growth is connected to information technology. According to data for the year 2015, the Estonian GDP per capita is almost USD 30 000, which is more than the GDP per capita of two other Baltic states, Latvia and Lithuania, and Hungary.

The nations listed above must face similar challenges: the number of births is decreasing, so a shortage of skilled labour is expected in the future. Estonia even has a solution for this: digital citizenship, which is available for anyone. 10 thousand people applied for it in 2015, which is a big deal, because only 13 thousand children were born in the country in the meantime. Of course, digital citizens do not live in Estonia, but abroad. Still, according to a report by Hungarian magazin HVG, 400 of them established a company in Estonia, and created 800 new workplaces. In addition, digital citizens only have to pay any kind of taxes if they take income out of the company, so the adventure might be worth a try. (Torontáli 2016)

And how serious is the Estonian government about this? According to their plans, this method will increase the number of their citizens to more the 10 million by the year 2025 (even if they are virtual citizens). This digital community may further develop E-Stonia.

## **Conclusion**

The basis of successful country branding is appropriate positioning, that is, to present how the country is distinguished from others, its so-called "competitors". This is mostly based on three factors:

- What is the strength, or what are the strengths of the specific country?
- What do "customers" need? What is the sensible advantage for locals, tourists, investors and other stakeholders?

- What is the positioning of competitors, that is, other countries? What do they communicate as their competitive advantage? (Our country must be different, or, at least, say something different.)

In addition, good positioning is characterized by attributes such as distinctive, relevant, true, concrete, motivating and strategic.

Although country image centres and country branding organizations are established all over Europe and worldwide, we can only see a few examples of unique positioning, implementing the abovementioned ideas.

The case study highlighted that Estonia is a successful example: positioning the country as E-Stonia is distinguishing, relevant, true, concrete, motivating and strategic at the same time. It is something that sets the "coherent strategic direction". We can state that positioning the country as E-Stonia had a clear role in the development of the country in recent years, and it will most likely play a similarly significant role in the future considering e-administration, ID-kaart, digital citizenship, or IT brands launched in the country, for example.

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# COMPARATIVE REVIEW OF ELEMENTARY INFORMATICS EDUCATION IN PRIMARY SCHOOLS OF THE REPUBLIC OF SERBIA, FYR OF MACEDONIA AND SLOVENIA

*Dragan Rastovac<sup>1</sup>*

## **Abstract**

*The author of this paper presents the current situation with elementary informatics education in primary schools of the Republic of Serbia, FYR of Macedonia and Slovenia. The autor has also made some recommendations for contents and status of informatics courses in primary schools. In this paper, status of informatics courses in the mentioned countries, relevant literature and actual standards are analysed to draw conclusions regarding the current state of affairs and future challenges. The primary school informatics curriculum in the Republic of Serbia has been presented in detail. This curriculum has then been compared to the primary school informatics curriculum of the FYR of Macedonia and Slovenia and then also with the ACM K-12 CS curriculum proposal.*

**Keywords:** *curriculum, elementary school, informatics.*

## **Introduction**

Technology is advancing every day. Computers have become an integral part of people's daily lives in school, at home and at work. "Computational thinking" is a skill that children must learn if they want to be ready and able to participate effectively in this digital world. The new national curriculum for computing has been developed to equip young people in England. Through the new programme for computing, they will learn how computers and computer systems work. They will know how to build programs, develop their ideas using technology and generate a range of content. But what does this mean for primary schools? How should school leaders be prepared for the new curriculum and how should teachers develop the additional skills they will need? (Berry, 2013)

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ACM K-12 CS Model Curriculum (ACM K-12 computer science curriculum) describes concept of learning computer science in school (elementary and secondary). According to Frost et al. (2009) curriculum model describes covered topics needed to be implemented in the teaching content of elementary and secondary schools. Every course or special module can be one or two – semester and it includes four levels. There are two compulsory courses, (one for elementary and one for secondary school), while the two others are optional for the students with ability and desire to study computer science more thoroughly. Curriculum is equally intended for students who want to keep studying, and for those who do not have ambitions for continuing education. Motive for making this kind of curriculum is, in the words of the author, insufficient knowledge of computing, and lack of computer literacy within the student community on one side, and large existence of computer science in all aspects of life, on the other side. Also, there was a demand for unique standards in the domain of computer science in schools and that was the reason for implementing this kind model. Proposal also includes questions of computer science education and teacher's competences required for realization of high-quality curriculum in that domain (*Rastovac and Mandić, 2016*).

### **Curriculum Model K-12**

The version of K-12 curriculum from 2011, which is being analyzed here, is a product of ACM collaboration with many professional organizations (IEEE, SIGCSE, ASCD, ISTE, NASSA, and NEA). Suggestions received from these institutions are implemented in the final proposal.

Model of K-12 computer science curriculum (table 1) consists of three studying levels, whereby each one corresponds with specific age of students. They are: K-8, first level, intended for specific students's age, which in our system corresponds to students in elementary school (primarily for upper grades). This level is called "Computer Science and Me".

Second level – "Computer Science and Community" is aimed at junior high school students (in the use of computational thinking as a problem-solving tool).

Third level – "Applying Concepts and Creating Real-World Solutions.", has three sublevels. First level of "Computer Science in the Modern World" (3.A.) is aimed at students of the 9th or 10th grade and is compulsory for all the students in secondary schools. This level is the prerequisite one for

the next two levels: 3.B and 3.C. The level “Computer Science Concepts and Practices” (3.B.) is recommended for senior students of secondary school. “Topics in computer science” (3.C.)

**Table 1** *Primary school computer science topics by ACM model K12 CS curriculum (Frost et al., 2009)*

<b>Parts of a Computer</b>	<b>Standard Software</b>
<ul style="list-style-type: none"> <li>• Input and output components</li> <li>• Roles of PC components</li> <li>• Starting up and shutting down a PC</li> <li>• Keyboard and mouse</li> <li>• Parts of a computer</li> <li>• Evaluating features</li> <li>• Volatile and non-volatile memory</li> <li>• Roles of components in electronic Devices</li> <li>• Units of measurement</li> <li>• Cables and ports</li> <li>• History of computers</li> </ul>	<ul style="list-style-type: none"> <li>• Choosing and using software</li> <li>• Word processors and text editors, presentation creators, spreadsheets, web browsers, email clients, etc.</li> <li>• test taking software; and classroom, homework, and assessment management systems</li> <li>• Similarities and differences in the common user interface</li> <li>• Multiple software applications can be used to complete the same task</li> <li>• Critical thinking about software applications</li> </ul>
<b>Operating Systems</b>	<b>Networks</b>
<ul style="list-style-type: none"> <li>• Desktop icons and software applications</li> <li>• File name extensions</li> <li>• Distinguishing proprietary and nonproprietary file types</li> <li>• Understanding files and directories (folders)</li> <li>• Selecting an appropriate place to save a file, manipulating windows, navigating between running applications, etc.</li> <li>• OS utilities</li> <li>• advanced OS user interface elements and features</li> <li>• Comparing operating systems</li> <li>• Multi-tasking</li> <li>• Role of the OS</li> <li>• Using the clipboard</li> </ul>	<ul style="list-style-type: none"> <li>• Working with local and remote resources</li> <li>• Protocols</li> <li>• Hostnames</li> <li>• Network topologies</li> <li>• Client-server architecture</li> <li>• Error correction</li> <li>• Data communication over networks (LAN; WAN)</li> </ul>

<p align="center"><b>The World Wide Web and Communicating over Networks</b></p>	<p align="center"><b>Representing Information Digitally</b></p>
<ul style="list-style-type: none"> <li>• Accessing the WWW and using a web site</li> <li>• main parts of a URL</li> <li>• Editing a web page template that includes HTML tags</li> <li>• Search techniques</li> <li>• Top level domains</li> <li>• Creating a web site that conforms to standards (Create a basic web page using HTML and CSS that conforms to standards.)</li> <li>• Social networks</li> </ul>	<ul style="list-style-type: none"> <li>• Digitizing information</li> <li>• Coding information</li> <li>• Understanding binary values</li> <li>• ASCII and Unicode</li> <li>• Range of values in a byte</li> <li>• Challenges of modeling information digitally</li> <li>• Hexadecimal</li> <li>• Data compression</li> <li>• Digital data representation</li> </ul>
<p align="center"><b>Problem Solving and Algorithms</b></p>	<p align="center"><b>Computer Programming</b></p>
<ul style="list-style-type: none"> <li>• Understanding the word “algorithm”</li> <li>• Describing an algorithm</li> <li>• Understanding instructions with AND or OR</li> <li>• Combinatorics</li> <li>• Write an algorithm to solve an assigned problem using a specified set of commands.</li> <li>• Algorithm efficiency</li> <li>• Relationship between Boolean Algebra and circuits</li> <li>• Simulations</li> <li>• Parallel processing</li> </ul>	<ul style="list-style-type: none"> <li>• Knowing about a variety of programming languages</li> <li>• Familiarity with a computer programming language</li> <li>• Computer programming (Code and test a program to solve a stated problem, using variables and at least one decision or loop)</li> <li>• Converting an algorithm to a computer program</li> <li>• Planning, writing, and testing computer programs</li> </ul>
<p align="center"><b>Privacy and Security</b></p>	<p align="center"><b>Evaluating and Using Information from Networked Sources</b></p>
<ul style="list-style-type: none"> <li>• Choosing good passwords</li> <li>• Internet safety</li> <li>• Computer security</li> <li>• Digital theft</li> <li>• Backing up files</li> <li>• Safe web surfing</li> <li>• Determining the appropriateness of email</li> <li>• Dangers of revealing personal information</li> <li>• Making friends on the Internet</li> <li>• How viruses are spread</li> <li>• Types of malicious software</li> </ul>	<ul style="list-style-type: none"> <li>• Using a search engine</li> <li>• Accuracy of Internet information</li> <li>• Search engine performance</li> <li>• Evaluating relevancy of web sources</li> <li>• Using relevant information</li> <li>• Copyright</li> </ul>

Human Computer Interaction	Computers in Society
<ul style="list-style-type: none"> <li>• Software application differences</li> <li>• Evaluating software ease of use</li> <li>• Selecting a good user interface</li> <li>• Interface evaluation</li> <li>• (Create) User-centered design</li> <li>• User differences</li> <li>• Accessibility (ease of use of the interface for certain users, such as physically challenged or elderly users)</li> </ul>	<ul style="list-style-type: none"> <li>• Computers at work</li> <li>• Ethical and unethical behaviors</li> <li>• Reading an acceptable use policy</li> <li>• Future changes</li> <li>• History of computer science</li> <li>• the contributions of two or more computer scientists.</li> <li>• Social impacts of computerization</li> <li>• Computing careers</li> </ul>

Looking at the structure itself of proposed K-12 curriculum, we notice that it is in the larger part coinciding with current form of educating computer science in Serbia. Respectively, similar to concept in which informatics and computing are optional subjects in elementary school, and after that, depending of the type of school, there is at least one compulsory subject of informatics and computing. Noticable advantage of K-12 curriculum, looking at the structure of levels, is one compulsory course (at least) on the elementary level, which is a flaw of educational system in Serbia (although it is studied to some extent through the courses of Technical and Informatics education) (*Rastovac and Mandić, 2016*).

### **Informatical contents of courses “Technical and Informatics education” and “Informatics and Computing” in Republic of Serbia**

In Serbian elementary schools, informatical contents are represented in grades 1- 4 in the optional subject “From toy to computer”, while in the grades 5-8 of elementary schools there two subjects dealing with that topic: Informatics and Computing as an optional subject and compulsory subject Technical and Informatics education. The program of “From toy to computer” is conducted by teachers who feel competent enough to deal with this subject (*Petrović and Mandić, 2012*). Informatics and Computing is in the same group of optional courses as following: Keepers of Nature; Domestic education; Everyday life in the past; Drawing, painting, sculpting; Choir and Orchestra; Mother tongue with elements of national culture and Chess. School is obligated to, by its own choice and financial – organizational – personnel abilities, offer four subjects, from which the students (and parents) choose one for specific school year, according to student’s preferences and that repeats for every following year (*Nastavni planovi i programi za osnovne škole, 2014*).

Information technology are presented in teaching course “Technical and Information Education” within its section called “Information

Technology”. Table 2 shows the specific content of that section from the fifth to the eighth grade.

**Table 2** *Contents of Technical and Informatics Education course (Rastovac and Mandić, 2016)*

fifth grade	sixth grade
Introduction to Informatics and Computing. The use of computers. A computer system (basic parts, additional equipment and software). Connecting and turning on your computer. Using the computer’s operating system, working environment. Word processor. Software for technical drawing .	Software for simple drawings. Working with CD player and flash memory. Saving the drawings. Working with the printer. Using Internet .
seventh grade	eighth grade
Drawing using a computer and making presentations. Interface. Managing models using a computer. Working with interface based technology.	Practical application of computers. Computer networks. Using Web’s access to the global computer network (www), e-mail. Controlling your surroundings with PC. Using computers and interface technology to control various models. Applying previous mastery of word-processing, database, spreadsheets and graphics to prepare presentations in different areas. Creating technical documentation in electrical engineering using the software.

In addition to the content presented in Table 2, in a course “Technical and Information Education” there are two more areas for the eighth grade students that contain the information content: Digital Electronics and From idea to implementation–modules. Digital electronics in its plan includes: Fundamentals of analogue and digital technologies; Basic electronic components; the architecture of a computers: motherboard, processor, memory, interface, and modem. Electronic devices in the household; Telecommunications and audiovisual media: mobile phones, GPS systems, internet and cable television;

From idea to implementation – modules in its plan includes: The practical creation of electrical circuits – experiments- study of construction materials and simulation using computer software according to the preferences of students; Practical examples of control by computer; Modeling of electrical machinery and equipment, automation systems and robots;

Information technology course content of Informatics and Computing for the fifth grade includes three areas: Operating system, Text editing

and Introduction to multimedia. The content of the mentioned areas is presented in Table 3 (Rastovac and Mandić, 2016).

**Table 3** *Content of Informatics and Computing course for the fifth grade (Rastovac and Mandić, 2016)*

Operating system	Course introduction. Graphical user interface of operating system. Starting the programs. Using the program for managing files and directories. Adjusting the working environment. The installation of the programs. Installation of additional devices. Working with the keyboard and mouse.
Text editing	Layout of the main window. Entering and editing text. Working with documents. Formatting the page, adjusting the margins. Formatting characters. Formatting paragraphs. Printing. Working with images. Drawing in a word processing software.
Introduction to multimedia	Introduction to multimedia. Programs to work with multimedia. Application of multimedia in teaching. Using CDs and DVDs with audio and video content (books, encyclopedias, atlases)

Information technology course content of Informatics and Computing for the sixth grade includes five areas: Text editing, Internet, Graphics, Animation and Elective modules (Programming or Interactive graphic). The content of the mentioned areas is presented in table 4.

**Table 4** *Content of Informatics and Computing course for the sixth grade (Rastovac and Mandić, 2016)*

Text editing	Working with tables (creating tables, text formatting, editing text in a table, moving across the table, inserting rows and columns, deleting rows and columns, merging and dividing cells, width and height of rows and columns). Borders and shading to the table. Combining tables with text and images. Inserting headers and footers, page numbers, date, and time. Page break. Background. Setting the paper size and margins. Print Preview. Printing.	
Internet	The concept of global and local area networks. Connecting to the Internet. Working with basic Internet services. Search the Internet. Download text and images from the Internet. Online behavior and personal data protection. Internet Security.	
Graphics	Sources of digital images (drawing, screenshots, scanning, photographing, downloading images from the Internet). Image processing. Types of digital images. Conversion between formats. Preparing images for printing, display graphics and for publishing on Internet pages.	
Animation	Basics of animation. Creating simple animations.	
Elective modules	Programming	Introduction to Programming. Data types and declaration of variables. Elementary commands of programming language. A demonstration of the programming language capabilities.
	Interactive graphic	Teaching students to work with the programs for graphical editing and their use for mastering the curriculum of other subjects (mathematics, physics, technical education and IT education).

Information technology course content of Informatics and Computing for the sixth grade also includes five areas: Internet, Sound Editing, Video editing, Creating presentations and elective modules (Programming, Drawing and graphic design). The content of the mentioned areas is presented in table 5.

**Tabla 5** *Content of Informatics and Computing course for the seventh grade (Rastovac and Mandić, 2016)*

Internet	The concept of electronic communication and recommendations for safe on-line behavior . E-mail. The discussions and comments on the Internet, instant messaging, blogs, forums, video-conferencing, e-learning and distance learning. The digital library.	
Sound Editing	Audio formats. The conversion between different formats. Recording and processing of voice and other sounds. Practical work on the sound recording and processing.	
Video editing	Snimanje video zapisa. Obrada video sekvenci. Primena vizuelnih efekata. Montaža video, zvučnih, grafičkih i tekstualnih materijala u celinu. Samostalna izrada filma. Formati i konverzija.	
Creating presentations	The concept and structure of the presentations. Working with slides. Designing and finished template. Working with text, images and objects. Setting effects. Linking slides within the presentation. Linking to external content and web pages. Create a presentation on your own. Recommendations for successful presentations.	
Elective modules	Programming	Arrays. Loops and other control structures. Subroutines, procedures and functions.
	Drawing and graphic design	Working with drawing tools. Working with colors and textures. Special effects. Print Preview. Customizing the display views, printing and publishing on the Internet. Practical work.

Information technology course content of Informatics and Computing for the eighth grade includes two areas: Spreadsheets and Elective modules (Programming and On-line presentations). The content of the mentioned areas is presented in table 6 (Rastovac and Mandić, 2016).

**Table 6** *Content of Informatics and Computing course for the eighth grade (Rastovac and Mandić, 2016)*

Spreadsheets	Workbook and worksheet. Data entry. Formatting cells. Working with formulas. Using built-in functions. Working with graphic objects. Creating a chart. Printing.	
Elective modules	Programming	Procedures for solving of problems. Solving of problems.
	On-line presentations	The basic elements of HTML. The color and background image. Working with text. Working with images. The hyperlink. Working with tables. Specialized software for creating web pages.

### **Informatics courses of Republic Serbia, FYR of Macedonia and Slovenia in regards to ACM K-12**

In this section, we are comparing Informatics teaching courses in the elementary schools in Republic of Serbia, FYR of Macedonia and Slovenia with ACM K-12 computer science curriculum. Contents of Informatics teaching courses in these countries are:

In FYR of Macodonia Working with computers and programming fundamentals (two classes per week in third grade), Technical education (one classes per week in fourth and sixth grade and two classes per week in seventh grade) and Informatics (two class per week in sixth grade and one classes per week in seventh grade) are compulsory subjects Work with computers (two classes per week in fourth and fifth grade) is optional subject.

Technical and tehnologies (one class per week in seventh and eighth grade, two class per week in sixth grade) is compulsory subjects and Computing (two classes per week in fourth, fifth and sixth grade) is optional subject in Slovenia.

Teaching plans and programs (described in detail) are taken from the websites of institutions: Republic of Serbia (*Nastavni planovi i programi za osnovne škole, 2014*) – FYR of Macedonia (*Ministerstvo za obrazovanie i nauka- Biro za razvoj na obrazovaniето, 2015*), Slovenia (*Ministrstvo za izobraževanje školstvo, znanost in šport, 2013*). In this paper there is only a detailed description of program content of the Republic of Serbia (tables 2 to 6). Comparison of teaching programs in regards to ACM K-12 computer science curriculum is done in the following way. In the table 7 informatics teaching plans and programs content from mentioned countries are compared



with contents of ACM K-12 curriculum and the result of comparison is expressed in the percentages shown. First column in the table 7 represents basic content of ACM K-12 curriculum, and each basic content of ACM K-12 has its own program content (table 1). For example: content of “Parts of a Computer” (table 1) which includes 11 elements is observed and then each element is taught in the programs of enlisted countries. Only if there is an explicit emphasis of elements in the enlisted countries, we consider that teaching content of those countries match with compared elements of ACM K-12 curriculum. In the second column of table 7 we have that the matching percentage is 72% for Serbia (ie. out of 11 elements in Serbia teaching programs there are 8) as seen in tables 2 to 6, also in the third column 91% for Macedonia of matching (ie. 10 out of 11 elements), while in the fourth column Slovenia have 81% of matching (ie. 9 out of 11 elements).

We can notice that contents of “Standard Software”, “Operating Systems”, “Computer Programming” and “Privacy and Security” (in the table 7) match completely with ACM K-12 curriculum. Thus, programs of enlisted countries have in its entirety a plan to study elements of software, operative system, programming and security which are included in ACM K-12 curriculum. However, contents of “Evaluating and Using Information from Networked Sources”, “Human Computer Interaction” and “Computers in Society” have smaller percentage of matching. The most likely cause lies in the category (compulsory or optional) and number of classes in a week related to subject Informatics in the mentioned countries.

**Table 7 Curriculum comparison in relation to the ACM K-12**

Structure ACM K-12	Serbia	Macedonia	Slovenia
Parts of a Computer	72%	91%	83%
Standard Software	100%	100%	100%
Operating Systems	100%	100%	100%
Networks	57%	71%	71%
The World Wide Web and Communicating over Networks	57%	86%	71%
Representing Information Digitally	78%	89%	57%
Problem Solving and Algorithms	33%	78%	78%
Computer Programming	100%	100%	100%
Privacy and Security	91%	100%	100%
Evaluating and Using Information from Networked Sources	50%	100%	100%
Human Computer Interaction	43%	57%	57%
Computers in Society	50%	50%	62%

Author of this paper consider that the emphasis should be put on basic understanding of algorithms, although K-12 curriculum states that, in the frame of algorithms on this level there is a need for introducing concepts of conditional loops (if, for and while). Introduction of complexed principles like if, for and while loops would be useful for students who have more preferences toward informatical – logical way of thinking. The teacher should illustrate several examples of loops and therefore enable for certain group of students to have a better vision of algorithm processes. It's author of this paper opinion that it is too early to introduce concepts of loops, conditional expressions already in elementary school (unlike K-12 proposal) for all students, although they should be introduced into compulsory subject on the next level (first grade of secondary school). The main reason is the various structure of the students, who have very diverse abilities of abstraction and informatical – logical reasoning and ambitions toward further education (*Rastovac and Mandić, 2016*).

### **Conclusion**

K-12 curriculum is considerable equivalent with the current curriculum for educating computer science in Republic of Serbia. Two curriculum of one compulsory and two optional courses which K-12 suggest are similar to Serbian concept of Informatics and Computing studies in the elementary schools in one optional subjects. In the secondary schools there is at least one compulsory subject of Computing and Informatics. Advantage of K-12 curriculum is at least one compulsory course on the elementary level, which is a weakness of educational system in Serbia (even if it is in some studied through Technical education). Author of this paper conclude that introduction of compulsory and special course of Informatics and Computing is necessary. That is one of the principles of K-12 curriculum, which should be adopted to avoid, already mentioned, potential issues that students have in secondary school when they begin to learning it without any previous knowledge of computing. Students have realized that some other optional subject take less time and effort or it's easier to achieve higher grade, so they do not choose this area. Moreover, it is arguable are students able, at that age, to make an independent decision concerning what is more useful for them in future professional career. Also, it is not confirmed whether they are able to comprehend the necessity of studying computing and informatics. Potential barrier for adopting K-8 level as compulsory course is technical equipment, availability of Internet and legal and safe software in elementary schools.

The K-12 proposals (learning tools for word processing, creating presentations and image editing) which are needed to be adopted in the future framework of compulsory course (now optional subjects in elementary school). The K-12 proposal for students between sixth and eighth grade does not mention compulsory learning of any programming language. That should be considered. Implementing one course (as optional course) and introducing programming languages suitable for understanding basic concepts of structure, data flow and developing “computer” way of thinking is what author of this paper proposes. We need to be careful when implementing a programming language in the domain of computer science, regarding that all students will not select some of the secondary schools that study computer science more extensive (some of them won’t even continue with their education). Which basic programming language is suitable for learning demands a special discussion (for example traditional Pascal, Visual basic). Certainly, for the start, some of visual tools should be used as they make learning easier. The authors of this paper consider that methods of learning the chosen programming language are just as important (*Rastovac and Mandić, 2016*).

The analysis indicated that it is necessary to improve the curriculum in order to be better matched with modern challenges in primary informatics education. Moreover, the analysis showed the importance of the studying of informatics contents in primary schools through compulsory courses.

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# SUSTAINABLE DEVELOPMENT – THE SMART CITIES

*Sedlak Otilija<sup>1</sup>, Dragan Ivanišević<sup>2</sup>*

## Abstract

*The factors of sustainable development of cities correspond to the factors of smart cities: improving the economy, competitiveness, management of basic natural resources, the environmental factors, efficient and transparent management, creating and maintaining a certain level of livability, sustainable transportation system, wide application of information and communication technologies, and investment in social and human capital. Certain standardized criteria will utilize the recorded values for the ranking and for the support of the sustainable development of cities. Modern cities' transportation systems require the development of new management methods, especially in the field of economic efficiency. A city is considered as "smart" if the investments in human/social capital and information-technology infrastructure ensure sustainable growth and improved quality of life. The analysis and description of the concept of "smart cities" aim to address the current urban challenges and seize the opportunities of modern information and communication technologies by using a holistic approach. Smart cities are faced with serious economic and social challenges. The EU's goal is to invest in ICT research, innovation and development to improve livability in the cities as well as improved sustainability. This goal corresponds to the declared aims for the EU "20-20-20".*

**Keywords:** *Sustainability, Information and Communication Technologies, Competitiveness*

## Introduction

The concept of Smart Cities became increasingly important in Europe in the last 10 years despite the fact that intelligent development of the

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cities had his turnovers before. One of them happened in 1999 when Singapore became an “intelligent island”; or 1922 when the Houston put into operation an automated system for traffic lights. There are several guidelines for what we consider a smart city, where the citizens can live. The cities became “smarter” but they also more and more attractive and grew in size. Because of that their sustainable development and quality of life in them become a more acute problem. Urbanization and congestion in the cities created the need for “ruralization” within the cities themselves. One of the famous definition (ITU) of smart city is: “Smart and Sustainable City is an innovative city, which makes extensive use of information and communication technologies, using them to develop the level of quality of life, city management, and urban services more efficiently, and so that takes into account the needs of present and future generations, and at the same measure takes into account the economic, social and environmental aspects (16.2.2017) <http://www.itu.int/en/ITU-T/ssc/Pages/info-ssc.aspx>.

### **Literature review of keywords and definitions**

The concept of “smart city” has emerged and developed through three areas: academic, economic and management. Leydesdorff and Deakin (2011) is defining the university, industry, and government as the three most important participants in the creation of intelligent cities, whose function is organized the production of knowledge and the creation of economic growth. The role of information and communication technologies is important for smart urban development. The formation of the platform of smart cities was initiated by the European Commission in 2013 in order to identify and disseminate information on smart cities. After that platform smart city aims to increase the quality of life of residents, improve efficiency and competitiveness, ensure sustainable development, improve the efficient use of resources, reduce emissions of harmful substances. (Smart Cities and Communities Key documents & links).

Dirks et al. (2010) in their study start from the differentiation of cities based on knowledge, innovation, and creativity. They conclude that it is necessary to adopt modern information technology and systematic reviews in order to maintain or to create a competitive advantage which is an integral element of such provision services that are directly geared towards the needs of citizens.

Carli et al. (2013) start from defining and implementing strategic plans to create smart cities that are operationally efficient, socially sustainable and have a pleasant environment with effective cost. It is necessary to

optimize the smart cities and expertly measure, control and manage them. The authors propose a framework for classifying the performance of smart cities based on two dimensions: the degree of objectivity of the observed variables and technological possibilities of data collection. In the analysis comparing traditional and innovative indicators related to the economy, residents, mobility, environment, government and life standard.

Branchi et al. (2014) in their work emphasize the refining and standardizing the meaning of smart city and define an analytical matrix to evaluate the elements that define the smart city, with special attention to information and communication innovations that form the behavior of residents of the cities in the 21st century. A smart city is a continuous and unbroken blend of people (education, health, social welfare, public safety), planning and management (public security, public administration, urban planning and smart housing) and infrastructure (environmental protection, water, and energy supply, transportation). Based on these indicators, the authors performed the index for smartness of the cities, as the relative indicator of indicator position for the analyzed cities.

Dameri and Rosenthal, (2014) in the Proceedings “Smart city – How to create a public and economic value in an urban area with high technology” lurks the idea that citizens are expected to live in urban space designed to provide a high quality of life while this can only be achieved by investing in sustainable development. The complexity of the concept of smart city arises from the fact that it is associated with both physical as well as the intellectual and social capital of the city. In this regard, city planning is not just urban design to incorporate social, political and economic studies. The concept of smart city technology supported the development of information and communication technologies at its core. In some sections this compendium questions concepts of digital cities – smart cities, questions of standardization status of the smart city, and attempts to formulate proposals for increasing the level of city smartness. Measuring the performance of smart cities needs to refer to the dimensions of production, technological innovation, quality of life and environmental sustainability, and should be presented through indicators of inputs, activities, effectiveness, efficiency and outputs.

Structural and functional optimization of cities and their transportation systems is a very complex and delicate operation with far-reaching consequences in all spheres of life for the city inhabitants. Two basic city development strategies emerged in the modern world – “sustainable development” and “quality of life”. Fulfilling these goals is possible by creating balanced urban transportation

systems, which can achieve a systemic approach to resources management and plan as well as the implementation of new technologies, organization, financing, etc. Set of goals related to sustainable development and quality of life in cities have not yet been fully realized in the European Union. These goals were based on the implementation of citizen mobility with limited use of passenger cars.

### **Sustainable Development – The Smart Cities**

The factors of sustainable development of cities correspond to the factors of smart cities: improving the economy, competitiveness, management of basic natural resources, the environmental factors; efficient and transparent management, creating and maintaining a certain level of livability, sustainable transportation system, wide application of information and communication technologies, investment in social and human capital. Certain standardized criteria will utilize the recorded values for the ranking and support of the sustainable development of the cities.

Modern cities operate in a turbulent environment created by world globalization processes, changes in the political, social and economic environment. Their transportation systems require the development of new management methods, especially in the field of economic efficiency.

The city is considered smart if the investments in human/social capital and information-technology infrastructure ensure sustainable growth and improved quality of life. The analysis and description of the concept of the smart city aim to address the current urban challenges and seize the opportunities of modern information and communication technologies by using a holistic approach. In order to perceive actual problems that threaten today's European cities, it is necessary to use a holistic approach to this matter and to make analysis with a greater number of aspects. Based on the analysis presented in the document "Cities of tomorrow - Challenges, visions, ways forward" (11.4.2016), which was published in 2011 by the European Commission's department in charge of regional development, the problems of today's cities are viewed from the demographic, economic, social, environmental and political aspects. The document of the European Commission entitled "Smart cities and communities - European innovation partnership" (10.04.2016) is the proposal of official strategy, addressed to the Council of Europe, European Parliament and all member states of the European Union. This document aims to accelerate innovation in interdisciplinary areas of energy production, transportation, transport, and information and communication technologies.



Urbanization is a process of growth and development of cities and their inhabitants. There are two main components that make up this process: (1) the growth of the urban population, (2) increase in the number of cities. At the end of the seventeenth century, on a world scale, only 3% of the population lived in cities. One century later, this percentage had risen to 10%, while in the first decade of XXI century the number of the world's population inhabiting cities rises to over 50% (Table 1).

The percentage of the urban population will rise to 85% in the year 2050, according to the demographic projections. European cities generate about 80% of the total gross domestic product in Europe today. This indicates that cities are the main generator of social and economic development.

Cities are the basis of the implementation of life issues for a substantial majority of the population. However, they also generate major problems today: rising unemployment, climate change as a result of environmental pollution, problems in transport and communication, excessive power consumption. In order to make cities a suitable place for living of the vast majority of Europe's population, it is necessary to establish and strictly apply the principle of sustainable development.

Economic development based on knowledge-intensive and evolving value chains empowers the trend of urbanization. An increasing number of people find jobs and other crucial life aspects in the cities. Cities consume 70% of energy and emit 75% of greenhouse gasses. This means that the battle for energy and climate change of the 21st century can be obtained or lost in cities.

**Table 1** *Population of European cities ordered by city size*

Size of the city	Number of cities		Number of inhabitants	
	Absolute number of cities	Percentage (%)	Absolute number of inhabitants	Percentage (%)
Rural			154.125.040	32,1
Small town and suburban			156.389.720	32,6
50.000-100.000	387	52,9	26.690.068	5,6
100.000-250.000	224	30,6	35.708.402	7,4
250.000-500.000	62	8,5	21.213.956	4,4
500.000-1000.000	36	4,9	27.041.874	5,6
>1.000.000	23	3,1	59.292.080	12,3
Total	732	100	480.470.140	100

Smart cities are faced with serious economic and social challenges. They need to remain attractive to businesses as well as for the old and the young people. The EU's goal is to invest in ICT research, innovation and development to improve livability in the cities as well as improved sustainability. This goal corresponds to the declared aims for the EU "20-20-20". (As compared to 1990 - 20% reduction of the greenhouse gas emissions, a 20% increase of the share of renewable energy sources and a 20% increase in energy efficiency by the year 2020).

The European Commission issued its' Intelligent cities and communities - the European innovation partnership (EIP-SSC) in July 2012. The document initiated the creation of a European Innovation Partnership in order to align resources to develop the organic integration of the energy, transport, and information and communication technologies in urban environments. The European Commission recommends that this partnership has to be managed by the entrepreneurial sector collaborating with the cities. Consequently, the EU support for the period 2013-2020 is closely linked to energy, transport and information and communication technology sectors.

The European Union has issued an "Operative and Strategic EU achievement plan" (16.2.2017), which contains useful and practical descriptions in 2013. The aim is to run projects which should be implemented in the European Union. Support for EIP-SSC projects is a part of the EU support system for 2013-2020. However, European cities after 2008 found themselves in an economic situation which in addition to its own forces, requires cooperation with market actors as well as the inclusion of their resources and expertise. The construction of the new strategy includes the market-oriented cooperation of all participants. In one hand investor funding is increasingly necessary for cities and communities. On the other hand, investors expect safety (controlled risk) and the appropriate size of the scale/volume. A single city can not provide an answer to these challenges. To meet the expectations of investors it is necessary to expand cooperation projects both vertically and horizontally.

The traditional approach is not sufficient for these projects: cooperation between the inhabitants of the cities, local and global market entities, local governments and companies, various organizations and state institutions in the region does not allow for traditional practices and procedures of the current competition. New types of transparent and efficient procedures and models of cooperation are required. Smart city projects integrate local SMART solutions with European.

This creates solutions based on the local needs which can apply globally. In the year 2014, EIP-SSC targets several city ‘Smart’ development areas with the framework of 370 projects and the involvement of 3,000 partners in 31 countries:

- urban mobility (traffic),
- Open data,
- business models,
- finance, procurement,
- policies and regulations,
- measurement and performance indicators,
- integrated energy, transport and communication networks,
- energy efficiency and low carbon dioxide emissions.

### **The Smart City Concept**

In this new development area the cities get a prominent role. Their role both in domestic and in international terms largely depends on better utilization of new technological capabilities in order to achieve social and economic profits. The answer to the challenges facing cities simply can not give the modernization of urban infrastructure, but also needs to better use and application possibilities offered by the available and existing information and communication technology. This can be achieved by exploiting the possibilities that are hidden in the concepts of smart cities. Smart city can achieve a better quality of life and a competitive sustainable economy with the intelligent organization of community life. Public services - public transport, health, education, trade are used to support local communities and ensure the desired level of the livability of the population in the cities.

According to the concept of smart cities, the city itself performs continuous optimization of its entire operation introduces the, through the relevant structures of the complex control system. Smart cities are the only logical answer in terms of the sustainability of development in the future. The key issue in the forthcoming period is not which cities will approach this concept of development, but which cities will be the first to do it. The aim of creating the vision and defining the concept of the smart city is:

- Create such a framework system of interpretation which ensures unified terminological and methodological basis for the development of the future concepts as a part of the international and domestic vision;
- Stay in line with the plans of urban development of the European Union, and domestic and foreign relevant plans in order to show contribution of Smart City services to development goals;

- Outlines the Smart City vision with legal descriptions based on approval by the City Council, that can outline directions for future development that will be able to program Smart investments;
- Identify and propose those areas of focus for investment into Smart services;
- Define the objectives of the system which are aligned with the vision and which determine the directions of further development;
- Indicates potential funding opportunities which can apply for funding national and international sources.

### **Model of the Smart City**

Creating a smart city includes different development path for each city. There are characteristics of the spatial structure, educational and medical institutions, events, the situation in the field of public safety, long-term supply of quality drinking water, the level of sewage coverage as the characteristics that define the overall image of the city. Certain parts of the category of the smart city for example mobility, energy (geothermal, solar), e-government require complex investments to produce results. However, it is the city challenge to maintain the proportionality of public transport to develop mobility, improve air quality, integrate and process information needed for better management, improve the quality, increase the quality of e-administration for the citizens. “Smart City” also means “Green City” - waste management, waste separation, recycling system. All these systems require the development of measures with the inclusion of Smart Instruments and solutions.

Most of the European cities struggle with lack of labor force, while the overpopulation is the largest problem in American and Asian cities. Smart mechanisms and targeted programs need to be more efficient and successful as mechanisms and methods for maintaining and attracting labor from the ICT sector, innovation and health sectors. The Smart vision and goals are extremely important to emphasize the contribution to the development of the business environment.

The goal for each city should be measuring the degree smartness of the city. The well-known ranking list of cities is formed on the basis of Smart Index, which is recognized and applied in Europe (TUWI - <http://www.Smart-cities.eu>).

Urban planning and the adoption of all relevant strategies of cities have the increased competitiveness in comparison to other cities, both at a national and international level as its goal.

In terms of the competitiveness in a time of the global economic crisis, the primary goal is the creation of appropriate conditions that attract a greater number of investors and the revival of economic activities.

A specific method that aims to precisely analyze the competitiveness of cities, based on their ranking on various grounds has developed in the past two decades. The most important criterion of this method is the way the selection of cities that are being compared and objectivity in the analysis. Objectivity is achieved by selecting the appropriate comparable indicators. In order to achieve a more successful ranking of cities it is necessary to observe three key aspects of the analysis:

- The goal of ranking - is not defined solely on the basis of the target group to which it is intended, but on the spatial extent over which is carried out and based on the analyzed indicators,
- The methodology of ranking - it is necessary to consider all the limitations that occur along with the choice of data collection for analysis and the methodology of their processing,
- Presentation of the results - the way in which the results of the analysis are evaluated, interpreted and published to the fullest extent, has an impact on decision-making on the basis of the ranking conducted. "Decision making is said to be performed under conditions of certainty when the outcomes of any action can be precisely determined and arranged" (Vojinovic, Sedlak and Stojic, 2016).

In recent years the European Union carried out four surveys in order to "measure" the satisfaction of the population quality of life in cities. The method of ranking cities in function of the real perception of their current state is recommended as a very effective instrument for the identification and consideration of how good or bad the characteristics of a city are. This method is a way for local - city authorities to focus in order to optimize the key important decisions for normal functioning.

Ranking cities by analyzing their characteristics proved to be a very useful method. The local government which in this way come to valuable data about their own weaknesses that need to be corrected. The potential investors receive very useful guidelines for individual characteristics of cities in which they desire to implement their business ideas. This methodology is based solely on the objectivity of the surveyed citizens, that can be the most sensitive point of its reliability. By adequate selection of the content of the survey as well as the methodology of selection of participants in the study, these negative impacts can be largely reduced. It should be noted that this method compares the results obtained from the

cities that are very different in terms of size and status (major cities still have a specific status).

The most frequently cited authors Giffinger et al. (2007) refer to the ranking of cities based on predefined parameters. Project research included 70 European medium-sized cities with a population of 100,000 - 500,000 inhabitants. Despite the fact that most of the urban population lives in cities that are medium-sized, previous studies have mainly dealt with the study of large cities - capitals. "When this approach concluded that major world cities are not suitable research model in terms of defining a unified approach in ranking cities" (Ciric, Stojic and Sedlak, 2015).

The concept in which the medium-sized towns are similar to each other in many ways, provide a good framework for a research aimed at finding common factors to define the Smart city. Six major functional segments were selected as a starting point that characterizes the city:

- **Smart Economy:** here are classified services that support innovation and research and development activities, competition. entrepreneurship (eg. the formation of industrial parks, incubators and support to newly established firms). Possible factors through which custom: innovation, entrepreneurship, economic visibility, productivity, labor market, international networking.
- **Smart mobility:** provision of services which facilitate and optimize the use of urban transport services (eg. The electronic system of tickets and monthly tickets, traffic management). Possible factors through which custom: local availability, (inter-) national accessibility, availability of information and communication infrastructure, sustainable, innovative and safe transportation systems.
- **Smart environment:** the provision of services whose primary goal is the reduction of energy consumption and environmental burdens (eg. Optimization of public lighting, forming station for charging electric cars). Possible factors: the availability of natural resources, pollution control, environmental protection, sustainable management of resources.
- **Smart people (population):** the provision of services which simplify the daily life of citizens who live in cities (eg. A university teaching materials available in the cloud system, e-learning systems, intelligent city maps). It is measured by cultural institutions, health care facilities, personal security, the quality of the housing stock, education, tourism attractiveness, social cohesion.

- Smart apartment: These services facilitate and provide benefits in the field of health (eg. Remote monitoring system), security (eg. A system that supports access control entertainment facilities) and private, domestic life of citizens (eg. Remote control heating and cooling).
- Smart Administration: includes the development projects aimed at simplifying of administrative services (eg. Provision of electronic administration, electronic payment of fees during the administration). Possible factors through which they can be measured is participation in decision making, the level of public and social services, transparency of administration.

### **Strategic Directions in Development of the Smart City**

The realization of the concept of the smart city is supported by the following strategic directions:

#### **Digitization**

The aim of digitization is to increase digital literacy and decrease the divide in digitalization level between developed and underdeveloped regions by contributing to:

- access to broadband (superfast) online with the construction of the statewide internet networks;
- construction of new generation broadband network infrastructure to increase the coverage of the entire state with the new generation network;
- increasing the employability of unemployed people in the labor market by the acquisition of knowledge and skills related to the use of information technology, access to opened job positions in the whole country, increasing the motivation for mobility;
- increasing the economic strength of the country by encouraging the use of information technologies, increasing access to public e-services, expanding the knowledge and qualifications of the individuals. “Resource may be any entity used to accomplish a goal, e.g. a person, an asset, material etc.” (Ciric, Stojic and Sedlak, 2015);
- taking advantage of digitalized culture with the development of the basic qualifications for individuals and the provision of a wide technical approach from the households. “When evaluating candidates, HR management is confronted with a significant number of tradeoffs over a diverse range of criteria” (Ciric, Stojic and Sedlak, 2015);
- expansion of intelligent urban services through the development and implementation of concepts for such services;

- development of the digital economy and creating new jobs by means of national and local competition;
- maximum availability of e-government services to citizens, computerization of administrative services provided to entrepreneurs by 2020 as much as possible, a mandatory electronic form of these services through the development and implementation of concepts for the electronic government;
- support for the development of digital competences for the lower social classes by increasing IT education and transfer of IT knowledge for children in schools.

### **Research and development activities**

Strengthening existing prominent research and development activities (eg. University research) and innovation eco-system (eg. An innovative clusters, industrial parks) and their involvement in the development of Smart service system ensures the integration of the current market expert knowledge of the system Smart services. The integration of these areas leads to the further motivation for raising the quality of research and development activities.

“Just as in many other areas, project management makes use of mathematical modeling in cases such as setting strategic goals, formulation of strategies, selection of human resources and realization of the chosen strategy and control” (Ciric, Stojic and Sedlak, 2015). The development of the innovation environment (eg. Support for start-up activities, the formation of pedagogical institutions with instruction in foreign languages, the formation of incubators, supporting the construction of a system of contacts with foreign entities) can provide continuous involvement and maintenance of the current market knowledge and innovation or foreign intellectual capital.

### **Support for the cooperation between the various economic and other subjects**

It is necessary to form such electronic (eg, discussion forums, shared online market space urban entrepreneurship) and physical spaces (eg, incubators, clusters), which provide collaboration between citizens, businesses, and public institutions. Participants were required to provide a space for work which supports cooperation in the development and in the provision of



services, especially in competitions and projects that require cooperation at the international or domestic level.

“When we talk about the influence of humans on events with harmful consequences, we say, that it is a subjective order or sequence of events” (Vojinovic, Sedlak and Stojic, 2016).

### **Modernization and sustainable functioning of public services**

The modernization and transformation (eg. Telemedicine - the construction of remote medical monitoring system which allows remote monitoring of patients, and in some cases diagnosing and control) of public services (eg. Urban transport, health) may require the introduction of new public services. This will lead to further segmenting of existing public services and their adaptation to individual needs, or creation new policies to charge fees for services proportionally to their use. The aim of modernization and “stratification” of public services is to make provision of public services to the citizens in more cost effective manner and in the optimized framework.

Formation, development, and functioning of the services as a whole are essential for the long-term sustainability. It is recommended to implement the services which have an increase in utility (serving faster, simpler arrangement) and efficiency (eg. The overall efficiency of the providers of services, the efficiency of service) so that they can be provided in a cost-effective manner in the long run.

### **Formation and communication of Smart brands and their conscious use encouragement**

In order to made solutions and Smart Services known within the citizens who live in cities and to persuade them that they were really useful it is necessary to define as a service by their deliverer. These services should be offered to the customers. The goal is that services and service packages are consciously announced to the audience. Other important factors are the motivation of consumers (for example, demo versions, cheaper tickets, if paid electronically) their notification (eg. There was a new service, the publication of the most common questions and answers) and conscious training (eg. webinars, interactive assistance, providing Smart mentor network). Without these factors potentials Smart services can not be used, therefore these factors should be taken into account when devising goals and strategies.

## **Continuous measurement and the development of Smart Services**

A large number of smart city programs have been implemented in recent years in Europe and beyond. The experience gained from these programs show that it is necessary to accurately measure and evaluate the results and impact of such programs in many cases. The evaluation has to be established at the very beginning of the program. The evaluation models can be applied - although estimate related fields - vary by several elements, methods, and categories. When creating the concept it is necessary to predict the possible models of evaluation, which are in addition to the vision related to the categories examined and linked to the overall system goals. "Criteria and restrictions of alternatives are also encompassed in the space of uncertainty and indeterminacy" (Ciric, Stojic and Sedlak, 2015).

In order to estimate the effects of implemented Smart service, it is necessary to collect and archive data and information generated during the performance or use of services. This should be made on the basis of a system of indicators, analyzed and applied. Only then it can provide an evaluation of life and quality of livability in the city and continue to deliberately increase the level of services. In addition to automatic data collection, it is recommended to devote attention on the feedback from the citizens (eg. An evaluation system built into the application) and the publication of public open data (open data) on services.

### **The development of innovative environment - the development of business culture and incubation**

Activities related to incubators are characterized by periodic regional meetings and business clubs. Activities of University incubation can be found only in trace amounts. The portfolio of business incubation services available to the wider sector practically does not exist in the Region.

It is important that both communities and private individuals use the mechanisms and sources of community support for the development of business and entrepreneurial culture: These mechanisms must be used in a way that forces the authors and perpetrators of the program to pay attention systematically to any relevant critical fact.

Regional incubation not only means physical space/location. Its most important element is the extension of business character, which in essence is the extension of evolving market. Part of that are market-oriented R

& D transfers, services and development conditions for them as well as generating innovative projects and project management. Part of this is the technological extension, monitoring trends (tech-scanning) and exchange of knowledge. It is also important to show venture capital (which really takes the risk) that is dedicated to incubation services.

The incubator should have access to such companies for mentoring and leadership that can authentically transmit the important elements of international business culture: a culture of success and failure, the required culture of risk-taking, market testing at an early stage and “lean” approach. It is also important that the selection of new companies that will be included in the incubator is objective, in accordance with international standards.

### **Implementation of academic research**

Based on available information, the transfer of knowledge in the region is now at a low level. A number of university spin-off companies is not significant. The problem arises already at generating ideas as well as at the formation of ideas that will survive in the market. It is necessary to strengthen the incubation process with the organization and resources within the university.

### **Knowledge management development**

Another important generator of regional knowledge transfer can represent a systematic and gradually increase in maturity of the knowledge management among entrepreneurs. The largest part of SMEs in the country and in the region possess scarce skills management, and together with it (or perhaps because of it) are struggling with “a paradigm of inter-sized”. To increase the quality of management it is necessary to enlarge the number of practical methodological elements and skills development. It is important to know the methodology that examines the maturity of knowledge management in the development and management because of the vast expansion of information and knowledge-based economy. The general definition for increasing maturity of knowledge management is: strengthening the skills necessary for accelerating the implementation of the strategic circle of “monitoring, analysis and innovation”. Simply put, it is important to strengthen the intellectual capital of the company.

In order to increase the maturity of knowledge management it is necessary to build a system of instruments that can be effectively implemented in practice.

The methodological basis of this is to determine the level of knowledge, qualifications dimensions and by using the results of “maturity matrix” the realization of interventions in the necessary areas, while advancing to higher levels of maturity. The maturity of knowledge management is usually graded by 5-8 categorization levels which are upgraded. One of the main analytical methods is CMM (Capability Maturity Model), a model from Carnegie Mellon University, developed by the Software Engineering Institute (SEI) at the university. We can not talk about an effective and adequate knowledge management without proper ICT.

However, several studies have found that technological approach (CMM) by itself is not sufficient to test the maturity of knowledge management. Research of social and personal relationships is as important as the performance management that builds on it.

By expanding the tests of knowledge beyond the scope of technology the following dimensions of analysis can be determined: people; process; technology.

### **Communication with the community, sharing/ spreading of information (dissemination)**

The aim of communication with the community is to make the actors familiar with the Smart services in order to promote an innovative way of the city in public discourse. This also increases the number of visitors and scientific-technological dissemination events, and thus the transfer of knowledge in the region.

An important goal is to make services more and more known, that way more opinions needed for the continued development will appear. Consequently, the possibility of adoption and feedback increase the acceptance of Smart services and legitimize their costs from the past thus providing adequate space for a cost framework of the future development.

Communication-related to the area of Smart service can generate the need for training and education which can occur as the orientation of youth for further learning or as a growing need for elderly knowledge in the field of technology.

If communication channels are formed by appropriate experts who understand the content and design elements of Smart environments and markets the efficiency of communication can be appropriate. (These are

some of the possible tools: forums, conferences, evaluation systems for the exchange of opinions, publication of the news (news stream) at regional portals, creating a social portal, smart cities).

### **User Group Education**

Education is closely related to communication, the dissemination term may even include it. In addition to expanding the knowledge of the local society, the more cooperative involvement of the company can significantly expand its circle of associates. Education User Group has a dual objective:

- The aim is to make as many people use Smart tools of modern technology, ie. The adequate number of tools is essential (accessibility to citizens, penetration). It can be a starting point to build awareness at the city level and to reach potential customers Smart Services. This can create and program and budget of the city and include partners who have initially been clients. Partners can be software organizations from the region as well as community organizations. With the above methods, different market levels can be opened. This can accomplish the development of digital competence within the widest layers of society, from retirees to preschool age. Citizens are users as well as data providers and they include a continuous analysis of information, that can be helpful for the cities to use.
- An important objective of training users is the expansion of digital knowledge. By raising awareness required to achieve this a growing number of citizens will be able to solve their administrative tasks digitally. This can make the future Smart systems sustainable and profitable.

### **Conclusion**

The fact that today European cities generate about 80% of the total gross domestic product indicates that cities are the main generator of social and economic development. Despite the fact that cities are the basis of the implementation of life issues for a substantial majority of the population they are also the place of generating the main problems of today. Urban development is responsible for the rising unemployment of the population, climate change as a result of environmental pollution, problems of transport and communication, excessive power consumption, etc.

In order to make future cities a suitable place for the life of the vast majority of Europe's population, it is necessary to establish and strictly apply the principles of sustainable development.

If we want to maintain the European model of urban development it is necessary to create and adopt strategies which will also contribute to the rapid exit from the current crisis as well as sustainable development after its completion.

It is necessary to strive for alignment if competitiveness in the world economy with the sustainable development of local economies in order to break their degradation and thus all the negative social consequences which result from it.

The future economic development of the European Union will largely be tied to the development of its cities and local governments (region). There is a need to grant them special attention, ie. make their own cities and local communities at the heart of attention and to make them the center of attention while defining strategies to the overall economic recovery and development.

European Commission document entitled “Smart Cities and Communities - European innovation partnership” was released 10.07.2012. reflect the proposed strategy, addressed to the Council of Europe, European Parliament and all Member States of the European Union, in order to accelerate innovation in the interdisciplinary areas of energy production, transport, traffic and information - communication technologies (ICT).

The concept in which the city itself, through the relevant structures of complex control system performs continuous optimization of its entire operation, introduces the concept of smart cities (smart city).

Despite the fact that most of the urban population lives in cities just medium-sized, previous studies have mainly dealt with the study of large cities - capitals. This approach concluded that major world cities are not suitable research model in terms of defining a unified approach in the ranking of the cities. A new concept was adopted - the medium-sized towns in many ways similar to each other and as such provide a good framework for a research finding common factors for defining the smart city. Smart cities are the only logical answer in terms of the sustainability of development in the future, it is expected that the key issue in the forthcoming period will not be whether cities will approach this concept of development, but which cities will be the first to do and which city will do it best.

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# ADVANTAGES OF MODERN APPROACHES IN HIGHER EDUCATION AND DISTANCE LEARNING

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## Abstract

*Traditional approaches to education, especially higher education, supported by information and communication technologies (ICT) have certainly opened up new opportunities in teaching and learning. Expansive development of ICT is the backbone of modern approaches in education and significantly facilitates the acquisition and exchange of knowledge and information. In the first part, the attention is focused on the concept, importance and representation of the concept of Open Educational Resources (OER), and analysis of its connection with the concept of distance learning, as well as the basic advantages of education. Increasing the availability of high-quality, relevant learning resources, the ability to adapt materials and free or cheap access to the needed resources is certainly in favor of further development and wider application of OER in Europe and the world. In the second part, the attention is focused on the concept, development and the importance of learning in modern society. Analysing the above-mentioned aspects, we have arrived at the conclusion that modern ICT made learning a primary concept in the acquisition of open knowledge. Distance learning can be a complement to traditional education or substitute for traditional education. Time and space flexibility, interaction between student and teacher that takes place via computer, the use of interactive learning content, the opportunity to attend prestigious programs without changing a place of residence, and to develop independence in seeking sources of information are just some advantages of the concept of distance learning.*

**Keywords:** *Information - communication technology, high education, Open Educational Resources, Distance Learning*

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## Introduction

The modern system of higher education in Europe in the period from the 90s of the twentieth century until today are faced with many pressures of globalization and expansion in the development of information and communication technologies. In such circumstances, it is inevitable that there have been significant changes in the European system of higher education. The main changes relate to the introduction of precise criteria for the accreditation of the university, faculty, and academic programs and orientations, as well as the introduction of criteria and rules for quality control in higher education. Parallel to this process, perfected their skills and approaches in creating a syllabus specific cases, methods of teaching, and methods of evaluation of students' activities, bearing in mind the pre-exam and the exam.

Among the goals of a united Europe is the creation of a European knowledge society, which rests on two pillars - European Research Area - ERA and the European Higher Education Area - EHEA. Their implementation has a strategic place in European integration (Komnenović, 2005).

Things that have opened the door to changes in the mode of teaching, or the manner of presentation of course content, and led to the displacement of traditional lectures to online lectures are expansive development, implementation and wide availability communication technologies. In fact, there is no area of life and work in which IT resources are not enabled better communication, planning and implementation of all activities of vital importance for modern man.

In an era of rapid increase the volume of global knowledge, information technology has enabled the continuous modernization approach to both teaching in higher education in world level and accelerated implementation, customization and implementation of the systemlike of distance learning. Thus, under the influence of modern technical and technological achievements and aspirations of modern man that activity in the private and business sphere into line with the opportunities that largely provides the technology, the system of education, especially higher education system in recent years has been actively involved in the field of IT support to the teaching process. Modern education, namely, includes introducing multimedia systems, distance learning, virtual schools, and other information technology that supported modes of communication between teachers and students, which lead or may lead to an increase

in the activities of students, better evaluation of their knowledge and advancement in accordance with individual abilities and prior knowledge.

Distance learning as a modern approach to teaching is significantly associated with the concept called Open Educational Resources - OER established at international level, which means that “all teaching and research materials, as well as learning materials available to the public and put into circulation with the licence open source, which allows people their release multiple use, access, and distribution with or without partial restriction (Report of the Tempus project Baektel, 2014, p. 4).

Distance learning is a relatively newer model of learning supported by information and communication technologies certainly bring new opportunities in learning and teaching. The most important role in this is the development of the Internet, which allows not only remote access to teaching materials, but in addition seamless communication between teachers and students, and in cases where they are located in remote locations. However, with the advent of this approach in teaching, there were numerous conflicting opinions about the significance and purpose of the virtual mode of communication in relation to the classical lectures.

### **Review of the concept of OER and the connection with the concept of Distance Learning**

At the beginning of the paper, it was pointed out that the expansive development of information technology greatly facilitates the acquisition and exchange of knowledge and information.

The term *Open Educational Resources* (OER) first was used at the UNESCO conference in 2000 as a means to allow release access to educational resources on a global level (Report of the Tempus project Baektel, 2014, p. 5). According to the views of many authors, OER movement originated from developments in open (free) learning, distance learning and the broad context of a culture of open learning, open source, free sharing and many others who have appeared at the end of the 20th century (Wiley 2006; Wiley, 2007; Mossley, 2013). In its primary form, the concept of OER describes each educational resources (including the curriculum, teaching materials, a variety of applications that include multimedia content as well as any material that is manufactured to be used for teaching and learning) which is freely available for the use of students and teachers, but not limited to companies in the form of payments for the use of, or payment of fees for licences.

How important is the use of OER by the fact that the European OER's record increase of users, the majority of this number is calculated from several hundred thousand registered users and up to several million. In the USA the number is much higher. In Serbia, the OER inserted into the Strategy of Higher Education by 2020, which is based on the openness of Education (Milošević D, Milošević M and Radovic M, 2015).

Based on the research of application of OER in higher education in the universities of the European Union comes to the conclusion that there are a number of initiatives in the field of higher education in the European Union (both by organizations and by individuals) relating to the promotion of public education available globally community learning and teaching. Some of these initiatives are: Open Education Europa, which was used by the European Commission, as part of a European consortium of publicly available educational programs; Miriada X, which was launched in Spain; iMOOC, which was launched in Portugal; FutureLearn as a branch of the Open University and forum, which were launched in the United Kingdom; Alison, and IREL-Open, which were launched in Ireland; FUN (fr. *France Université Numérique*), which was launched in France; Eliademy, which was launched in Finland; OpenHPI, Opencourseworld and Iversity, which were launched in Germany; OpenupEd - the first initiative of a MOOC (Massive open online courses), which includes Europe and has the support of the European Commission; iTunes U and Universia, which were launched at the EU universities; Be the Engineer, which was launched at the Architecture and Civil Engineering, University of Banja Luka; Knowledge for All, which was launched by the University Library "Svetozar Markovic" in Belgrade; The platform called Distance Learning System (DLS), which was launched by LINKgroup company in Belgrade, which has developed its own system of distance learning, with many of courses (Report of the Tempus project Baektel, 2014, pp. 12-20).

From the above-mentioned initiatives in the field of higher education in the European Union relating to the promotion of OER, it is clearly evident that the Distance Learning System as integral part of the concept of Open Educational Resources, respectively platforms that enable the realization of the concept of Distance Learning is actually an integral part of instruments and tools of promotion and realization of the concept of OER. On this point, it is important to mention one of the most famous and successful initiatives to promote and implement the concept of Distance Learning System, and thus the concept of OER. It is a OpenLearn initiative.

However, in the context of the relations between OER and Distance Learning System, Butcher (2011, 2015) points out that “OER and Distance Learning System are not synonymous, but many people make the mistake of just identifying the two terms. Open licenced content can be producing in any type of media in the form of text on paper, video or audio clip, or in multimedia form. Many courses within the concept of learning can be conceived in the form of OER, but that does not mean that every online learning automatically OER concept. On the contrary, many of the material within the OER, are solded not only through online, but are printed in hard copy and are available to users. Bearing in mind what kind of all the challenges facing developing countries, it seems increasingly that they prefer to use printed materials in relation to the placement of materials designed for e-learning “(pp. 5-6).

When we mentioned a OpenLearn initiative, we can say the following. The OpenLearn is well-known institutional source of HE OER. The Open University is one of the most successful universities for Distance Learning System in the world. Strive to be the world leader in the design, content and delivery of open learning and distance learning through academic research, pedagogic innovation and partnership. Materials with the Open University courses are available free on the website OpenLearn. Users can find hundreds of release lessons within twelve different areas, each with a forum for discussion. OpenLearn offers a range of methods and strategies in order to form a society of teachers and students around his content. It is composed of two parts: LearningSpace that offers learning materials and LabSpace where content can be downloading, reorganize, adjust and re-use (Report of the Tempus project Baektel, 2014, p. 17).

After a brief review of the concept of OER and the connection with the concept of Distance Learning System, it is necessary to make a brief overview of the importance of application of OER in education, as well as on the situation in Serbia in the field of opportunities for the implementation of the concept of Open Educational Resources.

In support of the implementation of OER in education, especially in the field of higher education highlights the following.

The most important reason for the use of OER is the fact that it is a learning (educational) resource with an open licence, which has high potential to contribute in improving the quality and effectiveness of learning. Transformative educational potential of OER revolves around three related perspectives:

1. Increase the availability of high quality, relevant learning resources can contribute to increased productivity of students and teachers. Since OER removes all restrictions on copying resources, can reduce the cost of access to educational materials. In many systems, the payment of royalties on textbooks and other educational materials represent a significant part of total costs, and procedures for obtaining permission to use copyrighted material may require a lot of time and money.
2. Principle permits adaptation of the material has enabled one of many mechanisms for creating the role of students as active participants in the education process. Students achieved the best result in learning not only passively reading and absorbing, but when practical work and create. Allowed access to the content that encourages activity and creativity of students through multiple use and adaptation of that content can have a significant contribution to the creation of more efficient learning environment.
3. OER can build capacity by providing institutions and educators release or favourable access to the necessary resources to improve their skills in creating teaching materials and implementing the necessary instructional design that would allow the integration of such materials in high quality learning programs (Butcher, 2011, 2015, p . 13).

### **The impact of information technology on education**

Education aided by information technologies implies at least three basic components: Computer Assisted Learning - CAL; Computer Assisted Research and Distance Learning System - DLS.

Computer Aided Learning is most commonly used and is very suitable for the realization of interaction between students and computers to improve the existing technology learning, teaching made more obvious, more dynamic and more interesting with the involvement of more students' senses in acquiring new knowledge. Computer-aided learning involves multimedia educational software, computer simulation, virtual reality, artificial intelligence, etc. Using information technology is planned individual to acquire knowledge, constant feedback and monitoring of students 'progress as a teacher helps to realistically evaluate students' knowledge and instructs them to other didactic media to successfully master new skills (Mandić, 2003, according to Matijašević-Obradović and Joksić, 2014, pp. 146-147).

With this type of education supported by information and communication technologies does not only take place between students and professors, but is oriented between the student - teacher. A wider range of application is justified; given that computer, aided learning can be represented at all levels of education (primary, secondary and higher education).

Computer-supported research is, at present, significant benefits to higher education institutions for theoretical research in various fields of literature and empirical research using appropriate statistical software (STAT VIEW, SPSS, etc.). Theoretical research literature is almost unthinkable without the use of computer technology, because today, almost all major books, articles, studies and collections of professional and scientific meetings are translated into electronic editions and placed on the web portals publishing houses, universities, libraries, schools, etc. (Mandić, 2003, according to Matijašević-Obradović and Joksić, 2014, pp. 146-147).

Distance Learning System is increasingly used in education. Many universities in the world, in order to equalize the level of knowledge that is given to students, instead of the praxis of professors travelling to other faculties, they stated exchanging ideas by using telecommunication technologies. The professors give lectures at the university, and it is transmitted over the Internet to other locations. This creates long-term intentions of managers in education that instead of people travel ideas, which significantly reduces material costs faculty. Distance Learning System represents an instructional mode that does not require the presence of students and lecturers in the same room (Matijašević-Obradović and Joksić, 2014, p. 147).

### **Concept, development and significance of DLS in modern society**

Significant attention in the world is given to development of Distance Learning System. Numerous of world-renowned institutions of higher education in their curricula have this form of education. According to data from The United States Distance Learning Association - USDLA, in 2003, on some form of distance learning there were about 3,000,000 students. Some of the most important institutions that apply it in their work in the United States: National Technological University, Western Governors University, University of Phoenix, California Distant Learning Program, Columbia Network for Engineering Education; in Europe: The International Council for Open and Distance Education - Oslo, United

Kingdom Open University, the Virtual University Enterprises, University for Industry, etc. (Pokorni, 2009, p. 138).

In Europe, significant initiatives to develop Distance Learning System realized through the “European Distance Education Network” (EDEN) and the “European Association of Distance Teaching Universities Education”. EDEN members from Serbia are: E-learning Network, Link group (who is the founder of the Belgrade Academy of Computer Science) and the Faculty of Economics from Subotica. Open University in the United Kingdom adopted the standards for distance education at whose model is organized educational institutions in Spain, Germany, the Netherlands and Portugal. The European Commission in its documents (e-learning Action Plan 2004-2006) strongly supports the development of distance learning or e-learning in all EU member states. Many programming documents, such as the e Europe+, eEurope 2005, Information Society etc. and the Resolution of the European Council provide distance education an important priority in the further development of education in the EU (Pokorni, 2009, p. 139).

Before definition and brief elaboration about the importance of Distance Learning System, it is necessary to say something about what is actually DLS.

Distance Learning System is not new. It came about with the advent of correspondence schools, which were based on materials and books that were sent by mail, and today is carried out through modern technology (sending e-mail, delivery of CDs, online communication, etc.), as of course and take the exams. Therefore, Distance Learning System exist more than 100 years, but with the advent of the Internet as a new form of communication, get a new dimension. Since then, Distance Learning System is considered as a new phenomenon. In fact, it is applicable at all levels of education, from primary through secondary and higher to various forms of education and training during their working life in the workplace and outside it (Lifelong Learning). Definitions of Distance Learning System are not unique, and over time have changed, often depending on the development of technologies that have been implemented, but additionally to reach out to the science of teaching at a distance (distance teaching), and its result - distance learning (DLS), especially in higher education, where distance education raised (Pokorni, 2009, p. 139).

Distance learning is the system and the process of connecting users to distributed educational resources. This is a completely new form of



education, in which the information technology emerge as an intermediary in contacts between teachers and users who are not in the same place at a certain period of time. Based on the application of computer networks and other modern electronic devices, customer education services enables the monitoring of lectures, access to educational facilities and programs, communication with the teacher, gaining a diploma (certificate), which follows from all the above (Milutinović i Ćurčić, 2012, p . 2).

DLS according to Tepšić, Borovnica and Bakić (2015), “means that the main carrier of communication between teachers and students is separation (at a different time and a different place - the separation of instructors - tutors and students). It must include two-way communication between teachers and students that aims to facilitate and support the process of education. As an intermediary for the necessary two-way communication, technology is used “(p. 2).

Modern information and communication technologies (Internet, hypermedia systems, computer networks, digitization etc.) made Distance Learning System as primary concept in the acquisition of open knowledge. DLS can be a complement to traditional education or substitute for traditional education (Tepšić et al., 2015, p. 2).

The system of Distance Learning System is a multimedia broadcast (network) that includes software support in the form of educational products, instructions for users, system evaluation and the electronic network that connects users with services. According to the form of communication, there are two forms of distance learning:

- Synchronous forms of distance education is based on the assumption that all users and trainers “online” at the same time. Types of on-line teaching are interactive television, computer conferencing, multi-user domains (Multi-User Domains - MUD). The main advantage of synchronous technology is the establishment of direct communication between trainers and users;

- Asynchronous form of education is represented largely, because it gives the user the ability to choose when and how much time to spend in the virtual classroom (distance education, audio and video cassettes, DVD, electronic mail, television educational program, www-oriented courses). Asynchronous schools are suitable for longer forms of education (complete secondary and high school) (Tepšić et al., 2015, p. 3).

The system of distance learning includes the following components:

1. The mission - the mission system of distance learning is the one who defines his role within the context of national policies. Moreover, mission can be directed to specific purposes, target groups, regions, sectors or levels of education and training, and may lead to different values and philosophies of learning and education.
2. Lectures and curriculum - a curriculum of lectures and define the profile of the system or institution. They should be relating to the mission and defined needs or markets.
3. Strategies and techniques of teaching - teaching strategies and techniques depend partly on the type of program and the needs you want to meet, but also from the educational philosophy and values of a particular system, and from the educational characteristics and potential of the technology used. Learning materials and resources are essential components of the system of distance learning. Comprehensive, well-designed materials may stimulate self-learning and thus affect the quality of the system as a whole.
4. Communication - Communication between teachers and students is a necessary component in distance education, as well as in all other forms of education. Communication technologies transmit messages in the text, fixed and moving images, and sound. Messages that generate knowledge can be transferred to many of students, either synchronously or asynchronously, “imposed” by broadcasting or accessing on demand via the audio / video player or Internet. How to change these devices, thus will change and the quality and nature of these messages.
5. Local support - local support is a common component of many institutions from one regime. The letter, phone call or e-mail, of course, supplied locally and are more likely to be a tool to support students in institutions with a double regime. However, that what is mean here is the support that allows some form of direct (face-to-face) interaction between student and teacher or mentor.
6. The subsystem management students and staff - subsystem management students and staff are often different from the subsystem of teaching materials. From an administrative perspective, subsystem management students and staff includes reception, allocation to courses and student services, learning management and procedures of teaching, assignments and assessment, monitoring dropout and completion, and examinations.
7. Effective management and administration - effective management and administration does not require a professional staff, but also

well-designed, efficient administrative systems and ways of working, planning and monitoring systems, accounting systems, etc.. Many of these are significantly different from the corresponding systems needed to management of other forms of education.

8. The needs of buildings and equipment - buildings and equipment needs are also different from conventional educational institutions. Distance Learning System do not have a present students, and therefore there is no need for classrooms and auditoriums in a central location. Such facilities may be needed locally, and often provided in collaboration with local institutions. At the central location need manufacturing facility and storage capacity, although it is possible and decentralized production. For institutions with a double regime, these objects of distance education must be placed along the space defined by the primary mission of the institution.
9. Assessment - assessment should be a component in order to provide information that is important to adapt the role and operation of the system components, and to ensure their optimal contribution and development. The success of any institution with one or two regimes, depends on the efficiency of the system of monitoring and evaluation. Without that it would be impossible for administrators to be aware of problems in the system until the system falls apart. Rely on the type of informal, unstructured feedback that may be sufficient in a conventional classroom, it is not possible in DLS (Zenović, Randić i Bagaric, 2012, pp. 129-130).

Computer technology is subject to constant innovation. Construction of teaching computer networks is expensive and requires time and investment. On which the software will use the educational institution will decide whether to use their own or rented kind of platform. The system, which is gradually gaining popularity in the world, is known as Moodle. Properties for which the faculties decided to use Moodle system for managing the learning process are: high availability - the ability to handle thousands of users simultaneously; stability - the ability to withstand an increase in the number of users with no drop in performance; easy usability - the ability of the user (student or teacher) very quickly learn to use the system; Interoperability - the ability to integrate with existing software in the institution; stability - a stable version of the software Moodle provides continuous services to the student population and teaching; Security - characteristics of the system that does not represent a security risk higher than other components of the information system of the institution. Moodle is a free, open-source platform for Distance Learning System. It is

also known under the names: a system for arranging courses, a system for arranging learning or virtual learning environment. Platform for Distance Learning System - Moodle is Open Source Learning Management System (LMS). Moodle can be used for online learning in a variety of conditions. Moodle can be used in virtual schools, higher education, courses, training and commercial employees. Moodle is designed to be used primarily as a tool for asynchronous learning, where learning takes place at different times. However, it also contains modules for synchronous form of learning. Moodle is used as the primary means of courses, as well as an additional tool to support traditional learning. Simply put, Moodle is a tool for teachers who required used to improve learning (Kostić-Kovačević and Gavrilović, 2011, p. 781).

Distance Learning System, above all, is the democratic form of education, because it creates all the preconditions of equality of access to information and knowledge, while significantly reducing the cost and risk of a “force” inappropriate involvement of the teaching staff, because qualified teachers still are few compared to the number of potential students. Therefore, the development of Distance Learning System in the world, is given significant attention. This way of learning allow learn at its own pace and individual consultation via e-mail, chat services and electronic conferences. Using these technologies students can continue to participate in any geographic location. The many advantages of such forms of education, such as the independence of the time and place of teaching, greater possibilities of individualized teaching, and better access to educational content, enabled the great popularity of Distance Learning System but what often becomes an alternative to the various education programs that are presented in the form of classical education (Tepšić et al., 2015, p. 2).

However, in addition to the advantages of the concept of Distance Learning System, which are manifold and of great importance for modern society, Janeska and Taleska (2011) point out that “despite all the advantages, e-learning has some disadvantages. First, students must have a certain level of computer literacy. In addition, students can feel the lack of face-to-face interaction with the teacher. Assessment of student work can be problematic; because teachers cannot know, who is really solved the tasks, which are answered questions. In any case, the e-learning cannot replace the traditional classroom environment, but it primarily enriches the content and use of new technology “(p. 2).

## **The relation of traditional learning and Distance Learning System**

The concept of traditional education is associated with a form of learning that uses the classic lecture and a written textbooks and manuals. In doing so, students are passive recipients of knowledge; a primary goal of education is its transfer from the source is professor to student. When it comes to contemporary understanding of education, the goal is no longer a simple reproduction of knowledge but strives, as far as possible, actively to involve students in the process of acquiring knowledge in which there are various sources of knowledge. Students can select a source through which can acquire material and regulate the pace of its adoption. Such a model in which the teacher is no longer the source of knowledge, but a mentor that guides students towards the desired goal is called model construction (Willis, 2005). Precisely, implementation of information technology in teaching allows the realization of this modern approach (Nikolić and Tešić, 2010).

The difference between traditional education and DLS, many authors also make from perspective of type, scope and method of preparation of educational materials.

Educational materials are the most important element of distance education. In classical education, they represent only support the teaching process in which the teacher is in the lead role. In DLS, educational materials represent the main source of new knowledge and skills. They both control the flow of the teaching process, because each student through the process of training and direct it toward the desired goal. Their role is very complex, and impact on the quality and outcome of Distance Learning System is crucial (Despotović and Savić, 2006).

The process of preparation and development of electronic materials for Distance Learning System is a cycle of four phases: analysis, design, development and evaluation (Savić, 2007). In addition, each phase has its own specific objectives, and the results of the previous phase serve as input to the next phase.

When we talk about traditional model of teaching and learning, and about model that only in recent years gained importance in our region, we cannot skip a view at a few important factors that greatly influence the acceptance of a particular approach. Namely, how society will react to innovations in the field of not only education, but also in other segments of life and work,

has a very strong influence of the system of values that are fostered in this society, then cultural moment and motivational aspect. No less important is the social aspect. A particular problem with the Distance Learning System students is isolation and lack of teamwork, exchange of experiences, mutual comparisons. This also means that the commitment to a particular approach, in this case in the education system is not only determined by the comparative aspect of the good and bad sides of an access (although this aspect is the observation of a question is inevitable), but also the capabilities and readiness of our society to understand, perceive and objectively assess the benefits of a particular model of teaching and learning, in accordance with the evaluation and implementation of the same.

Undoubtedly, Distance Learning System has many advantages.

Distance Learning System in relation to the classic, traditional approach to learning shows the following advantages:

- Time and space flexibility - students learn independent of time and space, and time, and education becomes available to those coming to college would not be possible, due to geographical distance or e.g. health problems;
- The interaction between student and teacher that takes place via computer (e-mail, discussion forums) is often more direct and intensive care communication in class. Questions to ask freely, without fear of authority professors.
- Use interactive learning content and different media (with text, images, animation, simulation, sound, video ...) for presenting content and their adaptation to students (Stanič and Gavrilovic, 2011).

In addition to these advantages in favour of Distance Learning System can also be given the opportunity to attend prestigious programs on quality institutions, run by well-known experts, without a change of residence, then, to acquire additional skills and knowledge on the use of modern information technology, then, the development of independence in seeking sources of information, etc. (Matijašević-Obradović and Joksić, 2014, p. 150).

All these advantages largely correspond to students. Leaving them enough room for better planning of time and a greater capacity for analysis and synthesis of content that is taught, are a major motivation for learning and training (Matijašević-Obradović and Joksić, 2014, p. 150).

## Conclusion

Summarizing all the above, it can be concluded that the availability of high quality, relevant resources, release or affordable access to necessary resources and adequate adaptation and online marketing resources are the primary characteristics of the main advantages of modern approaches in education.

Distance learning provides many innovative features in the process of acquiring new knowledge. Time and space flexibility, interaction between student and teacher that takes place via computer, the use of interactive learning content and different media for presenting content, then the opportunity to attend prestigious programs on quality institutions, run by well-known experts without change of residence, and to develop independence in seeking sources of information are just some advantages of the concept of Distance Learning System.

It cannot be disputed that the use of modern media, didactic teaching has become more dynamic and interesting, adapted to students' abilities. In fact, learning is increasingly used in education.

What is also important in this area, refers to permanent evaluation of performance and level of development of the Distance Learning System, in line with the changes taking place in developed countries, and based on the experiences and attitudes of teachers and students in practice.

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# IMPROVING BUSINESS PERFORMANCE BY USING SMART CITY TECHNOLOGIES

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## Abstract

*Digital transformation will be the prevailing trend in the several years to come marking the entire area of information and communication technologies. Expectations are high as real-time data availability and security are a very important segment for all organizational systems. Digital transformation is indeed a global trend, but it has to become a business reality with altered consumer habits and step into new areas of productivity. Required technology to achieve this has already become available (5th generation Internet, smart devices, Internet of Things - IoT, BigData, Network - assisted Device-to-Device - D2D) and familiar to employers, employees and business partners. Because of this, they will not tolerate delays or interruptions in providing services or any other liability. It is up to managers to find the best possible model to implement these technologies into their systems and provide their maximal utilization in an attempt to achieve competitive advantage and better business results. The application is a subject of many professional debates but has not reached academic circles in the manner it deserves. The goal of this paper is to provide a solid foundation for further research on this topic.*

**Keywords:** *Management, Smart technologies, Performance, BigData, IoT, Crowdsourcing, Sustainability, D2D.*

## Introduction

Smart city, Green City, Green Economy and Sustainability are probably 5 out of 10 most common used phrase in the current scientific and business literature. Most people use them as slogans and empty phrases in order to enrich their articles and marketing headlines. The skilled and well-versed observer can see that these keywords yield added value and many synergetic

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bonuses. Paradoxically, these frequently used keywords also lack general consensus about their meaning and content. Smart City, Green Economy as well as Sustainability, represents milestones and goals of future achievements which governments, business enterprises, and individuals seek to achieve together in order to create a better future. Every major technological and technical revolution applies its achievements in the economy first. This can be verified by observing any significant technological and technical leap for all major stages in human history from the Bronze Age up until today.

Each new technological breakthrough is reflected in the shape, organization and purpose of the cities. Smart city concept can be viewed as the application of newly available ICT technologies or even as the application of “Information Age” to living and work condition in the cities. Smart Devices, 5th generation internet, BigData, Crowdsourcing, D2D, High-speed network infrastructure, Sensor grids, and Smart grids are all used to enhance performance and well-being while reducing costs and resource consumption. Growing urbanization forced the government and scientific community as well as business enterprises and individuals to apply ICT technologies in everyday city life in order to achieve above-mentioned goals. Application of ICT technologies to urban living prompts the creation of entirely new range of ICT methodologies, techniques, and tools. It even connected ICT with Architecture, Cognitive Science, Psychology, Biology, Meteorology, Ecology more than ever.

These technologies are now retroactively being implemented into modern businesses in order to achieve the same goals they are intended to achieve with their application in urban living. These technologies are present in ever day life and well known to both employees and employers because they are widely accepted; however, their application in modern enterprises is still in the early phases. Despite being in the early phase of application of these technologies in business, expectations are very high.

Current economic crisis adds additional pressure on the implementation of these technologies to provide maximum utilization in an attempt to achieve competitive advantage and better business results.

### **Methodology**

A literature review approach was chosen as the method to gain additional insight into the complex matter because existing literature widely focuses on the application of the above mentioned technologies to Smart Cities;

while literatures on the application of these technologies to business and the creation of new business models is scarce.

Further study of this phenomenon can create new business models and provide business enterprises with competitive advantages. These technologies have already proven their values and they are widely recognized. However, they are not sufficiently implemented. It is also important to have dual approach to this matter because these technologies applied in smart cities, not only influence businesses which reside within the cities themselves, but can also be applied to companies located outside the smart cities.

These technologies were invented as building blocks of modern Smart cities and must be observed as such – inseparately connected with the smart cities. In the historical context of researching smart cities, the cause and consequence relationship between these technologies and smart economy/business have to be established. Smart cities are created to provide sustainable development with new business models as a key to sustainable development.

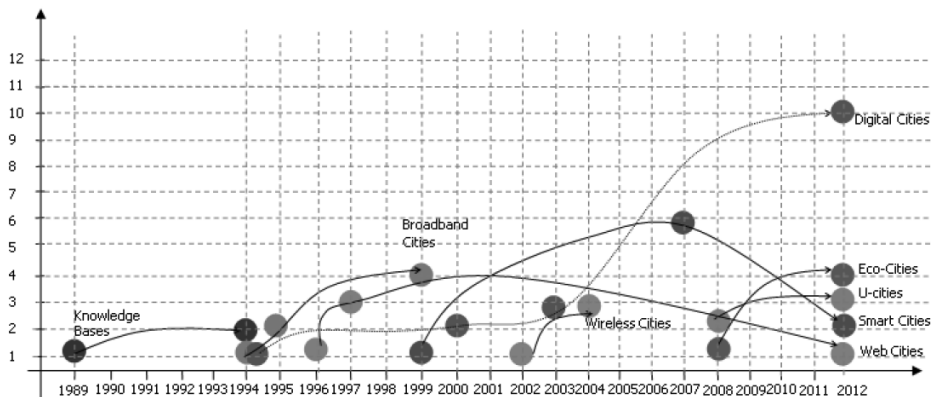
### **Smart City**

“A smart city (also, smarter cities) uses digital technologies to enhance performance and well-being, to reduce costs and resource consumption and to engage more effectively and actively with the citizens. Key smart sectors include transportation, energy, healthcare, water and waste management. A smart city should be able to respond faster to urban and global challenges than one with a simple ‘transactional’ relationship with its citizens” (Yau et. al., 2015).

“A Smart City” does not have a generally accepted scientific definition. The city is regarded as smart when it is well-performing in six macro-areas, that is to say: Economy, Environment, Mobility, Governance, People and Living” (Komninos, 2002; Giffinger et al., 2007; Shapiro, 2006). It is often used as a synonym with several other terms. Anthopoulos and Fitsilis (2013) made an investigative literature review which returned eight different smart city approaches and 31 representative city cases. The Web or Virtual City is the primary smart city form with representatives from the America-On-Line (AOL) cities (Al Nuaimi, et. al., 2015), the digital city of Kyoto (Ishida et al., 2010), (Albino, et al., 2015) and the digital city of Amsterdam (Lieshout, 2001). Knowledge Bases - which was adopted by

Copenhagen, Seoul as well as Beijing (China) (Sairamesh et al. 2004), Antwerp (Belgium), Helsinki, Amsterdam and Geneva (Van Bastelaer, 1998) introduced the third approach entitled Broadband City/Broadband Metropolis. Mobile or Wireless or Ambient Cities, with representatives New York City and Atlanta (Ganapati and Schoepp, 2008). Digital City extends the above approaches and older ones (Moon, 2002) and describes a “mesh” metropolitan environment that interconnects virtual and physical spaces in order to deal with local challenges. (Anthopoulos and Tsoukalas, 2006.) *Smart City* approach is currently fully applicable to Dubai, Barcelona, Austin (USA), Tampere (Finland) and European cities (<http://smart-cities.eu>, <http://www.smartcities.info>). Ubiquitous City (u-City) represented by New Songdo (Hyang-Sook et al., 2007) (South Korea), Manhattan Harbour and Kentucky (U.S.A.), Masdar city (Abu Dhabi) and Osaka (Japan). Eco-city or Green City approach has been followed by New Songdo and Dongtan (South Korea), Tianjin (Singapore) and Masdar (Abu Dhabi).

**Figure 1** *Smart city evolution*



**Source:** *Anthopoulos and Fitsilis, Electronic Journal of e-Government Volume 11 Issue 1 2013*

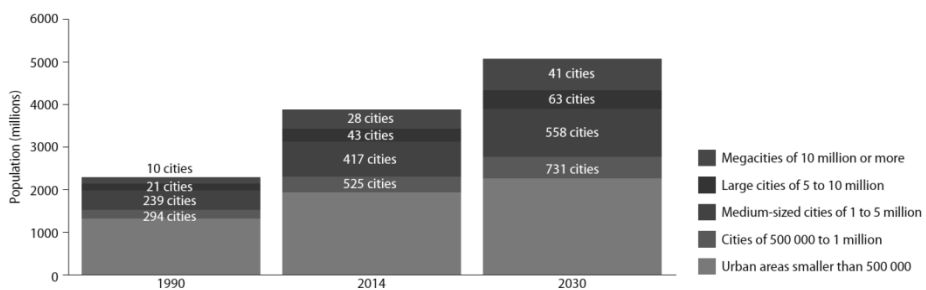
Smart city concept is sometimes regarded as a simple slogan or a vague goal which has to be achieved. However, the problem is far deeper and it has two major driving mechanisms; the first set of driving mechanisms resides in World Economic crisis and growing urbanization. United Nations and governments around the world seek to find the solution to the growing urban population. “Globally, more people live in urban areas than in rural areas, with 54 percent of the world’s population residing in urban areas in 2014. In 1950, 30 percent of the world’s population was urban and by 2050, 66 percent of the world’s population is projected to

be urban” (World Urbanization Prospects, 20.02.2017., <https://esa.un.org>, UN Department of Economics and Social Affairs). The second driver of Smart Cities resides in the major technological leap in ICT that enabled humanity to step into the “Information Age”. Throughout history, each new technological breakthrough is reflected in the shape, organization and purpose of the cities. Smart city concept can be viewed as an application of newly available ICT technologies or even as the application of “Information Age” to human living and working conditions in cities. Information age not only influences the shape and organization of cities but also enables inhabitants of the city to create new forms and models of organization through mutual collaboration and communication. Smart education and smart government were enabled by technologies such as 5th generation internet, smart devices, Internet of Things - IoT, and BigData.

**Figure 2-** Prediction of global city growth

Figure 8.

Global urban population growth is propelled by the growth of cities of all sizes



**Source:** UN Department of Economics and Social Affairs.

A city could be categorized as smart when sustainable economic growth and high quality of life is achieved through investment in human capital, an adequate level of government participation and infrastructure that supports proper dissemination of information throughout the city (Caragliu et al., 2009).

Smart City, Green Economy as well as Sustainability, represent milestones and goals of future achievements which governments, business enterprises, and individuals seek to achieve together in order to create a better future.

European Union introduced long-term targets contained in the directives for sustainability and energy consumption as well as several strategic documents on Smart Cities: “Smart Cities & Communities issued by the

European Commission in 2011, containing the outline of an optimal, virtually perfect model of smart city, in which it is possible to reconcile and combine economy and ecology, and in which it is, therefore, possible to implement any necessary synergy between the protection of the environment and the development of new technologies, including policies of environmental sustainability and transformation processes of the urban land” (Ferrara, 2015). Thus, the Smart City can be regarded as a kind of “enabling” city (that) combines the creativity of citizens, experts, politicians and businesses for making cities in collaboration. Even though technology and connectivity are not necessarily the most critical factors in achieving this aim, they have the potential to be the enabler” (Hollands, 2008, p. 310).

### **Crowdsourcing**

Crowdsourcing is also known as civic science, crowd source science or networked science utilizes the citizens with their various age structure, education and backgrounds to aid scientific projects by gathering and analyzing data under scientific guidance. Information age technologies – especially high-speed internet and smart devices enabled this form of collaboration. “Crowdsourcing a modern management technology, as the basis for innovative business models and as a way of expanding the resource base of business” (Gafforova et. al., 2015). One of the amazing things we learnt about citizen science is that, we can tap into the human processing capacity. The human brain is a fabulous processor, and if you parallelize it and link all these different human brains you can tackle questions and analyze problems that are much bigger than a single research group at a University could ever tackle (Schawinsky, 2016). By the definition of Hove (2008) crowdsourcing is the transfer of certain production functions to the public on the basis of a public offer without a contract. Crowdsourcing is the use of collective intelligence and synergy interaction of a large number of people (Howe, 2012). Surowiecki (2007) in his book “Wisdom of Crowd” shows that searching a solution to a problem relying on the combined knowledge of many people, when conditions are prescribed properly, may be more effective method than the use of experts. The crowd can be smart if it is diverse, decentralized and has the opportunity to express their opinion as a consensus (Surowiecki, 2007). Crowdsourcing is widely used in the Smart city to gather data and build models of the city as an urban organism.

Citizens use their smart devices to gather environmental variables such as noise and stress levels, urban density, temperature, light levels, pollution, humidity etc. Crowdsourcing, as well as sensor grids in the Smart Cities

generate tremendous amounts of data transferred and stored in real time by using BigData. Stored data is further modeled into urban complexity models that represent virtual images of the observed Smart Cities.

Crowdsourcing is a management technique that utilizes the potential of a crowd and collective thinking. There are 3 main fields of crowdsourcing application – crowd creation which is most commonly associated with crowd creation, crowdfunding, and crowd voting. (Leimeister, 2010) Crowd creation aims to provide ideas, solutions, concepts and project design. Crowd voting is more to do with political control - a poll vote, assessment bills. Crowdfunding (Mollick, 2014) is the way of collectively financing activities and projects through the Internet. Using of crowdsourcing as a tool for scientific projects requires strict control from scientist and experts in a systematic effort to create classifications and further analysis (Kohler, 2015).

## **BigData**

“Adopting ICT, Cloud and BigData solutions will help address many issues such as providing storage and analysis tools. In addition, this will help to reach the innovation stage and encourage collaboration and communication between the different entities of a smart city” (Khan *et. al.*, 2013). This can be done by building BigData communities to work as one entity to foster collaborative and creative solutions addressing applications for areas such as, education, health, energy, law, manufacturing, environment, and safety. This also helps in real-time solutions to challenges in, agriculture, transportation, and crowd management as applications and systems are integrated and information flows easily across applications and entities (Bertot and Choi, 2013, Chandran, 2014).

There are many examples of BigData applications serving smart cities such as:

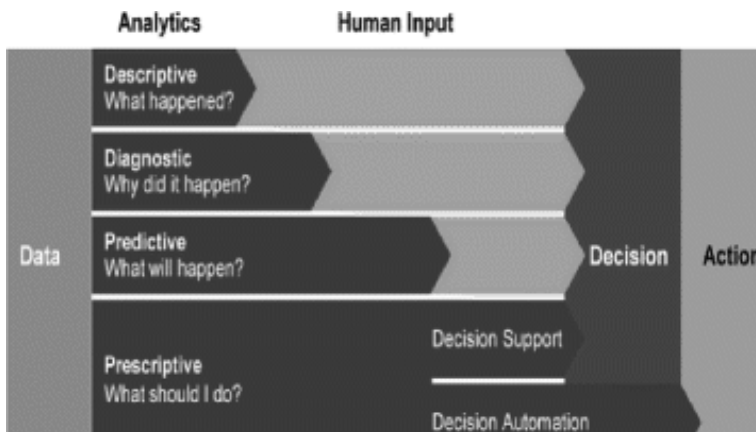
- Smart education: “Smart education applications will engage people in active learning environments that allow them to adapt to the rapid changes of society and the environment. In addition, by relying on BigData collected in the field and correctly process to generate the required information, we will have a positive effect on the knowledge levels and teaching/learning tools to deliver or acquire knowledge; furthermore, technology can make such opportunities available everywhere including remote or rural areas where commuting to schools may not be possible or the economic status of people is low and they cannot afford more expensive models. Using ICT and BigData will also help create a knowledge-based society, which will



enhance the nation’s capability in competitiveness. This data can create a useful resource for analysis to extract useful trends and models and use same to offer better and more enhanced education” (*Tantatsanawong, Kawtrakul and Lertwipatrakul, 2011*).

- Smart mobility: “One of the main aspects of smart cities is a good control of traffic flow within the city which will enhance the transportation system and improve the citizen’s commutes and the city’s overall traffic patterns. When the population increases, traffic problems, pollution, and economic problems happen. Smart traffic lights and signals should be interconnected across traffic grids to offer more information about traffic patterns; each sensor detects a different parameter of the traffic flow (e.g. the speed of cars, traffic density, waiting time at the lights, traffic jams, etc.). The system makes decisions according to the values of these parameters and gives the appropriate instructions to the lights and signals” (*Aguilera et al., 2013*).
- Smart grid: “The smart grid is an important component of a smart city. It is a renovated electrical grid system that uses information and communication technology to collect and act on available data, such as information about the behaviors of suppliers and consumers in an automated fashion to add some value” (*U.S. Department of Energy*). “Although the smart grid has many potential benefits, it requires the collection of huge amount of data from power procedures, transmissions, distributors, and consumers” (*Yin et al., 2013*). “In addition, it requires processing the collected data, which is considered BigData analytics, in real-time to send back some control information to improve the overall performance of the electric power system” (*Mohamed and Al-Jaroodi, 2014*).

**Figure 3-** *Gartner 2014.- correlation between BigData and smart city applications*



## **IoT - Internet of Things**

The term IoT was firstly mentioned by Kevin Ashton (MIT) when He defined IoT as a network that connects any device in the real-time in order to manage and monitor smart objects. “Since Kevin Ashton first put forward the concept of IoT, the idea has received substantial attention from governments, scientific technology enterprises, and scientific research institutions” (Weber, 2010, Sarma, Brock and Ashton, 2000). “The emergence of the concept of smart planet and the promotion of smart cities enhanced the involvement of the IoT technology in the economic revitalization strategy, which is based on the investment and urban development of the government” (Guo, Liu and Chai, 2014). The Internet of Things (IoT) is rapidly gaining ground in the emerging world of ICT (Atzori et al, 2010). The idea behind the IoT is to generate automatic real-time interactions among real world object that connects to the Internet and reduce the gap between real world and digital realm (Erb, 2011). Further, the development of mobile computing has also supported a plethora of applications namely combination between visual tagging of physical objects and Near Field Communication (NFC) devices that contributed to the development of the IoT (Borrego-Jaraba et al. 2011). Hence, IoT creates platforms that are able to transmit range types of data using a participatory sensing system (Gutierrez et al., 2013). These activities leave massive sizes of digital traces resulting in a multidimensional set of data known as BigData. By managing BigData, tourism organizations could extract valuable insight from the avalanche of information that could elevate them to a new dimension of customer experience and improve the way they interact with the customer (SOCAP International 2013).

### **Smart economy and business performance**

*Smart economy* consists of competitiveness, and consequently entrepreneurial skill, economic image & trademarks, productivity, flexibility of labour market, ability to innovate, *etc*; (Centre of Regional Science (SRF) Vienna University of Technology, Smart cities – Ranking of European medium-sized cities) “The transition from the competition of products and services to compete at the level of business models is a distinctive feature of the modern economy” (Ivanova and Leydesdorff, 2013). The main factor in the development of crowdsourcing is a risky business as innovative activities to create a new fund for business income. The essence of business is to create a new fund in order to obtain business income (Smirnov, 2014, Lee and Widener, 2016). Entrepreneurs in the

process of crowdsourcing productively use the resources of society, creating new social capital. Crowdsourcing should be considered, firstly, as a component of business model innovation, aimed at solving particular problems of business and management; secondly, as a basis for a business model and thirdly, as a way to expand the resource base of the enterprise organization. “Successfully adapting existing business models or developing new ones significantly influences a firm’s ability to generate profit and develop competitive advantages. However, business model innovation is perceived as a complex, risky and uncertain process and its success strongly depends on whether or not firms are capable of understanding and addressing their customer’s needs” (Marion and Poetz, 2015). “Business model innovation is increasingly recognized as one of the most important sources of creating competitive advantage in rapidly changing environments driven by new technologies, changes in customer preferences, and new regulations” (Zott, Amit and Massa, 2011). “Successfully adapting existing business models or developing new ones significantly influences a firm’s ability to generate profits” (Chesbrough, 2010).

## **Discussion**

It is up to managers to find the best possible model to implement 5th generation internet, smart devices, Internet of Things - IoT, BigData, Network -assisted Device-to-Device - D2D into their systems and provide their maximal utilization in an attempt to achieve competitive advantage and better business results. These new technologies prove that they can mitigate challenges and offer new unprecedented opportunities for success.

Major advances in IoT, BigData, other ICT and Smart City technologies offer the capability of creating new business models and solving current challenges in more effective manner. Storing, managing and analyzing data, collaboration, crowdsourcing, sensor technology, and networking have reached a new level of development. It is up to managers to implement these new technologies with their techniques and tools to create new flexible business models.

The level of application of these technologies may vary from the size of the business enterprise and a number of resources that an enterprise can allocate. Companies do not necessarily need to have the economic strength to harness the benefits of these technologies. Companies attracted to Smart cities establish their business model on competitive advantages offered

by the Smart City they reside in themselves. Smart mobility enables them lower transportation cost for their products and raw materials as well as a labor force; while smart education provides them more agile and educated labor force.

Beside Smart education system, smart cities themselves attract human capital which manifests itself in innovative culture later used by business enterprises. Smart government lowers legal and tax fees and enables shorter bureaucracy procedures. All of these lead to smart and sustainable economy.

Cloud technologies enable smaller business enterprises to harness the power of these modern technologies at lower cost with the “pay as you use” business model. They store their data in the Cloud cutting the cost of using these technologies to only a fraction of the cost that would be required to implement them “in the house”. These technologies enable improved collaboration capabilities between enterprises and employees which are crucial for real-time feedback and immediately analyze and provide corrective action required in the modern enterprise.

In order to improve the business climate and create fertile ground for Smart Economy, smart cities need to create public infrastructures and platforms to support smart city applications; while public infrastructures and platforms additionally enhance competitive advantages of the enterprises.

Developing this infrastructure, services, and BigData applications, even the smallest investments can offer significant effects on innovation culture and the economy. Sharing communication infrastructure between government, public and private entities and networks with different purposes and goals needs to address all the possible risks and to develop effective tools for solving them. Smart cities attract human capital and create innovative climate which has to be used to empower extraordinary scientific researchers and professionals to address and solve these problems. BigData applications have known benefits and application opportunities as previously shown in the literature however they also have many challenges and still have great room for improvement. BigData enables modern enterprises to store, manage and analyze huge amount of data. Security and privacy of the data become an important issue which has to be addressed. Cloud technologies are not always reliable while implementing BigData technology is costly. Scientific community industry and other research communities need to reconcile these in order to enable enterprises

to use BigData without the risk of losing or leaking of the data. Hybrid cloud and private cloud technologies are on track to accomplish this but they are still in the early phases of their development. Further research and tools need to be developed in order to enable SME to harness the power of these technologies at the affordable cost.

One of the additional opportunity for SME is the open network and the open data. SME can establish business models based on using and interpreting open data which is publicly accessible and available to everyone to use and republish as they wish without restrictions from copyright, patents or other mechanisms of control (Open Knowledge Foundation). They can build their own applications by using this data to provide new value to their clients. Open data principles are well known but their acceptance needs to be increased both among citizens as well as enterprises and government sector.

Crowdsourcing and particularly Crowdfunding have to be additionally recognized and further scientific study of these aspects as Civic Science need to be addressed by various scientific disciplines. Business enterprises are already using these techniques. Crowdsourcing is used by the scientific community to tap into the processing power of large groups of individuals with a diverse background in order to achieve unprecedented scientific endeavors enabled by the use of current ICT technologies. Business enterprises can use crowdsourcing to increase their consumer base; make a research on new product and services or to simply increase their consumer base (Bouvard and Herve, 2016). Crowdfunding slowly became worldwide spread tool for gathering resource base for new business endeavors for businesses, individuals, and communities. Crowdsourcing enables good projects and ideas to be executed and largely contribute to a climate of innovation and livability. Possibilities and limitations of this phenomenon have to be studied in order to spread and establish it as a viable option for every individual, business enterprise, and communities.

Internet of things is a vast field for scientific study and further research that has to be only mentioned without going further into the matter in this article. The internet already brought revolution to Smart cities and urban living. It is slowly becoming widely accepted despite the fears, it's application and reliability still exist. These fears are losing on their momentum because IoT technologies have proven their value worldwide. Business enterprises have to utilize it and to produce new devices and new ways of using them. IoT devices are currently used to create

smart buildings, smart vehicles, smart garbage dumpsters, smart tourist destinations, smart lights, etc. (Komninos, 2011). IoT technology is inseparably tied to Smart cities.

Crowdsourcing and IoT are technologies that enable humanity to tap into previously unforeseen capabilities for development. Their reverse and negative effects on humanity are yet unknown and have to be studied further. IoT aims to create an entire universe of interconnected devices which communicate without human interference and participation. These devices are entrusted with the everyday life of entire cities at a macro level and individuals at micro level e.g. cars and buildings. The Scientific community needs to study and carefully monitor the development of these technologies.

### **Conclusion and further study**

This literature review introduced relevant terminology and showed prevailing definitions in the scientific community about all major terms and definitions. It shows that the technologies mentioned in the review are separately tied to the Information revolution, smart cities, and modern enterprise. These technologies can be used to create new business models as their application in Smart Cities, already prove their value. Effects of utilizing these technologies in modern businesses are diverse and numerous. Beneficial effects of smart cities that contribute to the creation of Smart economy within Smart cities are a primary research topic for the authors. Smart economy provides additional revenues to the city communities and enables further sustainable development. This attempted to establish a frame for further analysis of the interaction between ICT technologies, Smart cities, and business enterprises. Establishing of this frame opened much unsolved or not sufficiently elaborated scientific research areas which has to be further studied.

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# APPLICATION OF THE PRINCIPLES AND METHODOLOGY OF PROJECT MANAGEMENT IN THE FIELD OF MARKETING

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## Abstract

*The development of new technologies and the need for more transparent, efficient and accountable marketing has driven the introduction of principles of project management in the area of marketing at the strategic, tactical and operational levels. This paper focuses on the application of the principles of project management in marketing at a tactical level of planning and managing marketing campaigns. This paper gives an overview of the most important methodologies of project management and assesses their applicability in the field of marketing. A study was conducted to determine the extent to which the project management methodologies and software are used in the development and management of marketing campaigns. A questionnaire was sent via email to selected marketing managers of the largest advertisers in Croatia. Research showed that marketing experts in Croatia generally do not use the available project management tools, though the majority use some elements of project management to ensure the success of the project: cost management, time management and, to a lesser extent, risk management, using basic office tools. The application of project management practices in planning and managing marketing activities would have a positive impact on the success of the marketing activities of Croatian companies.*

**Keywords:** *Marketing, Marketing campaign, Project management, Information support for project management, Project management methodologies*

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## **Introduction**

Under the influence of new technologies, marketing in recent years has changed more than in the past few decades (Juran, 2013). Marketing experts are faced with many challenges, including an increasing pressure from the board of directors to provide clear and measurable evidence that investment in marketing budgets contributes to achieving the strategic and financial goals of the company (Kotler, 2012). Marketing professionals therefore must acquire new skills that would connect the technical orientation of the project manager and research analyst with the ability of business strategists to look at the big picture (The Economist, 2015). The potential of combining traditional marketing theories with the project management methods of execution, monitoring and control was also recognized by PMI, the Institute for Project Management, which has founded the Marketing and Sales Specific Interest Group (MSSIG) whose mission is to introduce the discipline of project management in the area of marketing and sales (Fabac et al., 2010).

Each marketing campaign is developed with specific objectives and has the characteristics of the project and therefore requires a specific approach. The use of the project management methodology and information systems would greatly facilitate the management of marketing projects. Thus, the need for more transparent, efficient and accountable marketing has prompted the introduction of the principles of project management in marketing at the strategic, tactical and operational levels (Creveling et al., 2006).

In this article, we will focus on the application of the principles of project management in marketing at a tactical level of planning and managing a marketing campaign.

## **Research methodology**

The purpose of this research is to contribute to the issue of the application of the principles of project management in marketing at a tactical level of planning and managing marketing campaign, and the possibility of applying project management software tools in practice. The main goal of the research is to determine the extent the project management methodology and software is used in the planning of marketing campaigns. This research is also trying to find out the key reasons why the individual companies do not use the available project management software and IT support

when implementing and managing marketing campaigns. The survey was conducted among the top advertisers in Croatia according to data obtained from a MediaPuls ADEX report for 2015. The study seeks to determine whether there were significant differences between companies that use and those that do not project management methodologies and software, based on company size, number of employees, the size of the marketing team, the number of marketing campaigns of the year, the duration and amount of the budget dedicated to marketing or marketing campaigns.

Along these lines, the research has the following hypotheses:

**H1:** Marketing experts in Croatia do not use programs for the management and support of project management at the tactical level of planning and managing marketing campaigns.

**H2:** Marketing teams with a larger number of projects in the year are more prone to use project management software.

**H3:** Ignorance of project management software features is the main reason why they are not used among marketing experts in Croatia.

### **Literature review**

Kotler (2012), Gray and Larson (2006) define a project as a complex, non-routine, one-time effort that is limited in time, budget, resources and performance specifications that are designed to meet the needs of users. "Project management refers to the systematic application of knowledge, skills, tools, and techniques to project activities in order to meet the project requirements." (Šimović, 2011, p. 29). Project management means applying knowledge, skills, tools and techniques to project activities in order to meet the objectives and requirements set before the project by the stakeholder, while core project management encompasses the planning, organizing, monitoring and control of all aspects of the project and motivating all the people involved to achieve the project objectives in a safe manner, within the planned budget, time and other performance parameters (Omazić and Baljkas, 2005). Project management is an area within organisational theory and practice that is constantly evolving. The concept of project management represents a systematic approach to effective management through the optimisation of relationships, information, decisions, documents and activities in all phases of the project lifecycle (PMI, 2011). Key issues on which the project manager usually meets with project management are the people (the project team - their features, performance, availability, motivation, personal conflicts, etc.), assessment (quality assessment of the time and cost of the project), budget, authority (leadership as basic feature

of the project manager), financial and time control, and communication (80% of the project manager's time goes on communication).

Project management methodology is defined as a set of methods, procedures and standards that define a common development and management approach with a goal of delivering products, services or solutions. Traditional methodologies are complex, take a long time to learn and quite general, and they require a lot of practice in their application in order to be mastered. In contrast, modern agile methodologies are not so extensive, do not require a lot of documentation and are faster to learn. Within the traditional approach, there are various modified methods developed to respond to the various project demands such as the traditional waterfall model, the modified waterfall model, Critical Chain Project Management, Event Chain methodology, PRINCE2, etc. The main representatives of modern approaches are called agile methodologies that have developed from the need to increase the performance of projects. The best known modern methodologies are Agile project management, Scrum, Kanban, Lean Project Management, Extreme Project Management and Benefits realisation management.

The main role of project management is the successful completion of the project in accordance with the project plan that is related to five key factors including the time aspect, the financial aspect, the qualitative aspect, the user aspect and the aspect of performers (Šimović et al., 2011). Projects are often characterised by high levels of uncertainty arising from the various constraints, narrow timetables, uncertain budget designs that are on the edge of feasibility and often changing demands (PMI, 2011). Therefore, it is important to be aware that they are subject to unpredictable external conditions that must be met to get the project completed successfully and on time (Furton, 2003). The timely detection of the main project limitations is the best strategy for their removal. Numerous studies led to the conclusion that the reasons for the failure of projects generally do not lie in one specific reason, but are a consequence of various problematic situations and factors that aren't recognised and corrected in time (Fenech and De Rafaelle, 2013). Key project management issues are (Šimović et al., 2011) people, estimations, the authority, financial control and communication.

As a result of the multidisciplinary nature of project management, a large number of commercial and free project management software tools have been developed with the purpose of supporting project management. Today there are a number of software programs to support it - from those

that are less complex and useful in certain phases of the project, through sophisticated programs used for the entire lifetime of the project, to programs that are adapted to simultaneously support and manage multiple projects. Good software for project management would have to allow easy analysis of the project, defining the project priorities and the course of action of the project; it should ensure the efficient allocation of resources for projects and the simple and realistic planning of the project for project managers, minimizing risk, management parameters such as quality, budget, time and ideas, and ultimately provide support for all team members. Project size is associated with the level of complexity of the project and these two factors are usually highly influential in the decision on using the project management software (White and Fortune, 2002). According to a study conducted by Fabac et al. (2010), not using project management support software has been associated with a small number of employees in the company, a small number of projects on an annual basis, a low budget and a small number of people involved in the project. This research has shown that about 40% of the leading Croatian companies use project management support software. Thus, the bigger Croatian companies with significant budgets, which tend to work on several projects at the same time, tend to have developed the practice of using project management methodologies and tools, with a significant correlation between the number of employees, the number of projects on an annual basis, the amount of the budget and the number of people involved in the project on the one hand and the use of project management support software on the other.

### **Project management methodology in the field of marketing**

According to Kotler (2004), marketing is a business function that identifies unfulfilled needs and desires of consumers, defines and measures their size and potential profitability, determines which target markets the organization can best serve and decides on appropriate products, services and programs to serve these selected markets and calls on everyone in the organization to think about the consumers and be at their service. In other words, the job of marketing is to turn the changing needs of people into lucrative opportunities, and the aim of marketing is to create value by offering excellent solutions and providing a higher standard of living for the whole of society. Therefore, marketing professionals face many challenges, including the increasing pressure of the board of directors to provide clear and measurable evidence that investment in marketing budgets contributes to achieving the strategic and financial goals of the company (Kotler, 2012). According to a report by The Economist Intelligence Unit research,



which tested 478 high-ranking marketing professionals across the world, almost 40% of respondents believe that it is highly important for marketing professionals to acquire new sets of skills that would combine the technical orientation of the project manager and research analyst with the ability of the business strategist to look at the big picture (The Economist, 2015). Considering that the annual marketing plans consist of a series of activities that are realised on a project basis, many of the general principles of project management can be easily and simply applied to marketing. The elements of project management that marketers should adopt are project planning, managing documents and tasks, storing documents, tracking budget costs, additional analysis of ROI and tracking management tasks (Conner, 2014).

In recent years, marketing has changed more than in the past few decades (Juran, 2013), therefore as well as the area of software development, a traditional approach to the planning and execution of marketing activities simply cannot keep up with the speed of changes that are present in the digital environment. In the article on agile marketing, author Zoe Merchant quotes the report of the consulting firm Forrester Research from 2013, which explores the effectiveness of traditional planning approaches in marketing with the annual plan, given that 69% of respondents claim that market conditions change too quickly for set plans to maintain relevance (Merchant, 2015). The use of project management software thus significantly facilitates the management of marketing campaigns and places marketing managers in a privileged position in relation to those who do not use similar programs.

Due to the specifics of the subject, there is no consensus on which methodology is best suited for use in marketing. Below is an overview of a few of the selected methodologies and an assessment of their applicability in the field of marketing:

- *Waterfall marketing*: a model for the planning and implementation of marketing plans that follows the traditional approach. This approach allows very good control over the time and cost of the campaign, but it does not leave enough space for creativity and a rapid response to unforeseen situations that are inevitable in the environment of digital marketing given that the new media provides quick and easy two-way communication between the user and the company in real-time.
- *Six sigma*: to increase the ability of marketing to respond to market demands and company management, the authors Creveling, Hambleton and McCarthy in their book “Six Sigma for Marketing Processes” proposed the application of Six Sigma, a method for business improvement, to

marketing (Creveling et al., 2006). The authors conclude that Six Sigma is a highly structured process that requires long-term learning and the implementation of these will work best for companies that have already implemented Six Sigma process in their operations.

- *Agile marketing*: according to an article on Wikipedia (Agile marketing, n.d.), this approach applies key principles of agile software development to marketing in order to increase the speed, quality, flexibility and efficiency of the marketing department. In the context of digital marketing, agile marketing means marketing practice that enables a rapid response of the company to every reaction through specially created, time-customized content intended primarily for sharing via social networks.

### **Difficulties and complications in marketing projects**

The development of digital technology changed the way companies conduct business in general, and marketing has been impacted as well. New technologies brought new expectations and new communication channels for marketing and it elevated the traditional marketing campaign to a whole new level. Therefore today, alongside traditional media such as television, radio and printed media, digital media such as websites, social networks and blogs are playing a key role in marketing communications and advertising. This led to new more diverse areas of marketing such as digital marketing, which requires a new set of skills and knowledge in order to meet new challenges.

Complications in the implementation of a marketing campaign mostly occur for reasons such as poorly defined requirements, a lack of resources, lack of support from management, poor judgment, the inexperience of the project manager or team member, changes in the budget, market or technology, etc. As mentioned earlier in this paper, the most common key problems in project management occur because of people, poor estimates, calculations, the project manager's authority, financial control and communication (Šimović et al., 2011.).

*People.* The modern marketing campaign involves the integration of multiple communication channels, a diverse audience and the need for communication within the team and to the end users in real time. Changes triggered by the development of digital technology did not reflect only on the technical side of marketing, but it changed the whole way of functioning in marketing – the digital advertising sphere enabled the

tracking of user responses to marketing communication and monitoring the progress of the campaign, which enables and requires adjustment during the implementation of the campaign and constant communication with the end user. The resulting changes have led to more complex marketing teams consisting of groups of people with different professional orientation and skills. The marketing sector is rapidly changing and becoming more complex, as the marketing professionals require the ability to quickly adapt to new technologies, market demand, tracking trends, as well as to daily acquire new knowledge and skills. Also, working with external teams, which imply a lack of direct control over the quality of work, represents an extra challenge for marketing managers.

*Estimates.* Launching a successful marketing campaign requires detailed planning and development, and there is always a risk of failure. One of the factors is certainly limited media space, which is often bid for, so it is often impossible to know the exact cost of each campaign in advance. Also, the development of technology and the increasing number of digital campaigns in which content display is charged per click or reaction (pay per click) further complicates this problem. Estimated time in marketing is a key element for the success of the campaign: seasonal campaigns, advertising in the press, fairs and the like, generally predefined deadlines that do not tolerate delay. Marketing campaigns are quite specific in that they almost always accompany another event (the launch of new products, brand promotion, redesign, etc.), over which the marketing team has no direct control, so any changes in deadlines generally require adjustment of the marketing campaign. Because of its complexity, marketing campaigns rarely progress as planned and expected. From the idea to the implementation, regardless of the objectives, tasks, time schedule, budget and evaluation described and planned in detail, there is always a risk that an unexpected human error, change in the deadline or change in the market that is not promptly detected will jeopardise the entire project. *Estimating the success of a marketing campaign* is a challenge on a whole new level due to the fact that the basic aim of marketing stimulates emotional reactions (which results in the purchase of products and/or changes of behaviour), and the basic goal of marketing is based on an assessment of something that is subjective and is not rational.

*Calculations.* The marketing teams within individual companies almost never work on only one campaign at a time; usually there are several parallel campaigns of varying importance and reach, which is why it is necessary to organize tasks in several ways: in order of importance, according to the

department, according to the campaign, the client, and according to the team members. Return on investment (ROI) in marketing is often not clearly and unambiguously defined with regard to the fact that it is mostly impossible to determine which of the large number of variables affecting the results of marketing activities contributed to the success or failure of the campaign. The priority of individual campaigns and of individual tasks within the campaign tend to change, which must be taken into account when reacting and re-adjusting the strategy. An additional problem with multiple parallel campaigns is the organisation of shared resources - the same resources are almost always used in different campaigns (the same people on the team, the same communication channels), which can create a problem if there is an overlap of the importance of campaigns or an overlapping of deadlines. Changing priorities and any other changes that occur during the implementation of the campaign may cause a break-down of the planned timeframes, and can significantly break the estimated budget.

*Authority of the project manager.* The marketing manager is a link between the CEO or board of directors and the marketing team that coordinates and manages in order to make the final result of the project successful. Given the fact that marketing activities do not provide immediate results and that it takes time to see the impact of certain activities (changing habits, etc.), the trust of the board of directors is crucial for the functioning of the marketing activities. *Authority over the team* on the other hand also requires confidence in the team leader, valid and correct reactions on the part of the leader, feedback communication, a fair reward system based on the realised effect. The challenge here is the fact that working in a team made up of a wide range of experts often does not permit clearly defined rules and standards, and a large number of activities and results are subjected to subjective assessment that favours the development of misunderstandings and conflicts. All team members at any time should be familiar with the level of their own responsibilities, the potential risks and their consequences.

*Financial control.* Although with marketing campaigns, it is often almost impossible to estimate certain costs until the very end, monitoring and controlling the progress of marketing campaigns in all stages (from the planning stage through the implementation phase to completion and measuring success) certainly contributes to minimising the risk of anomalies and crossing defined budget.

*Communication.* The coordination of different individuals in the team and their projects, the involvement of external teams for specific stages and

processes in the campaign, and communication with senior management and CEOs on the progress and results of the project requires highly developed control, communication and analytical skills. The management of smaller marketing projects primarily requires creativity, innovation and agility, while for larger projects, there is a necessary standardisation and automation of processes, which requires the skills of experienced project managers. A successful campaign requires an extraordinary coordination of tasks between team members at any time, and it is essential for all team members to be familiar with the current progress of the campaign, the deadlines and the tasks on the list of their priorities at any time. Such a level of organisation it is almost impossible to achieve without proper software support.

### **Marketing campaigns and project management software**

Project management software tools provide the development of a detailed plan and automated complex integration, communication in real time, saving all the relevant information, and the simple creation of reports. The key advantage in the use of project management software is dramatically reducing human error through automation. Although marketing has experienced outstanding growth in recent years, project management software specialised in marketing still isn't developed and only a small portion of marketing teams adopt project management software in their everyday work. In an article published in Forbes, marketing expert Joel York (2016) is critical of the fact that there is still no decent program for project management in marketing: "While sales, production, finance and so on have their own control systems of records, most of the marketing departments use tables and similar office tools to manage the projects. As a result, marketing is messy, misunderstood and always reinventing the wheel". York (2016) believes that most of the tools and support software for project management has been best implemented in the field of event organisation, but that the main problem generally occurs in integrated marketing campaigns, which need to be agile. These campaigns are facing everyday digital marketing, and successful marketing project management software support must have the function of drawing individual marketing projects into flexible cross-functional processes with the possibility of continuous improvement. Due to the specific area, the software for marketing management needs to have additional features besides the usual ones such as time management, resources and cost control. It would need to provide options for managing ads and commercials in traditional and digital media, including the management of posts and communication on blogs and social networks, video, working plans, the timing of tasks, plans,

performance, and it should have the option to review the team, department, working status and other important strategic dimensions. In selecting project management software solutions for marketing, one should take into account several features (Rivera, n.d.):

*(1) priority-based planning*

Short deadlines and unpredictable situations are scenarios that marketing departments struggle with on a regular basis. The solution is priority-based planning for tasks in which any change in the plan leads to an automatic rescheduling of the entire plan, which provides significant time savings compared to 'manual' project management. Tasks that are high on the list of priorities are scheduled first.

*(2) predictive management schedule / Gantt Chart*

The Gantt chart follows the progress of all phases of the project and automatically moves all unfinished activities in advance. This allows marketing managers to track the flow of all activities in real time, leaving them room to reschedule the project or reinforce them if necessary to avoid delay.

*(3) visual tools for human resources management*

When working with several marketing projects with varying deadlines, the effective management of human resources is critical. In doing so, a program with visual tools for resource management that enables marketing managers to quickly identify overload (chart the whole team in coded colours where each colour indicates a certain status: busy, overloaded, free, on vacation, etc.) and resolve conflicts about the deployment of human resources (prevents overlapping schedules).

## **Research results and analysis**

The presence of project management standards in Croatian companies is analysed in several research papers (Fabac et al, 2010; Sukić, 2007), but so far none have examined the presence of the same within the marketing sector companies in Croatia. The questionnaire created for the purpose of this research was partially based on the paper by Fabac et al. (2010), according to which the authors attempt to determine the presence of characteristic processes of PMBOK methodology, from which elements of time, cost and risk were selected. The questionnaire was sent by e-mail to 38 addresses of marketing managers in the top advertisers in Croatia, according to data obtained from the MediaPlus ADEX report for 2015 that monitors

consumption in advertising. A total of 13 responses were received, including 8 large companies (250 or more employees), 3 medium companies (50-250 employees) and 2 small companies (up to 50 employees).

Most of the companies that participated in the survey (85%) plan marketing activities on an annual basis, while over half (62%) write a detailed project plan for each individual campaign with a detailed timetable and a description of each stage and the tasks for each team member. Slightly less than half (46%) of marketing activities are planned on a multiannual level. Weekly coordination team meetings are held in 38% of enterprises. More than a half of the companies organise over 20 marketing campaigns a year (61%), and the average marketing team consists of 4-10 team members (including sub-contractors, agencies, designers, technical editors, communications experts, etc.). The average duration of the campaign in terms of the length of the project is significantly short, ranging from brief campaigns lasting up to 2 weeks (31%) and 2-4 weeks (31%), to slightly longer campaigns lasting from 1 to 3 months (38%). Although most of the companies covered by the survey indicated that they are working on more than 20 marketing campaigns during the year - which is a very high figure that requires a systematic approach to project management and the use of advanced technologies (Fabac et al., 2010), the average duration of the campaign is short and it is possible to conclude that these are not overly demanding projects. Responses on how the companies manage the cost, time and risk are presented in Table 1 below.

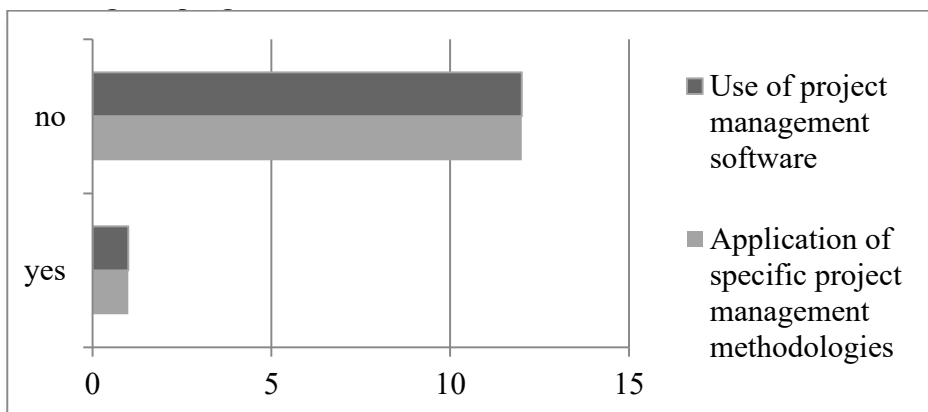
**Table 1** *Managing the cost, time and risk*

<b>Cost management of marketing campaigns</b>		
Estimating costs	13	100.00%
Assessing and budget planning	13	100.00%
Developing cost control	9	69.23%
<b>Time management</b>		
Defining the campaign activities	13	100.00%
Duration estimation of the campaign activities	12	92.31%
Developing a schedule of activities	12	92.31%
Developing time control	6	46.15%
<b>Risk management</b>		
Planning risk management	6	46.15%
Identifying and recognising the risks	10	76.92%
Analysing the risks in terms of quality	5	38.46%
Quantitatively analysing risks	4	30.77%
Surveillance and monitoring risk	4	30.77%

When selecting elements of cost management during the planning and implementation of marketing campaigns, all the respondents to the survey confirmed that they estimate the cost of the campaign and the planning budget. A total of 9 of the 13 subjects have developed controls for cost supervision. As for the category of time management, all of the respondents do plan campaign activities, while most of them estimate the duration of the activities in order to develop an activities schedule (12 respondents). A little less than half of the respondents develop time controls (6 respondents). The most diverse answers that the respondents gave to the question of risk management where the majority confirmed that they identify and recognise the risks (10 respondents), but slightly less than half of them confirmed that they plan risk management (6 respondents). Quantitative risk analysis, performance control and monitoring risk is present only within a third of the surveyed companies.

In order to confirm or reject hypothesis H1: *Marketing experts in Croatia do not use project management methodologies or software at the tactical level of planning and managing marketing campaigns*, respondents were asked whether they use a specific methodology for project management and whether they use any project management software (responses are shown in Figure 1).

**Figure 1** *Application of specific methodologies and the use of project management software in the process of planning and implementing marketing campaigns*



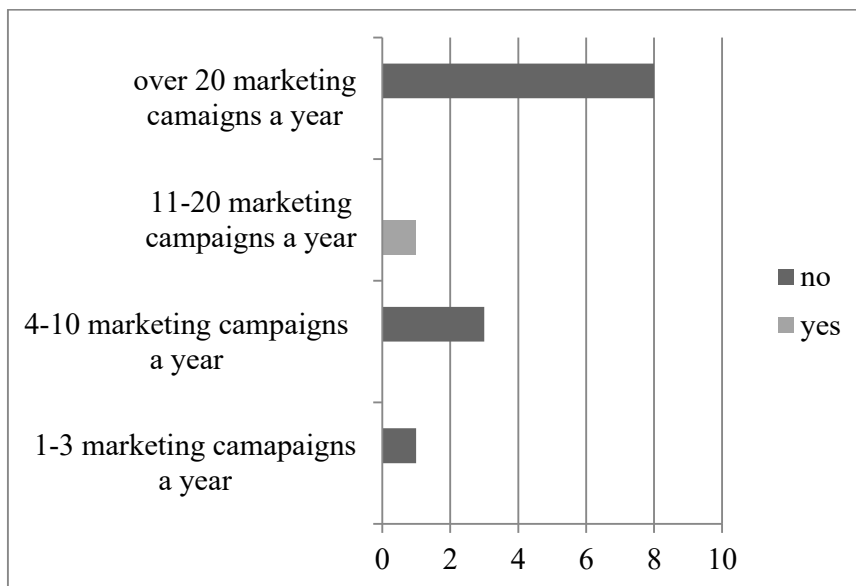
A total of 12 of the respondents included in the study indicated that they:

- do not apply specific project management methodologies in the planning and implementation of marketing campaigns;
- do not use any project management software support in the planning and implementation of marketing campaigns.



These results confirm hypothesis *H1* that marketing experts in Croatia do not apply specific project management methodologies or use any project management software at the tactical level of planning and managing marketing campaigns. Although most of the companies stated that they do not use a specific methodology of project management software in the planning and implementation of marketing campaigns, based on selected elements of cost, time and risk management that apply to the project management, it is possible to conclude that most of the companies included in this study to some extent do use elements of project management to ensure the success of the campaigns: all the respondents estimate the costs, plan the budget and define the activities of the campaign, while most of the respondents estimate the duration of the campaign activities and develop a schedule of activities (92%) and identify risks (77%), while slightly less than half estimate risks (46%) and analyse risks qualitatively (38%). Figure 2 below shows the distribution of the company by criteria of whether they do or do not use programs to manage or support project management according to the number of marketing campaigns in the year.

**Figure 2** *The use of project management software according to the number of marketing campaigns in a year*

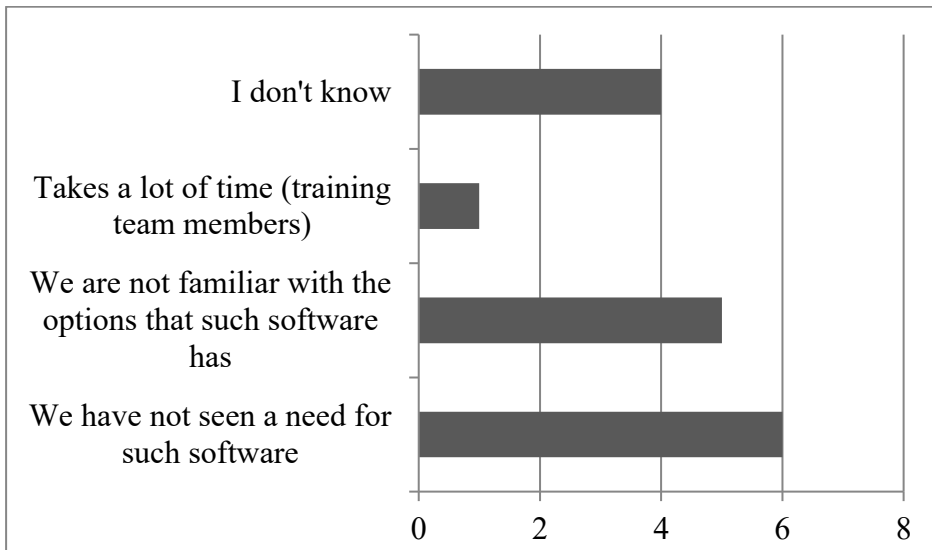


Given the small sample and the extremely small number of respondents included in the research that confirmed the use of project management software to manage or support marketing campaigns (1 out of 13 respondents), and the fact that the same respondent does not fit into

the category with the highest number of marketing campaigns in one year, hypothesis *H2* cannot be verified on the basis of the questionnaire conducted for this research and is therefore rejected.

Less than a third of the respondents were not familiar with any of the project management software, and the majority of respondents are familiar with Microsoft Project, Asana, Gantt Project and Trello. Figure 3 shows the key reasons for not using project management methodology or project management software as stated by the marketing managers included in this research.

**Figure 3** *The reasons for not using project management software*



Slightly less than half of the respondents stated that they do not use project management methodology or project management software because they did not see a need for such support (6 respondents). The next reason listed is the fact that they are not sufficiently familiar with the options that this software offers (5 respondents). A third of the respondents say they cannot assess the real reasons for not using project management methodology or project management software in the planning and implementation of marketing campaigns (4 respondents). These results partially confirm hypothesis *H4*, which states that the lack of information on the project management software available is one of the main reasons why they are not used among marketing managers in Croatia.

## Conclusion

Although marketing departments throughout the year are undertaking various projects such as fairs, festivals, promotion and classic marketing campaigns that require a serious approach and focus in order to take each step in the right way at the right time, and where the use of project management software would greatly facilitate the work, a study conducted on a sample of 13 companies showed that marketing managers in Croatia generally do not use the available tools of project management or project management software. The choice of tools for project management is of great importance for all project managers, regardless of whether they are small, medium or large projects. Although marketing sectors in Croatian companies mainly work on a number of short-term small-scale projects, the application of specific project management methodologies and software would greatly facilitate the implementation of the campaign and would undoubtedly have a positive impact on their outcome.

Positive indications come from the fact that although the majority of companies surveyed do not use a specific project management methodology in the planning and implementation of marketing campaigns, most state that they do use some elements of project management to ensure the success of the project: cost management (cost estimation and assessment and budget planning), time management (definition of campaign activities, assessment of the duration of the campaign activities and the scheduling of the activities), and to a lesser extent risk management (risk identification, risk assessment and analysis of risk in terms of quality) using basic office tools such as e-mail, applications like Microsoft Excel as well as team meetings.

There are a large number of licensed and free project management tools on the market, and it is sometimes difficult to decide on the most appropriate one. The solution for a limited budget is certainly the free versions of tools available on the Internet. Many such tools are available and many of them differ in specific components (some have only basic functionality, and some are too complex), but all share a primary function – the coordination of activities, outlining the duration of these activities and adding resources to activities. Although the use of such programs in the marketing departments of Croatian companies is not usual (lack of information and lack of time for training are the most common reasons for the non-use of these programs), the introduction of this practice and informing and training the marketing teams to use some of the project management methodologies and software

would certainly have a positive impact on the success of future projects and generally would elevate marketing activities within Croatian companies to a higher level.

In the end, it is necessary to point out that there are certain limitations that arise from this research – the research is conducted on a deliberate sampling of 13 marketing managers that have been surveyed using a questionnaire via a specialized Internet application, therefore it is impossible to draw conclusions about the entire marketing sector in Croatia based on the obtained results. However, given that the research did include some of the biggest advertisers on the Croatian market (from which it can be concluded that these are companies with the highest number of marketing campaigns and the largest budgets), this study may serve as a basis for further more extensive and detailed research of the application of project management methodologies and software within the marketing sector enterprises in Croatia.

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# TEACHING SCRATCH IN A DAY

*Silvia Likavec*<sup>1</sup>

## Abstract

*Teaching computer science and programming successfully has always been a challenging task, especially when teaching non computer science students. Since many students turn out to be frustrated and have difficulties along the way, it is important to keep their attention and interest. Alternative creative approaches have to be employed in order to engage students and capture their attention.*

*This paper describes our experience of teaching basic programming skills for non computer science students using Scratch. It also includes an evaluation which provided us with the information about students' general conceptions about computer science and programming, as well as their experience during the course.*

*The objective was to show that Scratch provides a creative and fun environment which encourages students to learn without frustration and keeps them motivated in the long run. The course was a part of another longer course and lasted for three hours. It gradually introduced new concepts using appropriate assignments. At the end of the course the students were motivated and satisfied and have internalized new concepts. This could serve as a model for future programming courses for non computer science students since it fosters creativity and experimentation, thus providing a good basis for future studies.*

**Keywords:** *scratch, programming, creativity, evaluation.*

## Introduction

Teaching computer science and programming effectively and efficiently has always been a challenging task. We can distinguish two groups of students who could be a possible audience for these courses: computer science students (or computer science majors) and non computer science students. The first group of students is expected to have some prior

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experience and knowledge of programming and logic, as well as to be highly motivated to learn and overcome any obstacles that come along the way. On the other hand, the second group of students does have some programming courses in their curriculum, but programming is usually not the focus of their studies. It has rather been included in the curriculum to help them learn the techniques which could serve them to fulfil projects in other courses or to improve their chances when looking for a job.

### **Programming and computer science for non computer science students**

Non computer science students have different background and knowledge when they start attending programming lectures. More often than not, they do not have any background in programming and know little about computer science in general. For them, it is more difficult to follow formal programming courses, especially the ones requiring some background in programming and logic. Also, their motivation is often not high and they are not willing to put time and effort into overcoming frustration during these courses.

All these factors lead to disinterest and gradual abandoning of computer science courses. Students tend to consider programming difficult and boring, which results in trying to avoid any involvement with computer science in the future.

Hence, the programming lectures which are aimed at these students should not follow the rigid programming standards and should not try to introduce at all costs all possible programming concepts. They should rather concentrate on providing a creative and encouraging environment where students would be relaxed, feel free to experiment and learn the new concepts in a fun and engaging way.

Preparing these courses might mean a total change of perspective for the instructors. They have to abandon their standard schemes and approaches and try to think out of the box in order to capture the attention and participation of these students. Luckily, recent years have experienced development and wide spread usage of alternative creative approaches, such as Scratch<sup>2</sup>. For example, according to Ornelas-Marques and Marques (2012), students develop skills like critical thinking and problem solving when using Scratch and they feel the need to resolve the problems.

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<sup>2</sup><https://scratch.mit.edu/>



## Scratch

Scratch (Maloney, 2004) is a free visual programming environment developed by Lifelong Kindergarten Group at MIT, Boston<sup>3</sup>. It was originally designed as a creative programming environment for 6-16 year olds, but it has soon become extremely popular and used by people of all ages, in schools, museums, libraries etc. As Resnick, (2007) puts it, “the “kindergarten approach to learning” - characterized by a spiraling cycle of Imagine, Create, Play, Share, Reflect, and back to Imagine - is ideally suited to the needs of the 21<sup>st</sup> century.”

In the Scratch environment it is possible to create all kinds of different projects, such as interactive games, simulations, music, multimedial projects etc. These projects could be shared with other community members. But the most important of all is the fact that prior programming experience is not necessary and immediate feedback is provided. Students can simply dive in and experiment, starting to produce interesting projects right from the beginning.

### Structure of the Course

In academic year 2016-17, Department of Culture, Politics and Society at University of Torino, Italy, launched a new degree in Social Innovation, Communication and New Technologies. This course merges economics, social and law studies with computer science and technology into a unique interdisciplinary course.

Since many students pursuing this degree do not come from computer science background, rather from social and political sciences, we thought that Scratch would be a perfect candidate to introduce them to programming and more serious computer science courses in the future.

The Scratch course was a part of the course on “Software development of applications” taught during the second semester of the first year at the Department of Culture, Politics and Society at University of Torino, Italy. The course lasted for 3 hours. The majority of the students had some previous experience only with HTML and CSS, taught during the first semester.

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<sup>3</sup><https://llk.media.mit.edu/>

The aim of the course was to introduce some basic programming concepts such as variable assignment, iteration, conditionals, creating new objects etc. But it was also supposed to engage students and make them produce fun projects, with the hope of keeping them interested and motivated in the future. The course consisted of the following parts:

- Part 1 - Getting to know your environment
- Part 2 - Iteration
- Part 3 - Variables and lists
- Part 4 - Conditionals
- Part 5 - Selective events and communication among sprites
- Part 6 - Fun

We will give a brief account of the content of each of the parts of the course.

### **Part 1 - Getting to know your environment**

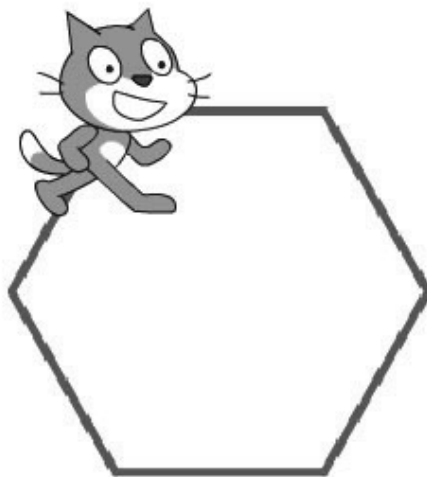
Students were introduced to “3S’s”: Stage, Sprites and Scripts. It was pointed out that scripts correspond to programs containing all their intended actions. The scripts are built by using “blocks” which correspond to basic instructions in programming, which could be added together in order to produce a desired result. Various groups of actions were introduced. To this aim, they started playing with “Scratchy” (the main character in Scratch) and make it walk around and make sounds. Coordinate system was introduced to easy the orientation on the screen and enable successful judgement of various coordinates needed in the assignments.

### **Part 2 – Iteration**

Many students were not familiar with the concept of iteration. By making “Scratchy” dance, a “Blue Dog” jump and draw various geometrical objects (see Figure 1,

Figure 2), they were introduced to the concept of iteration as a construct for grouping and repeating certain actions.

**Figure 1:** Code for drawing a hexagon



*Figure 2: Drawing of a hexagon*

```
when this sprite clicked
clear
set pen color to 
pen down
set pen size to 4
repeat 6
  move 100 steps
  turn 60 degrees
  wait 1 secs
```

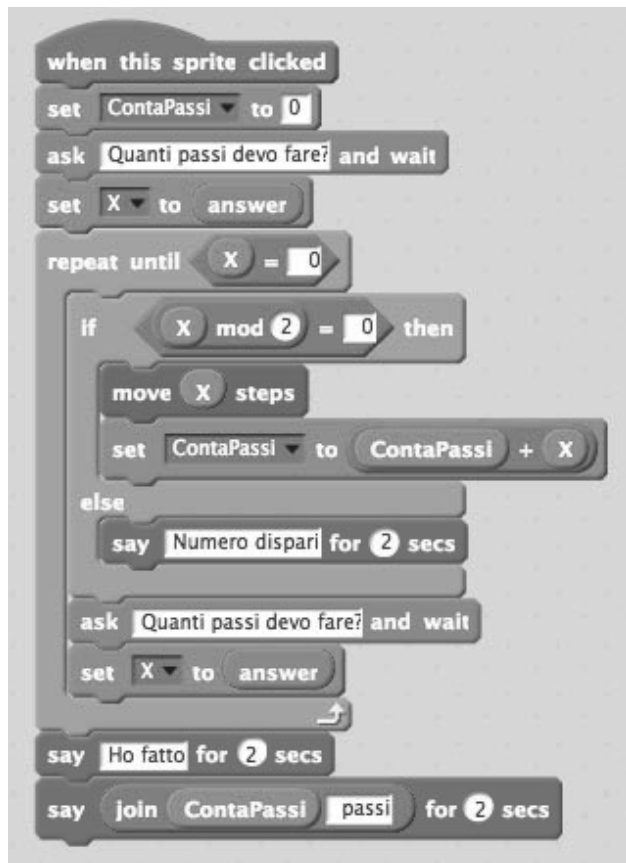
### Part 3 - Variables and lists

This was probably the least interesting part for the students. An idea that variables store information and help communicate with the user was somehow harder to grasp than the rest. As an example they had to give instructions to “Scratchy” using keyboard. Lists as containers for multiple related values were even harder to comprehend and we actually did not do the planned exercises, since the students’ attention was rapidly declining.

### Part 4 – Conditionals

By making “Scratchy” walk in one direction or another, depending on the input from the user, boolean expressions which help define conditions were brought to life. In this part we also introduced variable update by counting the steps (see Figure 3).

**Figure 3** Code for conditionals



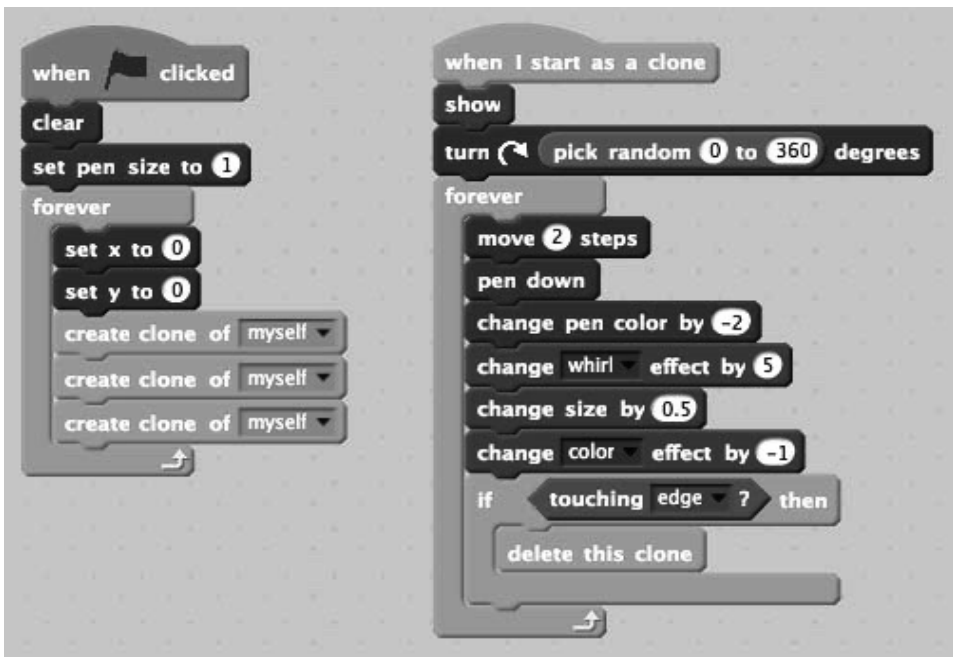
## Part 5 - Selective events and communication among sprites

Various ways to make the sprite do what we want were introduced, including communication among sprites themselves. In this part, “Scratchy” and “Blue Dog” finally talked to each other. Also, simulation of movement by change of costume was introduced by making a bat fly as a response to various types of input from the keyboard.

## Part 6 – Fun

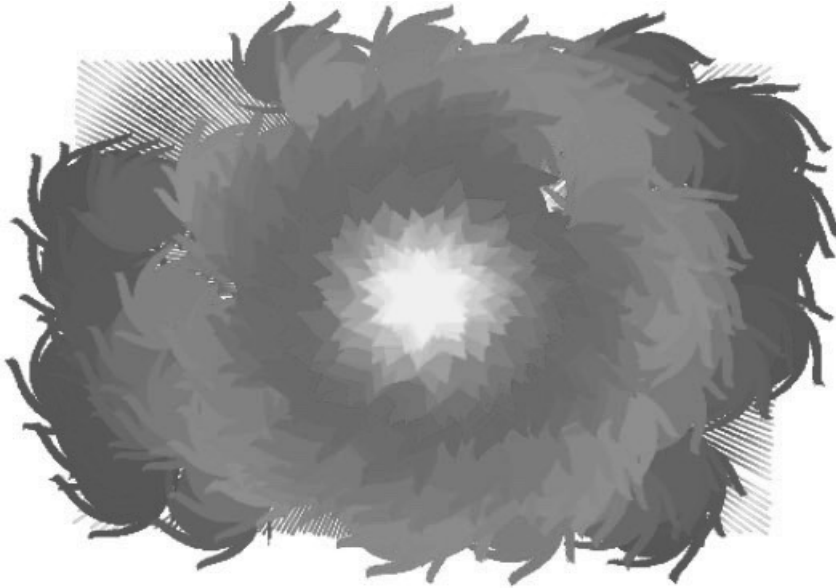
Finally, in this part the students got to be creative. They could try animating their name, simulate rain and big bang<sup>4</sup>. In this part we also talked about cloning of objects and what they could do once they come to existence and once they fulfil their task on the Stage.

Figure 4 Code for Big Bang exercise



<sup>4</sup>Rain and Big Bang exercises were adapted from: <http://scratched.gse.harvard.edu/sites/default/files/scratch-collodi.pdf>

**Figure 5** *Big Bang animation*



This was just the beginning. But we only had three hours for Scratch and this was the maximum that could be achieved, without too much frustration on the students' part. They seemed to be enjoying the course and many of them stayed to the end, even though the course was running until late and they had other lessons from early morning. To obtain somehow objective feedback of their experience, we performed a brief evaluation which we describe in the next section.

### **Evaluation**

Our experiment was conducted with the goal of evaluating how feasible teaching programming with Scratch is for non computer science students and to obtain some feedback about their subjective experience. The Scratch course lasted for 3 hours as a part of the course on “Software development of applications” taught during the second semester of the first year at the Department of Culture, Politics and Society at University of Torino, Italy.

### **Hypothesis**

We wanted to verify that:

1. It is possible to convey basic programming concepts with Scratch, even in a very limited time.
2. It is possible to teach programming in a creative and fun way.

3. Once programming is approached in a creative and fun way, frustration is greatly diminished.
4. Students enjoy learning when they are free to experiment.

### Subjects

A total of 38 students attended the course and answered the questionnaire. All the students were first year undergraduate students at the Department of Culture, Politics and Society at University of Torino, Italy.

### Materials

We conducted a brief survey, consisting of two parts, in order to have more information about the students' background and opinions about computer science and programming in general, as well as to obtain some feedback about the Scratch course.

The first part contained only one question with many possible answers. The students were asked what they think about computer science and programming in general and the possible answers were: *a) creative, b) interesting, c) fun, d) boring, e) difficult, f) experimental.*

The second part was aimed at getting some feedback about the Scratch course itself and their learning experience with Scratch. The students could answer "yes" or "no" to the following questions:

1. *During this course:*
  - a. *I learned new concepts.*
  - b. *I had fun.*
  - c. *I was frustrated.*
  - d. *I experimented.*
2. *Did you prefer to learn about basic concepts or do creative projects?*
3. *Have you noticed that you cannot make syntactic mistakes in Scratch?*
4. *Would you have preferred some other programming language instead?*

The questionnaire was anonymous. It was actually performed by handing out the questions typed on a piece of paper, since from our previous experience we knew that filling out online questionnaires generates less responses. The students were asked to answer either "yes" or "no" to all the questions, but many of them just wrote the "yes" answers and left out the "no" answers.

## Results and discussion

In this section we report on the results of our survey.

With respect to the first part regarding computer science and programming in general, the following table (Table 1) summarises the answers given by the students.

**Table 1** *Students' opinions on computer science and programming in general*

	YES	NO
CS is creative	30	2
CS is interesting	28	1
CS is fun	20	6
CS is experimental	26	2
CS is difficult	11	13
CS is boring	4	18

To our surprise, even though we were not dealing with computer science students, majority of them considered computer science and programming to be creative, interesting, fun, experimental and not boring. The only question without clear majority was the one regarding difficulty of computer science and programming where approximately half of the students considered them difficult.

This shows that even non computer science students could be interested in learning about more programming concepts if they are offered interesting and capturing courses with positive and experimental environment.

With respect to the second part regarding their personal experience during the Scratch course, the results are summarised in

Table 2 and Table 3:

**Table 2** *Personal impressions of the course*

	YES	NO
I learned new concepts.	33	3
I had fun.	27	7
I was frustrated.	10	24
I experimented.	32	5
Have you noticed that you cannot make syntactic mistakes in Scratch?	14	20
Would you have preferred some other programming language instead?	6	27



**Table 3** *Students' preferences*

Did you prefer to learn about basic concepts or do creative projects?	21 creative	6 both	3 basic
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We now comment on all the questions and the students' responses.

*I learned new concepts.*

We can see that the vast majority of students learned new concepts, even in such a short period of time. This also points to the fact that many of them have not had any substantial previous programming knowledge, since the concepts presented during the course were really reflecting basic programming knowledge. So naturally, the question arises: *“How could these students face more challenging and demanding courses if they do not have any previous programming knowledge and experience? Is it not more important to provide them with real basics before moving on to more complex issues?”*

*I had fun.*

Again, the majority of students had fun attending this course. The creative and stimulating environment that Scratch offers helped achieve relaxed and encouraging atmosphere where students were learning without much effort and having good feelings about it.

*I was frustrated.*

Around one third of the students did experience some level of frustration during the course, even though the instructor was available to answer any possible questions and help resolve any difficult situations. Again, a question comes to mind: *“If one third of students were frustrated when learning Scratch, what is the percentage of students being frustrated learning programming in other, more complex and difficult environments?”*

*I experimented.*

This is a very promising answer. Very often it happens that the students are presented only with one possible answer and not encouraged to try their own solutions, or even punished by bad grades for experimenting. If they considered that they had had enough time to experiment, this means that

they had the chance to internalise the concepts and put their creativity to work.

*Have you noticed that you cannot make syntactic mistakes in Scratch?*

This question was asked in order to see how aware the students are of the fact that syntactical correctness and coherence plays an important role in programming. Since more than half of the students did not notice that they did not have to worry about the syntax, we can assume that many of them have not had any significant experience with serious programming. On the other hand, not being able to make syntax errors, eased their way into Scratch and made the experience more enjoyable.

*Would you have preferred some other programming language instead?*

Even in this case, the clear majority was happy with the proposed approach. It seems that they were content with what and how they learned and for the time being did not think that other languages would teach them the basics better and offer more possibilities. Some of them proposed having more complex courses next year, mostly for being able to enter the job market.

*Did you prefer to learn about basic concepts or do creative projects?*

Only 3 students responded they preferred the basic programming concepts (see Table 3). This was somehow an expected answer, since we were working with the students who were not studying computer science or any related subject. Being able to experiment with creative projects enabled them to experiment enjoy the lessons, while still learning the basics.

## **Related Work**

*Theodorou and Kordaki (2010)* designed and implemented a collaborative 4-level game using the Scratch environment and Jigsaw collaborative method. The aim of the game was to teach high school students about usage of variables in programming and enable them to write their own game at the end.

*Kalelioğlu and Gülbahar (2014)* investigate what effect learning programming with Scratch has on problem solving skills in the 5th grade primary school students. Although there are no significant differences in problem solving skills when using Scratch, there is a slight improvement

w.r.t. self confidence of the students. But most of the students found Scratch environment easy to use and liked programming, which is an important asset when teaching programming to this age group. The authors also individualised some favourite and less favourite aspects when programming with Scratch, which can provide useful guidelines when designing courses with Scratch.

*Lai and Yang (2011)* also study how visual programming in the Scratch environment affects 6th grade students' problem solving and reasoning skills. They conclude that problem solving skills are significantly improved whereas logical skills remained unchanged.

With respect to creativity in computer science, *Knobelsdorf and Romeike (2008)* explore characteristics of creativity and investigate whether creativity could be a possible pathway into computer science. They examine 135 computer biographies written by computer science majors and bioinformatics majors. The biographies of computer science majors students are characterised by creativity and they consider programming a fun and engaging activity.

*Romeike (2007)* presents a creativity-based method for teaching introductory programming courses in high schools using Scratch. The author analysed a set of creativity criteria, not often taken into account when designing computer science courses, and designed and applied a framework for creating creative computer science lessons. Their evaluation showed that the students were highly motivated and interested, while achieving the previously set learning objectives. But the most important thing was that the students' image of computer science was improved and creativity brought new dimensions to computer science lessons.

## **Conclusion**

In this work we described our experience of teaching non computer science students the basics of programming using Scratch. This short course (three hours) was organised so that the fundamental concepts such as variable assignment and update, iteration, conditions etc. are included.

Our brief survey carried out at the end of the course confirmed many of our initial assumptions. The majority of students did learn some new concepts in a fun and engaging way, experimenting along the way. Some of them did admit that they had been frustrated, so even in a playful and creative

environment such as Scratch, students do encounter difficulties. This leads us to a conclusion that using different, more “classical” teaching approaches would introduce even more frustration and problems, leading to even less students seriously turning to computer science and programming in the course of their studies.

Finally, most of the students were happy with the choice of environment for their introduction to programming and would have not liked another language.

Our experience could be a leading example for other similar courses for non computer science students, where creativity and engagement are valued more than following a standard curriculum and covering at all costs the majority of programming concepts.

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### **THEMATIC SECTION III**

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***THE EUROPEAN EDUCATION  
SYSTEM - IS IT POSSIBLE TO  
KEEP PACE WITH THE CONSTANT  
CHANGES?***





# THE ROLE OF EMOTIONAL INTELLIGENCE IN THE PREDICTION OF PERFORMANCE AMONG UNIVERSITY STUDENTS

*Edgar Bresó<sup>1</sup>, Sandra Brkanlić<sup>2</sup>*

## Abstract

*Based on the Four Branch Emotional Intelligence Theory (Mayer, Salovey & Caruso, 2004), this study examines the relationship of Emotional Intelligence with student satisfaction and performance. Firstly, Emotional Intelligence of 821 Spanish and 783 Italian university students was assessed using MSCEIT and MEITPRO. Their satisfaction was assessed by a self-constructed questionnaire, and performance was estimated by GPA (Grade Point Average). Correlational analyses were consistent with a significant relationship among Emotional Intelligence, student satisfaction and their performance. Additionally, multiple-group analyses revealed cross-national stability of the model proposed. Implications of the study are discussed, together with limitations and suggestions for future research.*

**Keywords:** *emotional intelligence, students' performance, satisfaction.*

## Introduction

Previous research on the academic success field has mainly focused on cognitive factors, indicating the predictive role of cognitive intelligence on students' academic performance (Colom & Flores-Mendoza, 2007; Neisser et al., 1996). However, when the cognitive abilities proved to be accountable for less variability on the academic success than expected researchers started to acknowledge a broader array of potential predictors (McLaughlin, Brozovsky, & McLaughlin, 1998). However, in recent years the study of Emotional Intelligence (EI) has received increasing attention in the educational field, not only from the point of view of teachers, but also from the perspective of students. EI means perceptual capacity, tool, recognition, application and management of emotions in self and others.

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This increasing interest sets ground on the emergent body of literature which found strong association between EI and academic achievement in several educational settings (e.g., Elias, Bruene-Butler, Blum, & Schuyler, 1997; Goleman, 1995; Pasi, 1997).

### *Emotional Intelligence*

The concept Emotional Intelligence was mentioned for the first time in 1990 by Peter Salovey and John Mayer (1990). EI, according to Mayer and Salovey (1997), is the “ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (p. 5). This term became popular with the publication of Daniel Goleman’s (1995) book, *Emotional Intelligence*, which was on the New York Times best-seller list for more than a year. Emotional Intelligence, by definition, is differentiated from other forms of intelligence and from personality because it deals specifically with the manipulation of emotions and emotional content (Mayer & Salovey, 1997). Empirical research comparing cognitive and emotional intelligence highlights that EI is a conceptually distinct construct (Ciarrochi, Chan, & Caputi, 2000; Davies, Stankov, & Roberts, 1998). Additionally, neurological research on emotional intelligence is further strengthened by a basis in, which makes a case for emotional intelligence differing from cognitive intelligence (LeDoux, 1994).

On the other hand, emotional intelligence is believed to increase with formal and informal learning and with maturity (Goleman, 1995), unlike cognitive intelligence (IQ), which is fixed largely by the time a person reaches adulthood. Authors on emotional intelligence (Hein, 1996; Ryback, 1998; Segal, 1997; Steiner, 1997; Weisinger, 1998) recommend that the learning of emotional intelligence can be accelerated by some of the following methods: training individuals to be attentive to one’s own and others’ emotions, journal keeping, taking time for reflection, deliberately practicing good communication techniques, and increased exposure to people and situations that provide opportunities to practice these skills. Although emotional intelligence learning methods tend to emphasize reflective and solitary learning more than undergraduate management skill training does, it is interesting that the methods used to teach management skills are similar to those proposed by authors on emotional intelligence. Both rely on reflection (e.g., journal keeping, exercises to improve self-awareness). Both use exercises that promote self-monitoring, meaning the process whereby individuals control their own expression and self-presentation to remain on

good terms with others (Kolb, 1998). For instance, examples of learning activities could be role-playing, out-of-class application activities, and deliberate practice of interpersonal skills with feedback.

The concept of emotional intelligence can be applied in several educational settings. One of the reasons for dealing with emotional intelligence is that emotional intelligence compared its traditional concept, intelligence quotient, is accounted as a better predictor for social achievements (Goleman, 1995). Individuals with high emotional skills have better social skills, more stable long term relations and more ability to solve problems. People with high emotional skills are more capable of concentrating on problems and using problem solving skill that increases their cognitive abilities (Soltanifar, 2007).

Nonetheless, recent literature has renewed the claims that EI has impact on students' academic performance and on its prediction (Parker, Creque, et al., 2004; Parker, Summerfeldt, Hogan, & Majeski, 2004).

### ***Student Satisfaction***

Students' satisfaction refers to the subjective evaluation of the various outcomes and experiences associated with education (Oliver & DeSarbo, 1989). Students satisfaction is being modified continually by their experiences in campus-life. Additionally, the campus environment is apparently a source of experiences that influence students' overall satisfaction. What happens to students in the classroom is not independent of all other experiences relating to campus life. For example, Browne et al. (1998) found that global satisfaction with a university was driven by a student's assessment of the quality of the course and other curriculum-related factors associated with that university. Educational research has found that student satisfaction is related to how well the classroom environment matches student preferences (Fraser, 1994). A high correlation between actual classroom environment and student preferred classroom environment should enhance affective student outcomes, such as satisfaction. For example, students preferring a classroom with a high level of student-teacher interaction and personalization should have higher levels of satisfaction in a classroom that provides this personalization than one that does not (Elliott, & Shin, 2002).

According to Wilkie (1990) and Perkins (1991), there have been more than 1200 articles published in the area of customer satisfaction research. The

number of the articles published should be doubled or tripled by now since the topic itself has managed to gain more and more attention from scholars around the world. McDougall and Levesque (2000) defined customer satisfaction as “a cognitive or affective reaction that emerges in response to a single or prolonged set of service encounters.” Customer satisfaction can be a multi-dimensional construct (Hu, Jay & Thanika, 2009; Bitner and Hubbert, 1994; Price, Arnould & Tierney, 1995; Sureshchandar et.al., 2002) or a one-dimensional construct (Cronin & Taylor, 1992). Regardless of how customer satisfaction is measured, it is proven that a satisfied customer will exhibit loyalty and provide positive word-of-mouth as per reported by Kim, Lee and Yoo (2006). Machleit and Mantel (2001) describe customer satisfaction as the heart of all marketing activities and there is no doubt that customer satisfaction has been identified as one of the most important determinants to customer loyalty. In the context of higher learning institutions, the student’s satisfactions play an important role in determining the originality and accuracy of the education system. This is because the higher the level of satisfaction experienced by the student, the better the student’s ability to groom their skill development, course knowledge and mentality (Muhammad & Rizwan, 2010). Zeithaml (1988) mentioned that the student satisfaction is an evidence to measure how well effective an institution administers itself as well as its educational system. Rodie and Klein (2000), posited that if an institution possesses essential educational facilities with affective teaching and training staff, the student will most likely be more motivated, loyal and good performers in their academic.

In order to determine how the consumers respond and how satisfied they are with a certain service, it is necessary to perform certain measuring and research, as well as quantification of the results. The purpose of measuring satisfaction is to show the level of consumer satisfaction and achieve objectifying and quantifying subjective consumer perception (Veljković, 2009). This is why measuring and research of consumer satisfaction is conducted at higher education institutions as well.

Many education institutions tend to improve their offer in order to attract more consumers. Consumer satisfaction should be the focus of every institution. Creating happier, satisfied customers – whether they are students, their parents, donors, professors or employers – should be the primary goal which will contribute to the quality of education institutions. Consumer satisfaction is important for the business of every higher education institution. The level of satisfaction is determined by the difference between service specifications, consumer perception and their expectations. There are three levels of satisfaction. If the service is below

expected, consumers are dissatisfied. If the faculty does not meet what the student was expecting, the student will change his/her attitude towards the faculty and could leave it or be transferred on a different course or he/she could share negative information about the faculty. On the other hand, if the faculty meets expectations, the student will be satisfied and will be the best presenter of the university. If the characteristics of the institution surpass expectations, the student will be very satisfied or even thrilled.

In order to improve the service at higher education institutions and its quality, and thus realize a higher level of student satisfaction, there are different models for measuring service quality, the SERVIQUAL model being the most common, which heavily relies on the GAP model of service quality, which measures the service quality through five dimensions of service quality of higher education institutions: the first problem for the institution is the *consumer gap* which is essentially the result of the fact that consumer is not satisfied with the service. If the service meets expectations, the consumer will be satisfied and vice versa. Sometimes the service exceeds consumer expectations. Sometimes the service exceeds consumer expectations (positive un-confirmation of the anticipated), while dissatisfaction is based on a finding that by purchasing a certain service the consumer got less than expected (negative un-confirmation of the anticipated) (Maričić, 2011)

Consumer gap is the result of one of the four gaps of education institution and these gaps are commonly caused by: *Incorrect perception of the real consumer expectations*. If a study program is not efficiently designed, the strategic course of creating and delivering service is disrupted. The causes are lack of or poorly organized market research, lack of vertical communication, insufficient focus on development of relationships (absence of segmentation, focusing on transactions instead of long-term relationships etc.), not responding to comments and complaints etc.; *Deviation from the way the institution should perceive student expectations and the way of meeting their wants by creating a service and its quality specifications*. Knowledge must be transformed into an adequate service and the service process, including a well-defined and organized physical evidence. The set standards must be defined from the aspect of consumer needs and wants and their perception of service quality and not internal specifications and measures. Conflicts arise when there are no defined standards in terms of consumer requests and inadequate physical evidence; *Deviations from what the managers define the service (quality, specifications, delivery) and the way the service is really delivered to the student*. This gap is related to interaction between the professor and the student, the employees in the student service and the student. These interactions cause problems which

arise due to poor recruiting of the employees (teaching and non-teaching staff), inadequate system of reward and evaluation, lack of activities for the students, parents as kind of co-workers in the service process; *Difference between the service delivered and what was promised to students via various communication methods*. In a dynamic competitive environment, the higher education institution by using various communication methods makes bigger promises and causes excessive expectations in consumers. The reasons are the absence of integrated marketing communication, ineffective management of consumer expectations, over-promising, inadequate horizontal communication (Gajić, 2011).

Research on student behavior provide insight into better understanding of personal characteristics, as well as measuring their satisfaction and loyalty. These are all the reasons which have caused that service quality to be the centre of discussion how the universities should design their offer. Several studies have applied the SERVQUAL model or other instruments in order to measure perception or expectations of service quality. These studies discuss objective attributes which are related to high education, some others discuss the hidden attributes which students consider important in their perception of university. The SERVQUAL model is focused on service attributes and views the gap between expectations and what is delivered. Contrary to that, it analyzes why and how the product attributes are important in terms of personal values. Investigating personal values makes better understanding of how these values affect expectations of higher education and how they cause satisfaction and loyalty. Personal values determine and modify the relationships between individuals, the company, institution and society. According to some authors, personal values are designed to be a cognitive representation of universal human needs, as they include social interaction and social institutional demands. One study related to higher education institutions applied the model which was supposed to investigate the role of student expectations regarding service quality in higher education. The study has shown that students want to satisfy the following values: well-being, security, universality, self-confidence and hedonism. However, the study was in the USA and the relationship between personal values and the results of behavior was not examined. Although there are no studies which examine the relationship between personal values and services in education, their potential importance is being emphasized (Gajić, 2011).

There is the issue of how students evaluate higher education institutions; whether the focus is on the attributes (academic counseling, support on campus, efficient lectures and high-quality service) or personal values.

*Lages* and *Fernandes* used *Zeithaml's* frame as well as *Rokeach's* and *Kahle's* research and they have personal values related to services in three wide groups of dimensions. These three levels are the following (*Durvasula* and *Lysonski*, 2011, p. 37):

- The value of service in terms of personal satisfaction – this dimension is directed toward an individual – student and his/her perception of service as personal satisfaction, means of acquiring peace, safety, harmony; when the service increases the quality of life and satisfaction and protects an individual from the dangers of disrupting this harmony.
- Status value which provide social recognition and service values which are related to social integrations– these two dimensions are related to social recognition and status, respect from other people and they let the person show his/her fullness and satisfaction in life, provide a higher level of social integration, provide better relationships on different levels, such as social, family and professional life.

All stated above suggests that if a service offers improved, better social integration, a person can satisfy a higher level of personal values on that basis. Competition on the higher education market between the USA, Australia and Europe has encouraged research at the US universities involving international students. Research results show that personal values are on a higher level and that they strongly affect the decision-making process. Thus, personal values are an important activator of satisfaction, loyalty and they generate the promotion of personal recommendations (*Gajić*, 2011).

Evaluation of satisfaction at higher education institutions was measured only in alumni and the employees at first. Now, the focus is on the students since they are the key participants who affect the choice of other students, when it comes to faculty and society in general. Higher education institution must find ways to promote and encourage student behavior to benefit the institution, more precisely, to make them their own ambassadors. According to numerous research the model of student satisfaction is based on the following facts: student is a unique consumer in a specific service process and he/she is part of the development of education service; the level of student satisfaction student varies over time; student is the one who represents the higher education institution around the world. Accordingly, a research was conducted in Australia in order to identify characteristics of service and the university in order to evaluate the level of student satisfaction (*Gajić*, 2011).

## ***Emotional Intelligence and academic Performance***

Advances in neuroscience have highlighted the connection that already exists between emotional development and the processing of cognitive functions such as attention, perception, the different stages of memory (Damasio, 2010). However, there is an open discussion about the influence that EI has on academic performance. Based on the analyses of the previous results, that debate is due to the different conceptions/models of EI and mainly, the different type of surveys used to assess EI (i.e., ability test versus *self-reports*)

Nevertheless, consensus does exist on the need to develop EI in education (Morales & López-Zafra, 2009).

In this study, we used two different ability test based in the the Four-Branch-Model of Emotional Intelligence (Mayer & Salovey, 1990) that will be described below in the method section.

### ***The current study***

Taking into account the importance of the secondary school achievement on students' forthcoming academic life, the present study tested a model that connects the relationship between EI and academic performance in a two-countries sample of students. In other words, we examine the predicting role of EI in the prediction of secondary students' academic performance.

Based on the previous research depicted, we expect:

*H<sub>1</sub>: The existence of a positive relationship between students' EI levels and their GPA.*

*H<sub>2</sub>: The relationship between EI on the one hand, and students' GPA on the other hand, will be mediated by students' satisfaction.*

*H<sub>3</sub>: The results across both samples (i.e., Spanish and Italian students) will be invariant.*

## **Method**

### ***Sample and procedure***

Students from two different universities in Spain and Italy were asked to fill in questionnaires (during lectures) and 1,604 questionnaires were completed



voluntarily and returned (around 96%). The anonymity of the students was guaranteed and data were used exclusively for research purposes.

*Sample 1* consisted of 821 Spanish students; (63.7% females and 36.3% males). Their mean age was 23.72 years (s.d. = 3.1).

*Sample 2* consisted of 783 Italian students; (83.8% females and 16.2% males). Their mean age was 22.81 years (s.d. = 3.7).

### ***Variables and Instruments***

*Emotional Intelligence:* Two surveys were used for assessing students' EI. Firstly, the Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT Version 2.0- Spanish version adapted by Extremera, FernándezBerrocal, & Salovey, 2006. This test contains 141 items that are divided in eight tasks, which are divided into four classes or branches of abilities including (a) perceiving emotion, (b) using emotion to facilitate thought, (c) understanding emotion, and (d) managing emotion.

Secondly, the Mobile Emotional Intelligence Test (MEITPRO) was used, a digital ability test that evaluates the three skills related to Emotional Intelligence: perception, understanding and, finally, emotional management. The *perception* branch is composed by three types of tasks and along a total of 19 screens. The first task is to identify emotions through dynamic images that change from a “neutral” face to a certain emotional state. The second task assesses the ability to identify the level of activation and the pleasure that makes up a given emotion. The third task is to associate an emotion with the face that best symbolizes it. Obtaining a high score on these tasks shows that the user has a high capacity to recognize the emotions in themselves and in others. The *understanding* branch assesses the ability to understand how emotions are formed. It is divided into three different tasks along 7 screens. The first task evaluates, through the use of the test pieces and decanters, the ability to understand how simple emotions group together to form more complex ones. The second task, through real situations, evaluates a person's ability to know how emotional states can lead to a concrete situation. The third task is focused on the ability to recognize what kind of situations lead to a series of emotional states. Getting a high score on these tasks means that the user is able to understand how emotions relate to each other and how, depending on the situation, experiencing certain emotions can lead us to very different affective states. Finally, the *management* branch evaluates the ability to manage and regulate emotions, both their own and others.

For this purpose, a task is used, along 7 situations and 14 screens, which invites the user to answer about how he/she would act in that particular situation to solve the emotional conflict in the best possible way. Each response determines the content of the following situation. Getting a high score on this scale indicates that the person has a high capacity and clarity for the management of the emotions in the quest to meet their goals and for his uses different strategies that are successful.

*Satisfaction:* A self-constructed likert scale of 6 points was used for assessing students' satisfaction levels. It was composed by 2 items and it refers to the degree of satisfaction with the Faculty and with the University (eg, 'How satisfied are you with your university? '). In this case the student responds using a scale of faces that oscillates from 1 'totally Unsatisfied 'to 6.' totally satisfied '.

*Performance:* GPA values were used to assess academic performance in both samples. The values range from 5 to 10 with 5 being the minimum grade to be approved.

## Results

### *Correlational analyses*

Table 1 displays the descriptive correlations from all measures included in the study.

**Table 1** Means, Standard deviations, and Correlations of the Emotional Intelligence, Satisfaction, and Performance variables in the Spanish ( $n = 821$ ) and the Italian sample ( $n = 783$ ).

	Spanish		Italian		Correlations			
	M	SD	M	SD	MSCEIT	MEITPRO	Satisfaction	GPA
MSCEIT	84.14	9.01	86.40	8.72	-	.92**	.13	.41**
MEITPRO	87.02	10.28	87.41	9.11	.83**	-	.26*	.58**
Satisfaction	3.90	.98	3.34	.87	.31*	.61**	-	.28**
GPA	6.78	1.17	7.09	1.03	.28**	.37**	.43**	-

**Notes:** Correlations for the Italian students below the diagonal. \* $p < .05$  \*\* $p < .01$

As expected, correlations between all variables (i.e., EI, Satisfaction and Performance) were positive. Also as expected Emotional Intelligence, specially in the case of the MEITPRO assessment, is significantly and

strongly correlated with Satisfaction in the expected direction. The more Emotional Intelligent students are, the more satisfied they feel. Finally, students' Satisfaction is positively and significantly correlated with their GPA in both samples.

Then the fit of a model that consider EI antecedent of students' satisfaction and that, in turn, antecedent of performance was tested in both samples independently. Results are shown in Table 2 and indicate that the model fits well to the data in both samples, with all fit indices meeting their respective criteria, and with all path coefficients being significant ( $t > 1.96$ ;  $p < .05$ ).

**Table 2:** *The fit indices of the proposed model for the Spanish (n = 821) and the Italian sample (n = 783).*

	Model	$\chi^2$	GFI	AGFI	NNFI	IFI	CFI	RMSEA
Spanish	M1	21.42	.97	.98	.95	.96	.97	.06
	Null model	1874.01	.62	.48	-	-	-	.30
Italian	M1	29.54	.98	.95	.96	.99	.96	.07
	Null model	1463.73	.55	.40	-	-	-	.35

### *Multiple group analyses*

Finally, following suggestions proposed by Byrne (2001), the invariance of the model across both samples was tested. That is, we compared the fit of the model in which the estimates were constrained to be equal across both samples ( $M_c$ ) with that of the unconstrained model ( $M$ ). As expected, the free model ( $M$ ) provided a good fit to the data across both samples, with all fit indices meeting reasonably well their corresponding critical values (see table). However, the fit deteriorated significantly when all factor loadings and regression weights were constrained to be equal in both samples ( $M_c$ ). This means that, although the underlying structure is similar in both samples, the sizes of the factor loadings and regression weights differs slightly.

**Table 3** Fit indices of the proposed model. Multiple group analyses including the Spanish ( $n = 821$ ) and the Italian sample ( $n = 783$ )

Model	GFI	AGFI	IFI	CFI	RMSEA	$\Delta c^2$	$\Delta Df$
M	.97	.94	.97	.96	.05		
$M_c$	.95	.90	.95	.98	.06	$M - M_c = 171.67^{***}$	6
$M_{fa}$	.97	.94	.97	.97	.04	$M - M_{fa} = 7.81^{**}$	3
$M_r$	.94	.91	.94	.95	.06	$M - M_r = .91.87^{***}$	1
$M_{fi}$	.95	.93	.97	.95	.05	$M - M_{fi} = 3.47$ n.s.	3

Notes: GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; IFI = Incremental Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation. \*\*\* =  $\chi^2$  differences between the models are significant at  $p < .001$ ; \*\* =  $\chi^2$  differences between the models are significant at  $p < .05$ ;  $M_c$  = Full constrained model;  $M_{fa}$  = Model with factor loadings constrained;  $M_r$  = Model with regression weights constrained;  $M_{fi}$  = Final Model.

### Discussion and conclusion

The main objective of the present study was to add evidence of considering EI an antecedent of performance by means of students' satisfaction of students. We studied two samples of students from two different countries (i.e., Spain and Italy) in order to compare possible cross-national variations. Our results highlight the relevance that EI of students has in the process of learning taking to account that students' satisfaction is related to GPA, and these results are similar across samples. Some SEM analyses were performed in order to confirm that satisfaction is mediating this relationship between EI and performance in both samples independently (see Table 2). Thus, data support the idea that students' satisfaction is needed for mediating the relationship between a student emotional intelligence, and how he/she perform in the university. Consequently, the more EI, the more GPA engaged the students will get.

Finally, the multiple-group analysis carried out show that although the structural model proposed fitted well to the data of both samples, it was not entirely invariant across both samples (Table 3).

The most relevant theoretical implication of the current study is the test of the *predictive role* that Emotional Intelligence plays for enhancing students' performance. That is, this study, in spite of is not a longitudinal design, fit well to the data considering Emotional Intelligence as *antecedent* of performance (assessed by GPA).

Regarding to the practical implications of the present research, only the high EI does not guarantee higher GPA because the relation between EI and performance is mediated by students' satisfaction. In fact, following the results of the present study, in order to increase their performance, students need to feel satisfied. Consequently, universities should invest resources on enhancing students' satisfaction; but how it can be done?

From our point of view, the promotion of positive experiences in universities using counselling programs related to happiness, control of anxiety, and training on emotional Intelligence abilities can be useful strategy to enhance performance among students. The improvement of EI abilities can be possible by intervention-counselling programs and, changes in student Emotional Intelligence would enhance their performance.

Concerning to the limitations of the present study, the most relevant one is the fact that is not a longitudinal study and, causal relationships can not be wholly demonstrated.

For further research, longitudinal studies that include also a measurement of some personality traits of students are needed to increase the dynamism of the model proposed and its prediction power. Thus, studies focused in the promotion of EI, and testing the effects of this promotion on performance are needed in order to go further in this research field.

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# KNOWLEDGE-BASED SOCIETY IN THE SOCIAL DEVELOPMENT PERSPECTIVE ALTERNATIVES FOR THE BALKAN COUNTRIES

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## **Abstract**

*This paper deals with the role of knowledge and scientific research as factors in achieving intensive regional development and overcoming divergences. The inability of a knowledge society to establish itself as a global one following the present existing neoliberal project of development is one of its greatest limitations. The worldwide rivalry in the fields of sciences and innovations is even more intense than the rivalry in terms of control over natural resources. The production of innovations is very expensive, but it gives a huge advantage in all areas to those who can innovate. At present the Balkan countries are completely excluded from this process.*

*Two competing projects of development of knowledge-based society are analyzed in the paper. The first project can be called corporate – it assumes wealth distribution of knowledge economy in favor of big corporations and rich countries. The vast majority of people worldwide and the poorer countries in the EU remain permanently in its periphery. The realization of this trend is a dominant trend in the development of the EU today. The alternative project can be called a “social knowledge society” – it can be based on human solidarity and fair distribution of the wealth of knowledge economy. It implies equal access to the benefits of education and scientific and technological achievements. To succeed, this project requires combined efforts of the governments of the poorer countries in the EU, especially these in the Central and South-Eastern Europe, and the organizations of civil society.*

*For our Balkan countries other existing option is to follow the development of a new alternative model of economic development after the neoliberal age in building a cooperative society. This project will allow investments*

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*and intensive development in the poorest regions of the world and their inclusion in the knowledge-based society. Europe and the EU are about to lose the global race today their historical domination achieved after the scientific revolution in 18th century and the global capitalist expansion.*

**Key words:** *knowledge, development, society, perspective, Balkan.*

### **Utopia or Real Development Perspective**

In my previous publications I have tried to justify the thesis that the inability of the knowledge-based society to establish itself globally is one of its most important drawbacks (Bouzov, 2012). All its analyses and models made and developed by social scientists and presented in political documents, hold good only for societies in the most advanced countries only. This project can be realized successfully within the framework of a given nation state or alliance of states, when respective economic, social and political conditions exist in it. The development of a knowledge-based society or of dynamic progress in high technologies and innovations could be a tool for a rapid acceleration of the economy in the interest of the people. We will try to show that it could lead to overcoming of social inequalities and imbalances – but only in a limited perspective of one or some powerful countries. The introduction of education based on innovations and creativity is a very important instrument in this process. The present-existing tendency of transformation of education in business is a great obstacle to the realization of a knowledge-based society.

However, there exists no promising future for its project worldwide. Billions of people around the world would remain outside its scope in its realization. The knowledge society lacks a potential to bring a revolutionary change into social development – unlike the industrial society, which quickly became the master of the world in the 19th century. The wealth created by scientific progress, and an economy based on knowledge, are not at its disposal to be shared by all. This situation is not likely to undergo a change in the foreseeable future. Some important arguments are adduced below, supporting this view.

The first of them is associated with the existing historical division in Europe and the world – between the West and the rest part of it. The process of globalization reproduces and generates multiple inequalities and the most unmanageable of them are seen in education, science and technology. It could be said that some of the most clear-cut divisions in the world today

have been the result of the scientific revolution during the 17th and the 18th centuries in Europe (the Western world in particular) when large-scale capitalist expansion made itself manifest. Universities, academies, humanist and scientific schools, and all modern institutions of knowledge then sprang up in it. Universities were free corporations of teachers and students, based on federal, democratic principles and universal values in the organization of students' training and scientific research. They therefore became the motor of social evolution. Mathematics, natural science and technologies developed rapidly and shaped the nature of the modern world of our days.

The second argument bears on the transformation of knowledge into commodity; it has become a resource – and a subject of conflicts – not accessible to all. Today, the existing worldwide rivalry in science and innovation is far more intensive than that in the control over natural resources, such as fuel and energy, and the control over trade routes. To be sure, the „production of innovations” is expensive, but it spells out a telling advantage for anyone capable of turning it out. In fact, it is not within the potential of the majority of countries in the world, forced to compete for market shares in its use. The existing competition in the field of information and communication technology is an eloquent example. There exist no economic or political prerequisites for a fair distribution of available resources.

The third argument features the lack of perspective to review and underscore established social distinctions and inequalities and to somehow smooth them out. The world community is not adequately successful in its efforts to reduce poverty and to streamline and bridle environmental hazards. Our planet does not have adequate resources to secure high standards of living for all humans, on a par with the ones of the richest people. The latter are altogether not concerned with making any changes. The achievement of a satisfactory standard of living is entirely consistent with the potential of the knowledge society. Yet, its advantages today benefit a few people only. It is also true that rich countries are not prone to let poor competitors have any access to hi-tech achievements. They refer to alleged environment concerns in order to allow no dynamic economic and social development of the latter. This is borne out by results in the work of the World Summit in Copenhagen on ecological threats in late 2009. No doubt, debates on this matter will become ever more complex and critical as time goes by.

Knowledge is one of the most important factors determining the development of global economy and overcoming the present existing inequalities.

Humankind needs a fair distribution of the potential of knowledge because its big social problems and difficulties today are due to the existence of deep-going differences in its possession and use. The knowledge society cannot become one of a global significance, but it can enable people to enjoy its benefits at a reasonable price. A way of grounding the need for participation of all people in activities of the knowledge society could be found by means of gaining a specific insight into the nature of human rights, worldwide. The principle of justice is not meaningless as L. von Mises suggests (Mises von, 2008, p. 79), however difficult it might be to adapt its „natural-law interpretation” to global reality. It has its historical justification in the fact that „intellectual products” are, in themselves, universal achievements of mankind. They belong to Popper’s World 3 of „the objective knowledge” (Popper, 1972). Every individual has a right to access wealth created by knowledge; any disregard of it spells out social injustice. Hence, the growth of the knowledge society globally calls for involvement of a fair and socially responsible worldwide community. Nongovernmental organizations, and the global civil society itself, can play a decisive role in it. Scientists in the Club of Rome outline this perspective in their claim that „science and technology have to respond to real needs and be accessible and shared by all people” (Statement, 2002, p. 9).

### **The Western Domination in the Field of Science and Technologies**

Existing revolutionary achievements in science and technology back up the most important reasons for thwarting the march of globalization of social and economic changes in Europe – in the Early Modern Epoch at present. The ongoing scientific revolution can be characterized by its destruction of the old conceptual system of understanding of the world, which has been dominant for centuries on end, and by the development of modern science on the basis of empirical and mathematical grounding. A new view of the world was evolved and certain progressive research methods were mastered in the above-said period.

An important prerequisite for this was the establishment of modern institutions of knowledge – universities, academies, schools – also via translation work and development of scientific knowledge – boosting up „the production” of technological innovations. That was a great achievement of the overall economic, political, social and cultural progress in Western Europe; in the 19th and the 20th centuries it led to its domination in the world. This is the time of building of our present-day world. The rise and growth of the United States can be accounted for by the use of European

achievements and the European impact on it in the era of large-scale capitalist expansion.

The prerequisites for this development can be explained by the existence of an unique combination of favorable social and spiritual factors in the innovative scientific and technological development in the western part of Europe during the 17th and the 18th centuries – the time when the Greek intellectual heritage was „absorbed”, with its liberal spirit and theoretical loftiness; when philosophy began to develop by means of a better understanding of the activities of the subject of knowledge, as an echo of the telling growth of human activity in society. The interiorization of these processes was reflected in the formulation of new ideals and norms of knowledge – as scientific rationality, linking theoretical aims and trends of science to a profound interest in making practical changes; and linking them in social benefit and technological application of results achieved. Logic was in search of effective rules of discovery, ones guaranteeing absolute reliability. The complex interplay of scientific development and cultural conditions found its expression in generalizing philosophical criticism, and in institutionalization of scientific education in academies and universities; and, specifically, in increased communication between scientists, authorities and society, on the basis of a new type of „knowledge networks”. European institutions of knowledge – primarily universities – then turned into free and democratic corporations (Bouzov, 2010).

The unique combination of factors, allowing us to define the scientific revolution indicated as a product of the creative spirit and cultural environment in the Modern Age, could not be observed in other developed civilizations – the Arab world, China, India and Japan. It did not appear also in Eastern Europe, which at that time was plagued by invasions from the East. Thus the scientific revolution enormously deepened the cultural, social and spiritual division in Europe between West and East. The fact that the S/E part of Europe became a target of the basic impact of invasion by some Eastern nations with low-level culture can be viewed as an important factor in this process. As a result, countries in S/E Europe were compelled to adopt and become adapted to achievements of the West-European Civilization, imported from without. The prerequisites for existence of the present-day European political, social and cultural domination took shape under the impact of the scientific revolution in the 17th century; it continues to be an important factor in the world, a fact evinced by the development of the United States as its product.

Today, in the era of globalization, the existence of knowledge-based economy and the effective functioning of universities and other institutions as its bearers, require preservation of their institutional integrity and promotion of a diversity of organizational arrangements with firms (Conceicao and Heitor, 2001).

### **The World Rivalry in the Field of Knowledge**

Europe 2020 - the new strategy of the EU - is aimed at bringing it to the forefront of the global economic competition – its strategic aims are bound up to the project of development of „the knowledge society”. The idea of the Lisbon Strategy – of making member-countries set aside 3 % of their GDP for investment in R&D (2 % of them coming from private business), has largely failed in realization, which is the reason for its orientation to the creation of a new conception. A. Giddens rightfully says that the deadline date for its materialization has proved to be inadequate; in fact China herself spends two-digit percentage of her GDP for such activity (Giddens, 2009, pp. 207-213). The gap between science and business has not been overcome in Europe so it makes up a very important basis for existence of the knowledge society. The fact that over 40 % of all young people worldwide (according to a new estimate) need to complete secondary or higher education is also a telling indicator. A realization of these projects within a period of 10 years could contribute to the strengthening of the UE, and it might take up a leading position in the global economy, in the context of the existing competition between the United States and the developed countries in the East – China, Japan.

The existence of several competing economic centers in the multi-polar world today is not sufficient to build up a global knowledge society. Innovations in science and technology have become a strategic resource; which, however, divides, rather than unites, people and countries in the world. American domination in the sphere of information and communicative technologies today determines its overall economic and political domination worldwide. It is an incontestable fact that today's centers of power are not ready to share technological and scientific experience and knowledge with others; rather, they seek to dominate in markets and to sell products of scientific and technological progress as much expensively as possible.

The uneven distribution of such products widens the gap between wealth and poverty and boosts social imbalances. The states or corporations which are

owners of resources in knowledge and innovations hold the key to successful economic development and supremacy in global economic battles.

### **Two Projects of Knowledge-Based Society**

At present the development of a knowledge-based society is defined as a key objective of the EU and the years until the end of the second decade of the 21st century will be of decisive importance in this context. Two alternative options for its development can be considered --“corporate society” and “social knowledge society” Now, what type of knowledge society could be built up by the EU?

#### ***Corporate Knowledge-Based Society***

The first project can be called “corporate society”– it assumes a wealth distribution of knowledge economy favoring corporations and rich countries. The vast majority of people and the poorer countries in the EU invariably remain in its periphery. The realization of this trend is dominant in the development of the EU in our days. The great economic, financial and social crisis currently operates in this direction. It has increased the profits of corporations. Limited minorities of rich people benefit from this type of knowledge-based society!

Innovations in science and technology have become a strategic resource in the Globalization Era The struggle for advantages in it however divides rather than unites people and countries in the world. It is an incontestable fact that today’s centers of power are not ready to share technological and scientific achievements with others; rather they seek to dominate in global markets and to sell products of scientific and technological progress as much expensively as possible. Lagging behind in the development of science and technology brings forth multiple degrees of inequality between the richest and the poorest regions in our world.

Thus defined,” corporate knowledge society” forwards wealth distribution of knowledge economy in favor of big corporations and rich countries. “Knowledge generation and technological capacity are key tools for competition between firms, organizations of all kinds, and, ultimately, countries. Thus, the geography of science and technology should have a major impact on the sites and networks of global economy” (Castels, 2005, p. 320). The uneven distribution of products of knowledge economy widens the gap between wealth and poverty and boosts social imbalance;



corporate knowledge favors big business and global economic and political elites.

Corporate knowledge-based society is a product of the neoliberal strategy of development, dominating in the world nowadays. Only a limited minority of rich people benefits from it. The majority of people remain outside of the scope of wealth distribution. But it is true indeed that neoliberal philosophy is based on the assumption of man's egotistic and self-interest nature and "market systems are environmentally destructive and socially irresponsible as a result" (Peet, Hartwick, 2009, pp.98-100). Neoliberal capitalism cannot provide normal living conditions for everyone – it has no potential to reproduce social and cultural systems of society. It only gives "good life" to an elite minority. The "corporate model" featured here is only suitable for big business - for Microsoft, Nokia, Google and Facebook. Their profits keep on snowballing!

This model of society is counter-productive. Remember here the Lisbon Strategy of the EU. It has failed in its intention to make member-countries set aside 3% of their GDPs for investment in R&D (2% of them from private business). This target is on the agenda for Europe 2020! It is a very problematic target for Bulgaria and Romania – in the crisis rampant in them today we have spent only 0,4% of our GDPs on R&D. China spends a two-digit percentage of its GDP on such activity! The conclusion is that the EU's following neoliberal strategies spells out losing ground if compared with other more dynamically developing parts of the world.

### ***Alternative Project: Social Knowledge Society***

The alternative project can be called "social knowledge society" – it can be based on human solidarity and fair distribution of wealth of a knowledge economy. It implies equal access to benefits of education and scientific and technological achievements. It is completely incompatible with "neoliberal capitalism" and its values. To succeed, this project requires combined efforts of the governments of poorer countries in the EU, especially those in Central and South-Eastern Europe, and organization of a civil society in them. Materialization of the right of access to benefits of "the knowledge society" requires existence of global consensus. A distributive justice, including the right of equal access to the benefits of knowledge, could be based on cosmopolitan political and moral values and principles, or on a new republicanism, adapted to the Global Age. Any violation of the cosmopolitan principles would spell out existence of social injustice, with

lasting consequences including loss of access to “natural goods” as well, such as food and water. Republicanism champions the role of historical communities in the distribution of wealth of a knowledge economy – among national states and societies, ethnic and religious communities. The “nation- state” does not lose its meaning in the Globalization Age – “the new phase of globalization certainly transforms and alters the power of old nation states” (Soete, 2001, p. 37).

What should be done in the EU community or in our region of South-Eastern Europe? In order to succeed, this project should rely on combined efforts made by governments of the poorer countries in the EU, especially those in Central and South-Eastern Europe, and on the organization of a civil society. To overcome the multiple negatives of the first model and to attain new growth in dynamics, the EU has to reckon on the development of a social knowledge-based economy. Such economy could unite the forces of more people in the fight for new ideas in the sphere of the R&D. Such change is especially important for our countries, the poorest countries in the EU, because we strongly need a new acceleration of our development. Our countries cannot overcome the present-existing economic and social crisis and cannot translate new national objectives into reality by means of neoliberal policies! They need fundamentally new solutions to problems of economic growth and social justice.

### **Global Injustice and the Imbalances in the Field of Knowledge**

The ongoing process of globalization has entailed growth of inequalities and injustice worldwide. Humankind still underestimates their effect as a threat and risk to its security. Global injustice is a source of most dangers to world security: terrorism, crime, social clashes and regional conflicts.

The first cause for the existence of crisis of global security is the lack of perspective to review and underscore established social distinctions and to somehow do away with inequalities. The world community is not adequately successful in its efforts to reduce poverty and to streamline and bridle environmental hazards. Our planet does not have adequate resources to secure a high standard of living for all humans, on a par with that of the richest people. The latter are altogether not concerned at with any making of corresponding changes.

Neoliberalism cannot be an adequate strategy in this process. As a development strategy it is unable to ensure normal functioning of a social

system and just relationships between people. The global corporative media and neoliberal economists have defended in one voice “The Washington consensus” and neoliberal strategies. This type of political and social projects is considered as having no alternative (Harrison, 2002, pp.16-17). It coincides with the intimate ideas of the corporative media owners. The neoliberal values claim to be an universal therapy for all economic and social diseases. It is justifiable to compare the contemporary neoliberal economists with the theologians in the Middle Ages (Pogge, 2005a, p. 30).

The deepening of economic imbalance on our planet is a lasting result of the ongoing neoliberal globalization. Capitalist expansion transforms existing relations in the ranks of mankind: dynamic changes in them in recent decades have given an impetus to coordinated work in solving economic, political, social and cultural problems of states and their citizens. However, one can say that these processes could not lead to a fair sharing of existing limited resources. The developing countries in the world have increasingly become moored to the debt trap laid by the most advanced ones. The wealth of the latter is growing rapidly. The uncompromising language of data shows that in 1960 20 percent of the richest people in the world had incomes 30 times higher than those of the poorest ones, while in 1995 this ratio had already marked a 82 times jump; the wealth of 225 of the richest individuals in the world made up 50 % of the annual incomes of 2,5 billion individuals in the poorest people bracket (Boniface, 2007, p.194). The data for the preceding growth of this rift in the income ratio was as follows: 3:1 (1820), 7:1 (1870), 11:1 (1913); it went up to 30:1 in 1960, and to 60:1 in 1990) (Pogge, 2005b, p. 549). It accounts for the incredible scope of hunger, poverty and diseases among the population of our planet. The use of information and Internet and communicative innovations is also very unevenly distributed, mainly benefiting citizens of the most advanced countries (Sendov, 1993). J. Fulcher is right in saying that although it is often considered that global capitalism integrated world, it, as a matter of fact, permanently brings about more division into the distribution of wealth (Fulcher, 2008, p.195).

One could say that the ambitions of the world community to reduce poverty and stake off environmental hazards have relatively no effective means of realization in our divided world. Rather, they entail serious conflicts owing to the pressing demand of developing countries to have no restrictions in their prospects for economic development, rooting in assertions that advanced countries sought to reduce emissions and do away with harmful effects of the global warming. The Copenhagen Climate Summit in December 2009 was the first major arena of this deepening conflict.

It could be said that social and economic inequalities are prerequisites for the existence of lasting inequalities in the field of knowledge. Practically, the developing countries and the poorest people in the world are deprived any social perspective.

### **The Right of Access to Benefits of the Knowledge Society Requires A Global Society Consensus**

The right to participate in activities of the knowledge society and to share in its wealth is related to the use of social and economic benefits. A distributive justice, including such right, could only be based on cosmopolitan political and moral values and principles. Any violation of such principles means existence of social injustice, with lasting consequences, including loss of access to natural goods, such as food and water. Hungry people can be fed, homeless ones can receive shelter, but lagging behind in science and technology brings forth multiple degrees of inequality and difference between the richest and poorest regions in our world.

L. Cabrera has all good grounds to ask the following questions: „If all individuals, regardless of their birthplace or citizenship, have rights to adequate resources and life opportunities, how are those rights to be fulfilled?“ He seeks to find an answer to it in the availability of „strong institutional cosmopolitan approach to distributions“, one employed by „just supranational institutions“ (Cabrera, 2004, p.71). Indeed, there exist good reasons to assert that the idea of existence of universal human rights can be „theoretically incoherent and practically dangerous“ (Ingra, 1994, p. 198) in the context of the existence of cultural and political differences today. Hence, one can ask the question of how we can find a grounding of the idea that all people should benefit from the wealth of knowledge? And then...how could these supranational institutions be operational?

The idea of this paper by me seeks to spotlight the need to promote the creation of institutions through which a cooperative justice could be realized in the distribution of these specific goods. I mean a cooperation, that is not in the field of trade alone, „but of the production of public goods such as world peace, the prevention of damaging climate change, the guarantee of mutual aid in case of natural disasters“ etc. (Parijs van, 2007, p. 640). Shared use of scientific and technical achievements belongs to these public goods. NGOs and the global civil society could bring a certain pressure to bear, so as to foster a democratic access to goods, produced by science and technology. It should target large corporations, endeavoring to gain huge

profits from the use of research results. Such democratic pressure should be exerted on state institutions, for the purpose of making them ensure adequate financing of development with priorities in knowledge-based sectors and industries, as well as of transparency and efficient access to their achieved results. Achievements of the scientific progress in our days, say in the field of new communicative technologies, help out in limiting illiteracy and augmenting job opportunities, and thus - solving of social problems. It could be said that the attainment of a consensus ensuring democratic access to the products of knowledge could be steady enough, if it is based on shared respect for values and is attained by people in a global community, not by individual countries only. Such community would be interested to the utmost in the realization of universal values upheld by the knowledge society.

The crisis of realization of knowledge-based society featured above could be overcome by means of cooperative political decision-making. Its results should improve the situation of each actor without worsening the status of anyone. Cooperative decisions could be initiated, controlled and imposed by world organizations and a global civil society through the development of a new consciousness of humankind. Nowadays there is a real chance some great countries like Russia and China to realize an initiative for building an alternative economic order based on investments in poor countries. A dominating factor in these efforts to overcome the neoliberal worldwide order should be activity in the interest of people, not in the interest of economic elites.

A political game theory can be used as methodological tool, but its formal schemes need a philosophical interpretation. Choices could be motivated by personal selfishness or by an idea of action in favor of the interest of a given group of individuals. Games could be a good model for international relations with nation-states, international organizations and individuals as actors.

The principal problem here is how to reach a consensus between conflicting interests of individual and group actors. Two alternative viewpoints could be outlined in the interpretation of the ways and means of solving conflicts between individual and community. They have different philosophical justifications. Cooperative strategies rely on a social welfare function in their attempts to find out values of individual utility functions – i.e. maximization of benefits or utilities in respect of different individuals. Cooperative strategies rely on holism; corporate strategies rely on

methodological individualism. The latter perceives of society as a sum total of atomized individuals. According to holism in social studies “the general” is more important than “the individual”; it meets a ruling social interest.

Efforts to correlate these two types of strategies in an uncontroversial way come up against considerable logical and methodological difficulties, formally expressed in the Paradox of Social Choice. It says that it is impossible to get to maximization of a social welfare function on the basis of satisfaction of certain individual utility functions. It could be demonstrated through an analysis of two familiar choice situations – the Prisoner’s dilemma and the Paradox of vote behavior. The latter example justifies the conclusion that preferences of a group of voters do not correspond to the rational requirement of transitivity. On this basis K. Arrow proves the validity of General possibility theorem for social welfare functions (Arrow, 1963, 22-80). According to it, in order to achieve maximization of a social utility function, a given choice must be subjected to five living conditions of moral nature. They bear on relatively simple cases with two options; however they do not overcome the Paradox of social choice.

When used corporate strategies lead to the formation of coalitions and their domination in the allocation of resources. These strategies cannot find a stable social way-out, one living up to a variety of differing interests. They cannot solve social problems and the problem of fair distribution of knowledge wealth. Use of these strategies in international relations and the distribution of wealth will lead to further growth of the power of rich global elites and powerful countries.

Cooperative strategies are based on a common interest of a certain social group, community or society. Their decisions are oriented to the realization of this interest as a collective aim or commonly-shared good. Cooperative strategies lead collective actors to seeking for realization of their preferences and to achieving maximization of existing social utility functions in a successful way on the basis of some communitarian values like solidarity, mutual aid and support.

One can note that contradictions between the two types of strategies outlined correspond to the existing discussion on liberalism and communitarianism in the contemporary political philosophy. They are not alternatives – the latter is a project of revision of some unfavorable social consequences of the first one. These consequences became ever clearer in analyzing the

failures of the liberal project for justification of cosmopolitanism in the process of neoliberal globalization (Bouzov, 2015).

There are three specific ways of justification of cooperative decisions in the field of knowledge. The problem here is that of ensuring equal access of all members of the global society to the benefits of knowledge.

The first of them is the so-called “moral economy” or cosmopolitanism as a new form of this project in the Globalization era. The main idea of the “moral economy” stems from the assumption that there are communities based on institutions and practices developed in common interest. It is an “economy”, based on commonly-shared good, mutual aid and justice; an economy completely opposed to political economy. Yet it can only regulate relationships in small social communities, under specific natural conditions. Cosmopolitanism is an attempt to recover this idea in the context of contemporary liberal philosophy, upholding the view that each human being can make a choice with regard to an interest of humankind and universal moral principles.

The right to participate in activities of the knowledge society and to share in its wealth is related to the use of social and economic benefits. A distributive justice, including such right, could be based on communitarian political and moral values and principles. We need debates and “reasoning together” on the advantages of good life, mutual aid and human solidarity (Sandel, 2010) – it is the best way to defend the communitarian values as a basis for a construction of a new project for realization of common good through fair distribution of the benefits of knowledge.

Knowledge can be considered as a communitarian social value. World organizations, governments of poor and developing countries, alter-globalist NGO’s and the global civil society as a whole could bring a certain pressure to bear in efforts to foster a democratic accessibility to goods produced by high-level science and technology. We can add here the poor countries and their alliances interested in finding out new dynamic incentives for their development.

Global inequalities between peoples in the world today have their repercussions on inequalities between countries – we are witnessing the existence of new intensive conflicts between rich and poor countries. There is a new trend of building up new alliances of nation-states, jointly seeking to react to challenges of the globalization process and trying to counter

negative consequences of neoliberal economic experiments. Examples are the development of the EU and new alliances in Latin America built up through efforts made by countries like Brazil and Argentina. Also, mention should be made of the integration of developing countries to counter dictate by rich ones especially in the field of environmental challenges and ecological constraints on economic growth (the Copenhagen Summit 2009 and the Kyoto process after). Another unifying idea of developing countries could be the securing of equitable access to benefits of the knowledge economy-it could be a more serious source of future conflicts than cultural differences. It could hardly be asserted that rich countries will continue to exploit, unpunished, resources, experts and labor of poor countries, without any reaction.

It could be said that the attainment of a consensus ensuring such accessibility to the products of knowledge could be steady enough, if it is based on shared respect for values and is realized by people in a global community, not by rich countries and their elites only.

Other vehicles of justification of cooperative decision making in the field of knowledge economy and shared use of its goods could be the critical communicative theory of Jurgen Habermas and the public choice theories.

Individualist and cooperative strategies of decision making are opposed to each other in the conception of Habermas (Habermas, 1984). The first correspond to corporate decisions and have a justification in the context of instrumental rationality. Communicative action is based on moral values and rules defining the framework of a discourse – they are accepted in an inter-subjective way in the holding of a free discussion. Habermas rightfully binds the cooperative strategies to the efforts of all participants in public communication to achieve a consensus or a democratic association of citizens based on collectively accepted values. His humanist criticism of neoliberal capitalism could be a good road to social and political justification of the cooperative models of rational decision-making.

According to the public choice theorists it would be more advantageous in some situations of decision-making if an agent chose a social utility function and did not seek an individual maximization (Buchanan and Tullock, 1999, pp. 31-40). They argue that such organic entities as “society”, “community” and “people” do not exist. The choice made according to the social utility function is thus subjected to individual models of decision-making. This type of individualism and nominalism could not be successful



in searching for justification of a collective decision. Alternatively, a collective or some community could be taken in as a basic unit of an analysis and a cooperative choice could be bound up to common goals and principles of common interest. So, we can define a social utility function as an expression of group interests.

In conclusion, one could say that cooperative decisions could be justified in different ways which could be the basis for reconsidering the present-day global policy of uneven distribution of the benefits of knowledge economy. This process could open up new prospects for the existence of a balanced, sustainable and dynamic development of humankind.

It would not be reasonable to expect that an access of all humans to the wealth of the knowledge society could become a reality some day. T. Pogge rightfully notes that „a human right is fully realized by some institutional order if and only if all of its participants have secure access to its object” (Pogge, 2002, p. 166). What could be mostly achieved in the final count is the securing for every human an opportunity to benefit from the existing scientific and technological progress at a reasonable price.

### **Alternatives for the Balkan Countries**

We are living in the periphery of the economic development of the present-day world dominated by the West. Germany aggressively asks our countries to accept more and more refugees, but we have not job for our people. The unemployment and the lack of economic perspectives are very important problems.

Our main problem is how to boost up our economic development to provide benefits for more people. This goal could be achieved after rejection of the neoliberal policy and the colonial expansion of the powerful countries.

We can consider as harmful and wrong the policy of imposing unilateral solutions. Our Balkan countries need long-term prospects for reindustrialization and interruption of the neoliberal destruction. The alternative is a deepening cooperation in the economic, social and energy fields, to enhance their development. Beneficial partnerships may be sought outside the EU – the BRICS countries are trying to build an alternative development project based on investments in the poor countries. The establishment of a new republicanism requires the national states to defend the interests of their citizens and to protect their national interests.

Now the EU is on a crossroad of choice a new scenario or model of development after the collapse of the neoliberalism. In result of this policy our countries (European and the West as a whole) passed through deindustrialization and turned into hypermarkets.

The most perspective among all discussed options is the limitation of the cooperation in some most important fields like investments in innovations, education based on innovation and creativity and new technologies based on the progress in information and communicative technologies.

Now at the beginning of the presidency of D. J. Trump we could predict great changes in this policy of imposition of political and economic interests by military force. The Trump-revolution is a request for a rematch on the part of the industrial capital and the national state-responsible people against the globalist expansionism.

It is determined by the tendency of exhaustion and the searching for new ways of global dominance – through investments in high technologies and return of business in the U.S. The industry was given in poor countries to increase in times the profits of global corporations and financial oligarchy. We have been faced up a great unemployment and social crisis – lack of development options. It would be a more effective way to make America great again! This policy will boost new development models based on conservative nationalism. The nation-state is the most advanced form of human community – it guarantees rights, freedoms and interests of everyone. The EU needs to be turned in an alliance of sovereign nation states and now it becomes a real opportunity.

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# UPBRINGING AND EDUCATION IN FREE TIME

*Drago Brankovic<sup>1</sup>*

## **Abstract**

*Under the influence of globalization processes and modern information and communication technologies in pedagogy, gradual changes are occurring at the theoretical and methodological level. New theories and contemporary models of upbringing and education are constituted. "The entire world" is engaged in practical upbringing and education of children. More and more, the intentional upbringing in schools and education in free time is being reduced, and non-intentional one is being increased. Such education in free time is based on the theories of informal education. Reflectivity as a cyclic model with multiple loops (reflection before action; reflection in action; reflection after action; reflection of reflection) constitutes the essence of informal upbringing and education in free time. These models of reflectivity are dominated by the procedures of systematic self-observation, learning by solving problems in everyday life and procedures of achieving plans of own development (self-planning and self-realization). Informal upbringing and education in free time significantly affects the changes in the structure of personality (strengthening the ego, self-image, emotional balance, motivation, interests, personality traits and temperament).*

*Upbringing and education in free time is also an important factor for the formation and development of general and specific competences. Freedom and intentionality lie in the essence of process of increasing competence, not only in terms of selection of activities, but also the manner of their realization. From the methodological aspect, the problem of consideration and determination of relationship between the competences acquired in formal, informal and non-formal education and upbringing is complex.*

**Key words:** *free time, non-intentional upbringing, informal learning, upbringing in free time, upbringing for free time, learning to learn, competences, self-realization.*

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## Introduction

The processes of globalization and modern information and communication technologies have determined significant changes in all domains of life. In pedagogy, these changes lead to theoretical and methodological reorientation and constitution of a new pedagogical paradigm. As part of these changes, new theories and implementation models of upbringing and education are constituted. "The entire world" is engaged in the upbringing and education of children considering the domination of information and communication technologies. In such conditions, the working time of adults is reduced and the amount of free time is increased. Not only that, the increase of the amount of free time reduces the impact of school intentional upbringing and education in free time, and increases the non-intentional one. Free time is finding its use in the "function of rest, entertainment, leisure, development of personality and in the process of creativity" (Vidulin-Orbanić, 2008, p. 19). Traditional school fails to integrate these challenges of free time into overall educational work. The school continues to increase obligations of students and thereby reduces their amount of free time. In free time, the knowledge is not deepened, and work habits, self activity, initiative, socialization, creativity and a healthy lifestyle are not developed. School is faced with challenges of free time marked as free will, freedom of choice of contents and method of work. These are the challenges that school fails to install into its work and to form student competencies for purposeful, rational and high quality use of free time. In school activities, absent is the acquainting of students and their parents with the meaning of free time, self-organization of free time, planned and continuous cooperation between schools and parents in the field of free time of students. By such activity, school is failing to become a creator and carrier of the implementation of new concepts of upbringing in free time. In new conditions, it is necessary to "learn to treat free time, not as a state of mind, but rather as a condition which is a product of the interactions between many factors" (Rojek, 2010, p. 188).

Pedagogical science in the "new" time has not theoretically created and empirically checked the basic problems of upbringing and education in free time. These problems are insufficiently analyzed by contemporary pedagogues as well. Although there are individual examples of analyzing of some aspects of upbringing and education in free time (Jankovic, Kacavenda, Božović, Kokovic, Brankovic, Mikanovic, Grandic, Barakovska, Ninković...) they relate only to problems of classification of free time activities and emphasizing of upbringing and education as

one of free time activity. Also in those attempts there is little, or none of theoretical designing of such a significant problem of free time.

Upbringing and education in free time and for free time includes a number of complex pedagogical (general pedagogy, didactics, andragogy), psychological (pedagogical psychology, school psychology), sociological (sociology of culture, media sociology) and information processes and procedures. Theoretical bases of these processes are located within these sciences. By the synthesis of such concepts which have a multidisciplinary character, the processes of upbringing and education in free time and for free time can be theoretically founded, studied and interpreted which makes the essence of the subject area of pedagogy of free time. Free time, as the time outside of working hours, can “determine a person’s happiness, their contribution to the world in which they live, even the meaning of life itself” (Godbey, 2008, p. 1).

From the aspect of pedagogy of free time, the processes of upbringing and education in the free time can be summarized in two domains: a) upbringing and education in free time and b) upbringing and education for practical and rational use of free time. Upbringing and education for free time is considered and interpreted as a new and important feature which is realized in formal and non-formal education and it has an institutional character. Upbringing and education in the free time is possible to be realized within informal education in the working and living situations. Such an informal education does not have a determined set of goals and contents, nor structural, verified time components. For pedagogy of free time, of particular importance are characteristics of the processes in informal education, formation and development of specific competences in free time as well as the process of self-cognition (self-encouragement; self-engagement; self-reflection, self-assessment) in free time and for free time.

### **Informal upbringing and education in free time**

Education in free time is one of the most complex problems of pedagogy of free time. It comprises intellectual, moral, aesthetic, working and the physical components of the development of personality. Besides that, in addition to the positive influences of individuals or groups in free time, also the destructive ones are expressed. These are those situations in which the negative aspects of boredom, fun and entertainment can lead to more serious forms of deviations in the behavior of young people (Plenković,

1997). Pedagogues warn to the connection of the ways of spending free time with asocial behavior (stealing, smoking, alcoholism, gambling, drug addiction, robbery, etc.). Likewise, in free time there are also hedonistic activities or desire for excessive enjoyment. Theoretically it is not disputed that free time can be a significant mean for preclusion and combating of asocial behavior. Preclusion but also quitting the forms of such behavior in free time is not only a pedagogical but also a wider social function. Therefore, quite justified a number of modern pedagogues emphasize the great importance of upbringing and education for practical and rational use of free time in the function of development of a versatile and creative personality. Rational and appropriate use of free time is not “idleness” and it enables a connection with work obligations. Therefore, modern pedagogues are right to point out that “more free time equals more freedom” (Rojek, 2010, p. 179), understood in a relative sense (limited freedom - freedom of choice).

Modern empirical researches of pedagogues, psychologists and sociologists also indicate the complexity of the subtle processes of formation and development of personality in free time and especially some characteristics (self-concept) that essentially determine the increasing number of forms and processes of behavior and action. This especially applies to “training of personality for active, positive and cultural use of free time” (Barakoska, 2003, p. 252). According to these findings, there are three types of personal behavior in free time: a) an action-oriented type of personality, b) socially and intellectually oriented personality type, and c) socially-entertainment personality type. Each of these three personality types is recognizable by more typical features that can be encouraged and developed through pedagogically designed use of free time.

It is possible to derive theoretical bases of upbringing and education in free time from different models (model of formal education, model of non-informal education, model of informal education) of upbringing and education. Each of these three models affect (directly or indirectly) upbringing and education in free time, but in different manner. The model of formal (institutional) education and upbringing is recognized according to defined goals, specified curricula and a rigid structure of internal organization. Within that model, there is little time and content space for upbringing of young people for practical and rational use of free time. Within numerous non-formal models, there are possibilities for upbringing and education for use of free time. Even besides that, non-formal forms of education are directed towards educational contents (acquiring of



education) and forming of specific professional competences, but not for “learning to learn” which will dominate in free time. Therefore, a great number of pedagogists shows understanding according to which non-formal forms are not appropriate for upbringing and education for free time.

Theoretical bases of upbringing and education in free time are located in the theories of informal education that originated and developed in the context of adult education theoretical thought about the models of education (formal, non-formal and informal education). From the aspect of free time, formal and non-formal education with its meaning, content and methods of achieving are appropriate to upbringing and education for free time and informal education is appropriate to upbringing and education in free time. Informal education in whose essence are informal learning processes refers to “reflection and a self-organized form of learning. This is primarily reflected through individuality. Personal opinions and judgments are developed with constant new impressions, impulses and experiences “(Loewen, 2011, p. 9). Nevertheless, informal upbringing and education did not become a constituent of formal nor school upbringing and education.

Theoretical bases of upbringing and education in the context of informal education can be derived from the conceptual definition, meaning, character and way of exercising informal education and upbringing. Theoretically, informal education is based on self-learning, understood in a broader sense (educational and pedagogical aspects) and the narrow sense (informal learning). This informal learning is not learning understood in the school meaning (Kaiser, 2007), but a specific type of learning “that takes place in everyday life, in the workplace, in the family environment or in free time. It is not (in terms of learning objectives, time or incentive for learning) structured and typically does not lead to certification. Informal learning may be targeted, but in most cases it is unintentional/unconscious “(Memorandum on Lifelong Learning, 2001, p. 35). The essence of the definition of informal education, understood in the context of free time, can be expressed by the following determinants:

- a) informal education is situational education (life context) and does not have a special structure and internal organization,
- b) practical knowledge is gained as a rule by informal education, skills are formed and specific capabilities are developed (experienced knowledge, skills and capabilities),

- c) informal education is based on the learning by means of interaction with others in learning, but also learning from other people's experiences (experiential learning)
- d) informal education in the theoretical sense is directed towards output information and less towards specificities and flows of the learning process,
- e) informal education directed towards solving practical (life) problems so it rarely has intentional character,
- f) informal learning is an individual process that is determined by the interests, needs and motivations of each individual who is learning in the situational context,
- g) informal education is exceptionally flexible process in respect of objectives, content, structure and ways of learning,
- h) informal education is possible for all individuals and is based on free and voluntary choice of time and content of learning,
- i) valorization of the process or its outcomes is not carried out in informal education (there is no certification), and
- j) special funds should not be provided for informal education by the society or persons who are learning.

Based on the mentioned determinants, it can be concluded that informal education is an essential constituent component of everyday life (life situations) but also a constituent of upbringing and education that is significantly different from the non-formal and formal education. The essential difference between these models of education is contained in *intentionality*. In formal and non-formal education, there is an expressed intention to learn something (learn, adopt, train, build, develop). In the context of informal education and upbringing, personality unintentionally learns but it does not understand this process, or experience or interprets it as an extension of knowledge (education), developing of skills and the formation of personality traits (education in the narrow sense). These theoretical assumptions indicate the understanding that informal education and upbringing in free time is an unconscious learning. Such an understanding, in the broader philosophical and anthropological interpretation, is not acceptable because the process of learning itself in informal education often occurs unintentionally and even unconsciously, but the personality learns (keeps), develops only those capabilities and characteristics that are in line with its critical understanding of everyday life and objectives which the personality aspires to in life. Other learning processes and their outcomes do not become an integral part of personality so they quickly become abandoned and forgotten.

The needs and interests of each specific personality make a constant that follows all processes and flows of informal learning in free time. A person puts its own responsibilities and organization to the fore, because “informal learning is characterized by the fact that he/she who learns based on the problem of action and/or interest, which he/she set by himself/herself, and which he/she considers relevant, poses the objectives (of learning) to himself/herself for the realization of which he/she makes a work plan ie. learning activities, implements them independently, while deciding on how to deal with difficulties of learning when they occur, and finally determines when in such a way adopted competence will be considered satisfactory for the realization of the objective of learning” (Kaiser, 2007, p. 88). From such an understanding that is not alone, it is concluded that informal education also has elements of conscious and even intentional learning in certain life situations..

### **Reflectivity – essential determinant of education in free time**

In addition to the *intentionality* as an important determinant, the essence of informal learning in free time also includes *reflectivity*. Reflectivity (lat. reflectere = reflect, rethink, screw back, to focus on something) is determined by three meanings in pedagogical resource: a) reflectivity in the sense of self-reflexivity, b) reflectivity as an opinion, c) reflectivity as self-understanding. All three meanings are essential for informal education in free time, but the most appropriate is the meaning of self-reflectivity and self-understanding. These two meanings indicate the full meaning of reflective learning in informal education in free time. Because, reflective learning by Kolb (D. Kolb, 1984) is a cyclic model with multiple loops. According to his understanding, the central “loop” in reflective learning represents *an action* (the active component) which precedes reflection before action and it is followed by: the reflection in action (model of loop of the first level), reflection from action (model of loop of the second level) and reflection of reflection (model of loop of the third level). In informal learning in free time, reflection of reflection has a special role (meta-reflection) which is the “process of reviewing of own values, beliefs, attitudes and assumptions on the basis of which we are functioning, and which direct our attention and interpret our entire thinking and behavior” (Kulic, Despotovic, 2004, p. 98). It arises that all models of reflection are applicable in informal education in free time (Kačavenda-Radić, 1992). To apply the model of reflection in free time, required is competence for reflection that can be formed using multiple pedagogical procedures: a) systematic self-observation, recording and evaluation of own learning

experience, b) problem-based learning in everyday life by any model of reflection c) preparation and implementation of own development plans (self-planning and self-realization). In addition to these procedures, training for reflection (the acquisition of competences for self-reflection) of the learning process in free time requires an appreciation of gradualism and the sequence of model of reflection. According to the criterion of complexity, gradualism is carried out according to the sequence: at first, it is necessary to be trained for reflection after the learning process (reflection after action), then for the reflection in the learning process (reflection in action), and only after that the reflection before the process of learning (reflection before action). Training for these models of reflection is followed by training for reflection of reflections (reflection after multiple completed learning processes), which is in essence a critical synthesis of all models of reflection. At a practical level, reflective learning in informal education in free time needs to contribute for a person to be trained (competent) to: a) self-assesses own actions in the process of non-formal learning, b) critically reflects on own actions under the principle of relying on its own strength, c) observes itself from another perspective, and takes the position of someone else, d) searches for alternative procedures to solve problems in the processes of learning, e) critically reviews own actions in the learning process in free time in one's own life and in the wider social context (Branković, Mikanović, 2012).

Upbringing and education in life and through life situations in free time is also determined by the problem of developing of independence in learning, work and creativity. Expediency and rational use of free time of course depends on the level of development of multiple personality characteristics. This applies especially to the *independence* in learning, selection of activities and content, as well as selection of the form of behavior in the conventional and unconventional life situations. In addition to the independence in free time, other characteristics need to be developed such as the initiative to solve problems, the ability of self-affirmation, creativity and especially the ability to develop social components towards self and others. Upbringing and education in free time is particularly important for developing of creative manifestation in free time and in different areas of work and action (Kačavenda-Radić, 1989). In this context, self-affirmation and creativity are those personality traits that give free time activities priority importance and they become through free time an important indicator of the achieved level of the freedom of personality. In addition to self-affirmation and creativity, also the abilities for decision-making about

oneself should be developed in free time but not only in free time but also in other situations and forms own life.

It should be pointed out to another essential knowledge according to which free time can be a significant factor as well as a means of upbringing and education of an individual. Free time, as well as any other factors of education, achieves many influences of different direction (positive or negative influences) and intensity on the development of personality as a whole as well as individual particular characteristics. This is not disputable in pedagogical theory. It is less explained the function of free time as a means of upbringing and education. In numerous processes of upbringing and education, free time appears as “free means” through which the person gets to know itself and its specialty in free time more than in the family, school or workplace environment. It (personality), in its free creations, has the widest possibilities for identification, self-evaluation and self-assessment of freely chosen own actions. Not only that, free time with various activities becomes an important mediator of structural changes of personality (strengthening the ego, self-image, emotional balance, motivation, interests, character, temperament and other characteristics). In free time, a person is often found in situations where it has to make decisions on the coordination of individual needs and interest with others, groups or collectives. All these positive changes of personality traits in its free time simultaneously present the ability to increase the quality of life. We should warn also to the information according to which the free time as a means of upbringing and education can contribute to formation and development of negative actions, behavior and personality characteristics (Branković, 2015). From personality, but also from the character of free time (means of education), it depends whether (de)humanisation not only of personality but also the life as a whole is carried out. Therefore, those pedagogists are right who warn that it depends only by an individual in its real time whether it will turn its abilities into a positive (acceptable) or some other unacceptable characteristics and values (Branković, 2016).

### **Free time and development of competences**

In the theory of informal upbringing and education in free time, particularly relevant is the issue of theoretical establishing, formation and development of specific competence for this model of learning. From the formal aspect, general and specific competences are formed within the model of formal and informal learning (institutional context). From such an understanding, it is not justified to conclude that the certain competences are not formed

and developed in the model of informal education in free time. We base such a knowledge upon the known definitions of competence in world pedagogical literature. According to these definitions, competences are verifiable and confirmed abilities for application of skills and knowledge in a working and living context. General, specific and professional competences are formed targetedly and are acquired by training (practice). These are formed (gained) according to the rules that “individual competences are based on knowledge, built on values, disposed as abilities, consolidated by experiences and realized by will” (Erpenbeck, J., 2010, p.18). In this conceptual definition of competences, we can notice the term *action* (central pillar of competence) and it is the constituent of the life situations (self-organization and self-action) and competences that are formed in the free time. Personal attitudes and preferences for the development of specific skills are essential for the formation and development of competences in free time. Because it is exactly in free time that we “become aware of our need to adapt, of our capacity to learn and our ability to imagine” (Rojek, 2010, p. 188). Precisely without these features, general and professional competences cannot be formed and developed.

Free time as a means of education significantly determines the formation and development of competences in a number of processes of informal upbringing and education. However, free time is also the factor of losing of a number of acquired competences, especially those that are not found in the living context of a specific personality. Formation and development of competences by informal learning is based upon processes of self-knowledge (self-assessment), self-motivation, self-evaluation, self-confirmation, self-observation, self-respect. Of course, all these processes have individual character and persons estimate them adequately or inadequately (overestimate - underestimate). Also, these processes of self-knowing have the influence also on the establishment and development of competences that are acquired in formal and informal education. Competences are formed and developed by application of specific methods by using of special examples which lead to the “defined professional and life competences to more complex but at the same time unconventional ways” (Dohmen, 2001, p. 126).

Relations between the competences formed and developed in formal, non-formal and informal education are complex. Social reality and pedagogy give the priority to competences from formal education, but only individually to competences from non-formal education. Competences which are formed and especially developed through informal education

in free time have not been the subject of study and research so far. They have not been recognized nor valued (certification), and the system of measuring of acquired competences has been elaborated insufficiently. Nevertheless, there are attempts to measure informally and non-formally acquired competences such as: KODE trelekompas NRW, profile PASS, Europass, Hpert European Computer Pass. Methodologically speaking, competences acquired in informal education in free time can be determined and measured by a large number of instruments. They are constructed upon research procedures marked as description (autobiography narration), estimating (estimations based on claims of assessment scales), measuring of individual activity / activities (tests to diagnose adopted abilities, protocols of observations). The most reliable criterion of validation of informally acquired competences is measuring individual activity / activities, since such competences were acquired and developed in the world of everyday life (daily activities) and therefore there are the ones in the function of life (labor and creativity). The importance of competences acquired through informal learning cannot be overemphasized, especially not at the expense of acquired competences in formal and non-formal education and upbringing.

Despite undoubtful significance of informally acquired competences, the problem is made of the relationships between competences acquired in formal, non-formal and informal education. Considering that in the procedures of evaluation and measuring, it is not justified or possible to establish competences acquired and developed at any particular model of learning (formal, non-formal, informal), it is methodologically justified to accept the principle of equal values of competences from all three models of learning and to measure, understand and interpret them holistically.

Upbringing and education in free time (informal model) has an important futuristic dimension that is based on modern trends of reduction of amount of working time and increase of amount of free time and unimagined possibilities of modern information-communication technologies that will decisively influence the creation of future civilization flows.

### **Upbringing and education for free time**

The process of education for the rational use of free time is developed in pre-school and school upbringing and education. Therefore, it should be started at an early age. The essence of education for purposeful and rational use of free time is consisted of planned and organized set of procedures and

activities which make the person independent to perform certain activities. Such education can be exercised in all aspects and levels of education but also as relatively independent educational process. School education for using free time is important as much as any other knowledges for working and other activities. In the context of education for using free time, the capacities of self-confirmation should be developed. In addition, in the process of education to use free time, training of personality is necessary with acceptable self-organization, distribution of time and choice of appropriate content and manner of executing the activity. At the beginning of this century, upbringing and education for free time “has been recognized as a growing need to improve the quality of life of people” (Sivan, 2007, p. 51). Nevertheless, this phenomenon has remained on the sidelines of both pedagogical science and pedagogical practice.

Education for free time includes more pedagogical procedures for developing socialization of personality, maintenance and fostering social relations. Education in institutional environment for socialization in free time should be focused on training of multi-directional communication, acceptance and rejection in acceptable manner, playing and changing of roles, arbitration, group valuing and self-evaluation, creative participation, and developing democratic climate and democratic relations. Not only the process of education for free time, but also its outcomes are manifested through increase of level of needs and interest for the contents and activities of free time.

Upbringing and education for free time are realized on specific contents and the appropriate methods and forms of educational work and activities. Such contents, methods and forms should be chosen in accordance with the freedom of a man as a basic characteristic of free time. They must contribute to the development of maximum possible psycho-physical abilities of each individual. The essence of the educational process in free time consists of various incentives to develop individuals who will own internal intellectual and emotional balance, developed ability of creative participation, self-confirmation and self-respect of own personality. Therefore, in the pedagogy of free time, there is an attitude that important is connection and interdependence between education for free time and in the free time, as well as ways of using free time and personality development. The connection between education and free time has emphasized social dimensions. In activities of free time and processes of education in it, man also manifests social dimensions. In this context, “we are, in the true sense of that word, social creatures and our free time is an integral part of our



life” (Kelly, 2003, p. 42). Even in such a social context, personality self-upbrings and self-educates itself.

Self-upbringing and self-education are the basis and an integral part of a human nature and essential legality of personality development. The importance of self-upbringing and self-education is significantly increased in terms of rapid and revolutionary changes in technique and technology, in time of strong cultural and civilization progress. Although self-upbringing and self-education are personal (individual) problems, they should become family and school obligations. Essence of self-education in free time is consisted of self-criticism against own personality (knowing the real self), against its own positive but also negative interests, procedures and characteristics. By self-education, adopted are certain knowledge, values and habits and skills are formed. In modern pedagogy, self-education is based on training for all forms and models of learning. In the forms of formal and non-formal education, a person should be trained for independent learning. The essence of that process is *learning to learn* which significantly contributes to self-development based not only on innate abilities, but also on self-education and self-upbringing perceived as self-construction and self-forming of own personality. Self-upbringing and self-education are closely linked, so in reality they operate on holistic principles. This equally applies not only to the characteristics and personality traits, but also to the content and methods of self-upbringing and self-education. This holistic component of self-upbringing and self-education for practical and rational use of free time needs to be searched for in self-incitement of personality on development of own differentiated capabilities (capability identifiable to a specific personality) in free time.

Family, school, and other factors are also important for upbringing and education of personality for practical and rational use of free time. They do not realize such an important, but also a new function. “For this role of free time activities, necessary is a constant, hard and tiring educational work with individuals from early childhood” (Grandić, 2009, p. 470). Practical function of the family and the school is to train the person for self-planning and responsibility to carry out own plan how to use free time. This is about a culture of use of free time, which, like all other cultural habits and skills, are formed gradually.

Planning of the use of free time is made up of individual actions that may or may not be formally shaped (written). Plans of use of free time usually have a daily or weekly character. They are meant only for essential free

time activities (reading books, theater performances, film screenings, concerts, sporting events, trips, outings...). It is understandable that plans for practical and rational use of free time are flexible and that changes or replacements of activities are possible and often well justified. Justification of changes and replacements must be considered through reflection (reflection before action and reflection after action) of free time activities. Therefore, upbringing and education for use of free time comprises self-planning, self-responsibility for realizing of plans and critical assessment of the level of expediency and rationality of using the total amount of free time.

Upbringing and education for use of free time includes all the components of free time: rest, leisure and self-realization. This is especially important for the sake of complex combating the expressed boredom and idleness that are constant companions of use of free time. Well self-planned use of free time enables “killing” of boredom and idleness as a result of “excess” free time. Boredom as the phenomenon of modern human can also become a form of the disease that is difficult to overcome (treat). A consequence of boredom as a form of frustration can significantly affect the development of feeling of insignificance of a person to whom boredom has become a need and habit. The phenomenon of boredom and fight for its suppression itself is closely connected to the types of boredom. According to concepts of D. Koković (2007), there are nine kinds of boredom: a) fruitful boredom (encouraging creativity), b) stultifying boredom (fragmented work and monotonous work), c) passive boredom (yawning), d) active boredom (“do it yourself”), e) rebel boredom (breaking ...), f) situational boredom (waiting for someone or something), g) boredom of saturation (receiving too much of it), h), existential boredom (the world seems empty, meaningless) and i) creative boredom (a man is forced to work something new) (Koković, 2007). This disease also (boredom and insignificance) can be treated with various educational means and procedures. “Possible remedies against boredom are re-establishment of individual initiative, the introduction of passion into life and return to rituals” (Koković 2007, p. 100). From the pedagogical aspect, these procedures are very subtle and are conducted using extremely strong emotions. According to the view of psychologists, boredom and insignificance can also be treated through the formation of a number of defense mechanisms. The main problem is contained in the pedagogical practice of institutional education in which young people are not trained (develop specific competencies) for “managing” emotions (emotion education) and even boredom in free time. Upbringing and education for free time is an integral part of a new civilizational commitment expressed

through a demand for “quality of life for all.” The point of such education is contained in the effort of all social factors to “find and maintain satisfaction, happiness and faith in the future in a world of accelerating changes” (Lloyd, Auld, 2002, p. 43). Such a conception of life and upbringing for free time survives only on the level of futurological commitment.

### **Final review**

Upbringing and education in free time is a new and theoretically very challenging pedagogical phenomenon. It appeared as a consequence and integral constituent of rapid technical, scientific and social changes that have determined the new forms of learning marked as the conceptions of lifelong learning. Within this concept, one learns not only in childhood and youth, but all throughout life. Besides that, upbringing and education according to these changes, are not achieved only in educational institutions (formal and informal), but also in everyday life situations (informal upbringing and education). Free time is an amount of available time in which informal upbringing and education is achieved most completely.

Pedagogical science has not shaped a coherent theory (theories) of upbringing in free time and for free time even at the beginning of this century, so theoretical understanding of this problem remained within broader theoretical considerations of upbringing and education as a general pedagogical problem. Such a limitation is also present in empirical pedagogical research. Therefore, theoretical shaping of specifics of upbringing and education in free time is possible on the basis of existing knowledge about informal upbringing and education which are shaped within andragogical theoretical thought. Upbringing and education for practical and rational use of free time is “located” within the formal (institutional) and non-formal education and upbringing. Our educational reality shows that pedagogical institutions achieve symbolically that essential function, the function of preparation for learning in free time. Practically, these institutions do not teach youth to “learn learning”, so they enter the world of work and the world of life incompetent for further informal learning (learning in life situations) and further development of personal competences. In this context, it is important to develop a methodology of evaluation and measurement of acquired competences not only in formal and non-formal, but also in informal education and upbringing in free time.

Culture of use of free time represents not only an integral part of the general culture, but also an essential component of the culture of each person.

Institutional upbringing and education does not pay attention to this aspect of developing of the culture. Pedagogical concept that this culture can develop in teaching of all subjects, by extra-curricular and leisure activities does not mean much and has only a formal character. The essence of supporting and developing of such a culture is comprised of numerous pedagogical and psychological actions of developing of self-awareness, autonomy, self-confirmation, self-assessment and self-esteem. Unfortunately, pedagogy has not yet theoretically developed and practically verified the specific methodological approaches of development of such personality traits.

Futurologically speaking, upbringing and education in free time and for free time will become an essential component of formal, non-formal and informal education models. Such changes will determine new information and communication technologies under the influence of which not only the amount but also the possibilities of free time will increase.

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# PERSUASIVE COMMUNICATION AS A FACTOR OF MODERN EDUCATION

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## Abstract

*The subject of discussion in this paper is persuasive communication in the process of modern education. The basic starting point is the view that, for a successful transfer of knowledge in the educational process, it is necessary that the teacher, in addition to professional competence, has communicative competence. In this context, the communicative competence of teachers and their persuasive skills are viewed as one of the most important elements to a successful knowledge transfer. This is a feature of modern teaching which, unlike the traditional one, does not insist on communication (nor persuasive) teacher competence. Motivation of students was typically targeted at the acquisition of a certain score or satisfying teacher demands. Modern educational process resorts to new methods of knowledge transfer among which persuasive communication has an important role. Persuasion by teachers strongly affects the structure and dynamics of educational communication.*

**Key words:** *persuasive communication, knowledge transfer, modern education*

## Introduction

*„He did not change the opinion,  
the opinion itself was changing within him,  
seamlessly and without his knowledge“.*

Leo Nikolayevich Tolstoy, *Anna Karenina* (1877)

Individuals and their social entities have always entered in a variety of interactions to meet specific needs or to be confirmed as social beings. The phenomenon of communication is only one form of interaction and dates of when a man became a social being. Ancient human need is to establish

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a relationship with his fellow beings and to be in contact with others. As social beings, all individuals are “doomed” to communicate. Since becoming aware of the relation “I-other”, a man started the phenomenon that is called “communication”. This is a phenomenon that exists *post humanum* memory, or since the moment to which reaches the human memory. Communication is prominent for a human being, but also the immanent human characteristics.

Communication is a generic substance (essence) of the human species that is realized through the process of communication, and changes through it. In this sense, the man is (among other things) also a communication being. The man is “an animal that symbolizes” (*homo symbolicus*) - he creates, processes, transmits and interprets symbols, signals and signs as the basic unit of communication.

Throughout human history, communication was accompanied by persuasion. Certainly it has become the dominant form of communication and it strongly marked the twenty-first century. Persuasion is an omnipresent phenomenon: every day we are on all sides “overwhelmed” by the multitude of messages that seek to create and / or change our belief, attitude, opinion (create a thought process). This phenomenon is largely represented in education, since, as a specific social activity, it actually takes place through communication. Modern scientific findings are based on the view that the transfer of knowledge in the classroom is much more successful if the communication is persuasive. Why is this so? Why is persuasion necessary, and very often almost a necessity in the educational process? Why is it necessary for someone to persuade, convince or talk you into anything? It is possible to offer different answers to these questions. Basically the doctrine holds that man is a being who does not accept all “for granted” or lacks attention in receiving information. It is therefore necessary not only to inform but also to persuade into something.

In addition to voice, non-verbal message is a powerful tool of persuasion because 2/3 of communication is achieved by this form of communication. Although the traditional communication involves verbal message changes, speech is not the only means of communication. Verbal communication is the primary means of exchanging thoughts and ideas, but it is closely related to non-verbal communication. Communication is trimodal phenomenon: it has the speech, body and voice characteristics. So the man communicates everything at his disposal: facial expression (mime), look, gestures, posture, physical appearance, clothing, smell, speed and pitch of speech,



pauses in speech, etc. Verbal channel primarily transmits information, and non-verbal attitudes and emotional relationship in accordance with the recorded information. Therefore, successful communication involves careful listening or viewing interlocutors. Non-verbal communication is used to express feelings and attitudes, show psychological state, illustrate the verbal statements, replace verbal communication, conventionally express various forms of social activities and so on. This means that those who exercised persuasive communication needs to believe in what they represent or be a successful actor so that the non-verbal aspect of persuasive messages is in line with its verbal aspect.

Theoretical sources of persuasive communication in education are numerous. The main source is scientific research. Persuasion as a subject of scientific research appears very early and so far it is high on the agenda.<sup>3</sup> As a first theoretical work that significant deals with the phenomenon of persuasion, “Rhetoric” is usually stated ( “Ars rethorica” 323 year BC) written by one of the most famous ancient Greek philosopher Aristotle (Aristoteles, 384 - 322 year BC).<sup>4</sup> The first systematic scientific research which placed the empirical basis of the theory of persuasion are those which are carried out on “Yale University” in mid-twentieth century. The most important experimental research was conducted by American psychologist Carl Hovland (1912-1961) and his associates, and stated fear as a factor of (non) acceptance of the message, influence the order of presentation and parts of messages on the effectiveness of persuasion. The researchers came to the conclusion that the information that causes “lower fear” is more acceptable to the recipient of messages that cause “greater fear.” The causes of these correlations were found in the fact that messages causing “great fear” also caused certain defense mechanisms in the recipient. These mechanisms, such as the selection of information and cognitive dissonance, lead to distortions of perception, rejection or denial of a message. This shows that the effectiveness of persuasion is inversely correlated to the emotions caused. Messages that intimidates cause a complex web of factors that determine the correlation of messages and their degree of acceptability. When we look at these findings in the

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<sup>3</sup>Mythology knows two goddesses persuasion: the Greek Pate and Roman Suad. Pita, Pate (Peitha) is the goddess of persuasion and courtship in old Greek while the Romans had a goddess of persuasion and eloquence named Suada (Suadela).

<sup>4</sup>Greek noun “rhetor” meaning orator was first used in the works of Homer. At the beginning of the fourth century BC the word *rhetoreia* (eloquence) was used by Socrates and then began the usage of concept of *rhetoric*. The prevailing opinion is that *rhetoric* was introduced by Plato in the dialogue “Gloria”.

context of the transfer of knowledge in the educational process, then we could conclude that the teacher should avoid information that causes great fear in students if he wants to achieve persuasive communication. Based on these research Scott M. Cutlip and associates (2006) claim that messages have created a universal impact on the recipient. They found that those individuals who highly value their membership in a group show a significant indifference to messages that advocate ideas that are contrary to the positions of the group. But the “recipients with low self-esteem and feelings of rejection from society were more responsive to the messages that persuade, compared to those people whose self-esteem high and who have a sense of indifference to others“. These scientific findings are of great importance for the understanding of persuasive communication in the educational process and have certainly contributed to grasping the importance of persuasive communication in the transfer of knowledge from teacher to student.

### **The term *persuasion***

In the literature that deals with issues of communication they ofte use terms such as “persuasion”, “assurance”, “persuasion”, “suggest“ and the like. To what extent are these particular forms of psychological impact, and to what extent are they synonymous? Still in science the meaning of these terms is not well-defined and it has not clearly delimited their semantic content. The above mentioned categories are often used to be synonymous (especially the concepts of “suggestions”, “persuasion” and “convincement”), but many authors try to identify their differences beside many similarities. In particular, the terms “persuasion” and “manipulation” are used as practically the same thing.

Persuasion is a complex phenomenon and it has a larger number of elements. It is a specific form of communication: it means the transmission of information through persuasion and assurances or in the form of proposing - so the recipient finds it quite acceptable and natural. In essence, it is assumed that the broadcaster offers a selection of the recipient: “I suggest you choose” (“this offer, to propose”). So persuasion should not be any dictation. It carries the message: “You are free to choose!”. With the help of peripheral perception and emotional stimuli, consciousness is activated (thought, reasoning). Its principal purpose (function) is not to inform us but to convince us to “necessity”, “accuracy”, “truthfulness,” of some information. In this sense, Nenad Suzić (2005) believes that “one of the essential characteristics of persuasion is that we want to change the current

situation, that someone, a person or group, from sleep or indifference prefers to move into a state of movement or the state of interest, to make a decision and yarn in action”. Finally, the goal of every persuasion in the educational process is functioning on behavior (whether it is controlled, changed or maintained). The desired behavior is achieved by changing certain dispositions (faith, belief, opinion, attitudes, values, etc.). With the help of persuasion we influence the change of valence (direction) and the intensity of valence disposition of behavior. This is not an easy task because the disposition has its rootedness, gained force and provides resistance to any kind of change. Therefore persuasive communication involves many skills and knowledge in order to achieve an adequate effect on behavior.

Persuasion has its psychological basis in anthropological characteristic of man - in his susceptibility to believe rather than suspect. It relies on the principle of so-called mental economy - less effort, power and energy is needed to believe than to doubt. The man has primary beliefs, rather than doubts, a cornerstone on which persuasion is based. This significant mental characteristic enables man to adopt new knowledge about the world around him but it can easily be used for other purposes – it can be misused for manipulative purposes.

Many questions can be placed in the ethical context of this type of communication. Persuasion has a power that a skilled communicator can use to take advantage of the motivation of the audience, or abuse, or unethically use. A person who has a high level of persuasive power can manipulate recipients and involve them into something that is not right, desirable and humane. Therefore, a teacher who uses persuasive communication in the educational process is expected to respect moral standards.

Persuasion is defined in various ways. Most often it is viewed as the ability or methods of persuasion and persuasion. Nenad Suzić (2005) integrates these two aspects of persuasion (as the ability and methods) and defines it as “the ability to use methods of persuasion and convincement”. Michael and Suzanne Osborn (1997) believe that “the art of persuasion is to persuade others to devote the necessary attention to your point of view.” Persuasion is seen as a means of communication. In this sense, James H. Byrns (1994) states that “as a persuasive speaker you are taking the position of the subject and trying to convince him.” The largest number of definitions view this phenomenon as the ability of a person to convince another person or group into something. A small number of definitions treats it as a technique using lots of means of assuring and convincing.

## Strategies of persuasion improvement

Relying on the results of empirical studies English psychologist Richard Wiseman and his associates (1981) propose four basic strategies (approaches, methods) to improve the efficiency of persuasion:

1. *Strategy of sanctions* - using rewards and punishments.
2. *Strategy of altruism* - calling the recipient to help or come to the aid to sender.
3. *Strategy of argument* - Using three types of arguments: a) direct request in which the sender does not provide a justification for the request, b) explain that the sender provides the recipient with one or more reasons for accepting messages c) hints that the sender creates a situation (circumstances) from which the recipient pulls the desired conclusions and express consent.
4. *Strategy of deception* - misrepresent the situation, give false excuses or promises rewards (sanctions) that the sender of the message is not able to realize.

## The term suggestion

We have already stated that in addition to the concept of “persuasion” as a synonym is often used the term “suggestion” which requires that we look at this term as well. Suggestion has become the object of scientific interest even in the nineteenth century. In the early twentieth century (1908), Russian psycho-physiologist Vladimir Mikhailovich Behterev published the book “Suggestion and Its Role in Social Life”. In it he described the emergence of mass suggestions communicating using different sign systems and with the help of “mental disease” (Georgijević Kara-Murza, 2008). Here suggestion is directly tied to the manipulation of consciousness. According to him, the suggestion is “invasion of foreign ideas in man’s consciousness without direct and direct participation of the subjective ‘I’ in the act“ (Ibid.). No matter which system of characters is used (words, pictures, text) “suggestion does not affect anywhere by logical persuasion, but directly affects the psychic realm without proper processing, causing a real grafting ideas, feelings, emotions, or this or that mental state” (Ibid.).

At the turn of this century, a large number of scientists focuses on the importance of suggestions in the social processes. French social psychologist Gustave Le Bon (1841-1931) was one of the first that explored the relationship between the crowd-mass and political institutions, parliamentarism, democracy and leadership. He argued that the masses

have to be lead, directed and at the same time recommended a variety of recipes from mass psychology that would serve this purpose. His theory of the psychology of mass is used by all well-known leaders and dictators, as well as all handlers of media and public opinion. He argues that “a crowd is impulsive, susceptible to suggestion, unreliable, prone to exaggeration and insults, and false feelings, intolerant and in dictatorial mood” (Le Bon, 2006). There is also the hypothesis of the existence of a special kind of instinct in man - “the tendency to subordination” to which suggestion relies on and which provides a suggestive effect on human beings.

In the middle of the last century the suggestion was viewed differently. It rejects the existence of irrational process that goes beyond reason as the basic characteristics of suggestions. This new theory of “rational suggestions” believes that the suggestion does not change beliefs or estimations, only the subject of estimation. But even in these variants it imposes a certain concept of thinking, beliefs, attitudes. The communicator skills determine whether the variant that is to be imposed on the recipient will look most attractive, the most logical and best. Thus, it creates the illusion of choice (alternative) or conceives such an offer in which anything that the recipient chooses is not far from the desired option of the message sender.<sup>5</sup> The concept of suggestion on a rational basis did not justify expectations. In the 1950s the new doctrine of “subliminal suggestions” emerged that relies primarily on psychoanalytic learning. Austrian psychiatrist Sigmund Freud discovered that a great power hides in subconsciousness and that it has a significant role in determining human behavior. By suggestion is made a “secret” replacement of consideration subject in mind. Special suggestive technique conceives such a communication context and content in which thoughts, ideas, beliefs, convictions, and the like are directed to a pre-defined order. This doctrine of suggestion is the basis of method of “commented press” – it tells the facts but is accompanied by certain interpretations of its meaning, or commentary.

### **Differences between persuasion and suggestion**

What is the difference between persuasion and suggestion? These terms have a common root, but at the same time related forms of psychological impact. As such they have a lot in common, but there are also significant differences between them. Therefore, it is quite understandable that this led to great variations in their understanding. It is very important that the

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<sup>5</sup>In this case it is a more subtle manipulation.

teacher knows their differences to prevent persuasive position slipping into a suggestive one that already has the characteristics of manipulation. In order not to turn teaching into suggestion, and the students the subject of manipulation it is necessary to distinguish between these two phenomena. They can not be used in synonymous manner because they have some specifics that make them different in the contents, as well as on the functional and manifest level.

What is the *differentia specifica* between persuasion and suggestion? They differ in their semantic meaning. Persuasion involves the active participation of the subject, where he is offered a number of arguments which he should consider, accept or reject. Suggestion, as opposed to persuasion, is trying to “circumvent” sense (the active participation of the subject of persuasion), it does not offer arguments according to which he should take a critical attitude and (to some extent) accept or reject them. It is most effective when bypass or dampen the activity of the mind (consciousness) - “sleepy guards”. That is the principal difference between persuasion (convincement and assurance) and suggestion. And Vladimir Behterev confirms this: “Suggestion, unlike persuasion penetrates into the mental sphere by personal consciousness, entering without order and processing directly in the sphere of public awareness and gaining momentum here as any item of passive observation” (Georgijević Kara-Murza, 2008). Suggestion is primarily focused on the affective dimension of personality, but also the emotions and the intellect and the will of the recipients. Suggestion appears as a component of communication and therefore has many points of contact and manipulation as specific form of communication. Suggestive process does not imperative rely on logic, to prove the fact. Suggestion “feeds” on the absence of doubt and criticism and facilitates acceptance of the offered messages. It aims to build a belief in something or someone in order to direct the behavior of recipient.

### **The term verbal subliminal persuasion**

Persuasive communication very frequently uses the method of verbal subliminal persuasion. Primarily because the technique is very simple and powerful and as such greatly influence the subconscious mind of the recipient. It is difficult to detect because verbal communication is very present in social interaction and is a natural way of communication people.

As a starting axiom of verbal subliminal persuasion we take the fact that we are not talking just to say or tell something (someone about something

that we want to inform and / or communicate to him, a fact), but rather to achieve an effect, cause a reaction with the interviewees (recipient). Speech can lead to certain behavior of the recipient. What is the basic power of subliminal verbal persuasion as the disposition of human behavior? In the psychological, anthropological and biological characteristics of man: the shortcomings and imperfections of his senses. How are these human characteristics used for subconscious verbal influence? There are two established mechanisms which make it possible:

- a) authoritativeness (persuasion, keeping the authority, ability (power) the impact on individuals and the masses (they are *persuasive*) and
- b) authoritarianism (persuasiveness, obedience to the authority, susceptibility to influence (they are *persuaded*).

The basis of anthropological characteristic of man is that, in addition to the above, he is a being of belief rather than doubt, and being who is gullible and superstitious. This allows the creators of public opinion (persuaders, manipulators, anyone who uses the communication process) to model (create, design) messages (ideas) in such a way that will affect the conscious and especially the unconscious part of the psyche ( "Id"). In this sense, verbal communication, speech is one of the main means of successful persuasion. So, people are persuasive and through verbal communication susceptible to persuasion. That's why we are so much daily exposed to verbal and paraverbal communication. Both influence the feelings (delight, anger, trust and mistrust, fear or courage), as well as significant dispositions of behavior.

### **Transfer of knowledge in the educational process**

The process of knowledge management is usually viewed as the creation of a knowledge base and its continuous innovation in order to promote and use it in order to create new value. One of the main sub-processes of knowledge management is knowledge transfer (in addition to the creation, storage and use) in the educational process. Transfer of knowledge is one of the most important stages of the process of knowledge management. It is transmitted in several ways: by documents, personal contact (interpersonal communication), training, the media and the like. This process involves the transfer (distribution) of knowledge to desired recipient (user knowledge, at the right place) at the right time and with good quality. It is done in a formal and informal way, on a conscious and unconscious level. Transfer of knowledge in education belongs to the formal mode of transmission because it has a planned, organized and defined content, scope and objectives.

The term “transfer of knowledge”, is often used in a generic sense, as the exchange of knowledge between individuals, teams, groups or organizations, regardless of whether there was a need or intention for his transfer. In the narrow sense it is aware, one-way communication that takes place between the defined source (the one who has knowledge) and the recipient (the one who needs the knowledge) with the clear aim of transferring a defined content and scope (knowledge).

### **Persuasive communication in education**

For the transfer of knowledge in the educational process, teachers use a variety of methods. They should be tailored to the personality of students, because each student is a unique personality and “space for himself”, and methods of forming this expanse can encompass only one universal method. Persuasive teacher should take into account the numerous aspects of the educational process. Dyadic communication is a prototype of communication: although the teacher speaks to class, in the end he is communicating with each student individually to a greater or lesser extent. Therefore, a teacher in persuasive communication should take into account the characteristics of the personality of each student. This is the main reason for the emergence of a number of methods used in education but also in their classification. It is safe to say that the number of classification educational methods are almost identical to the number of authors. Classification criteria of educational methods are numerous because the area of learning and education is inexhaustible and vast. The formation of the etymology of the term “method” (Greek: *methodos*) involved two words *meta* and *hodos*. The first category (*meta*) indicates an action that specifies an object or from of reality transferred to the sphere of abstraction (thinking or imagination)<sup>1</sup>. The other word (*hodos*) means time and way to reach a certain goal, explanation or meaning. A similar meaning can be found in the Latin word *methodus* - premeditated and planned actions at work, achievement of a success, truth, knowledge, a certain way and manner tests and opinions. Thus, in the most general sense, the term “method” means research, testing, time or method of arriving at the truth, or the application of theoretical knowledge in practice and in the narrow sense of the practical process that allows us to come to the knowledge of the research subject.

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<sup>1</sup>In Plato’s work we can find the metaphorical explanation for this phenomenon. Specifically, he stated that the word *meta* is comparable to print of a key in wax that represents the key that does not need to exist. We have a picture or an idea of that key. The key is moved from the real world to a target board.



What communication methods achieve the best results in the educational process, and the transfer of knowledge? Neither communication, nor pedagogy have definite answers about the choice of the most optimal method to achieve the desired educational outcomes. It falls within the scope of skills, knowledge and willingness of teachers to implement adequate communication methods in the educational process. Therefore, one of the most important questions is the selection of appropriate teaching methods of communication. A number of factors influence their selection and application. Teachers have at their disposal several types of communication methods for specific instructional content to be realized: The most common are the following educational communication methods: a) persuasion, b) incentives, c) exercise (contraction) and d) prevention. These educational communication methods have at their disposal a wide range of techniques and tools they use. Here we will focus our attention primarily on the method of persuasion because numerous studies indicate that it is one of the most important methods for the successful transfer of knowledge.

In accordance with these definitions of the term persuasion we will view persuasive communication in the educational process as a specific form of communication between teachers and students that the students are to be convinced in the “accuracy”, “truthfulness”, “acceptability” of certain data, facts, values, information, and the like, which are important for their education, shape their personality and ultimately affect their behavior.

### **The process of persuasive communication in education**

The process of persuasive communication in the transfer of knowledge is determined by a wide range of variables and circumstances. The factor of the process flow can be divided into several levels, or steps that achieve the efficiency of persuasive communication in education. Most often this process is divided into five stages (steps, levels).

On the first level (step) of persuasive communication process it is necessary to take into account the specific psychological characteristics of individuals and basic social characteristics of groups to which the educational process is directed. It is therefore important before the start of persuasive activities to draw up an objective assessment of these characteristics to the content and the means adapted to them. An aggravating circumstance is that psychology as a science has not offered a complex theory of personality nor a reliable methodology and assessment tools for personality structure. Also social

psychology did not give a rounded theory of the characteristics and properties of the group and no single model of interpretation of group dynamics. It is encouraging that science is constantly enriching its knowledge about the characteristics and functioning of the human person and the group. When the object of persuasive activities is a student team then you have to take into account the additional issues. The personal and collective characteristics of this population are the dynamics of formation and intense formation.

On the second level (step) it is necessary to bear in mind the age difference of the individual or group that you are trying to convince in something through education. This factor is ambiguously essential for the success of persuasion in the educational process. Each age difference is in many ways characterized and distinguished. The basic ones are: a) cognition, b) emotions and c) motivation. A good review of these assumptions is crucial to successful persuasion.

The third level (step) is regarded to the decision (individual or group). This level of assessment which should make the teacher to make the process of persuasion in the educational process successful refers to the factors that influence the decision-making process. The first decision that students bring into the process of education is whether it is necessary to learn the material or not. In traditional teaching dilemma “whether or not students have to learn certain material”. Thus, the difference refers to the relation of *must* and *should*. If you use *must* then you use the instructional models of restraint, warning, commitments, punishment and similar. For the option of traditional teaching teacher seeks to persuade students by various explanations of compulsion. If using persuasion then the teacher is trying to persuade students of various explanations of needing. In this case he opens a new sphere of motivation - models of decision-making, procedures and methods of decision-making for students. In traditional teaching it is considered that students are motivated to learn as soon as they sit down in school or as soon as they enter the school. But today it is understood that students are thinking whether this decision should be his or teacher’s. This is the second decision they make, other than whether they should come to class or not. Finally, the decisions are made by the students, regardless of the suggestion of teachers (regardless of commands, requests, prizes, it is a student’s decision).

The fourth level is related to the objectives of students (the object of persuasion). This level relates to the goals achieved by the students through the educational process. The number of goals can be great, but can be diverse and very broad in their scope. In such a range of targets

only a part of them directly relate to school and learning. Persuasive communication means that learning goals (academic goals) integrates with other (ie. no-school) goals. Numerous studies confirm the possibility of such integration. Traditional schools insist on an assessment as the most important achievement of the target. Modern school insists on self-concept. In this regard persuasive teaching aims to develop models support self-concept for each student in particular linking the self-concept of the content of teaching. Social goals are an inexhaustible mine of motivation in teaching. Each individual as a social being has a need for social promotion. A class and school are important social environment for achieving social goals of students. Creating conditions for the social promotion of students in the classroom and school through educational content is a significant factor of persuasive communication. The classes that allow students to experience success and recognition in the collective assurance facilitates students in the character of the material and increases the motivation to learn. If the teacher is primarily focused on the material and ignores the interpersonal power of the collective, he does not achieve those results in the transfer of knowledge as the one that takes into account the moments of persuasion process at school.

The fifth level of persuasive communication refers to the educational goal to be pursued by persuasion. It is believed that this is the last step of persuasive activity of teachers in the educational process. At this stage it should be accurately determined what is to be achieved in education by persuasion (implement, which aim to achieve) or change in students: religion, beliefs, opinions, attitudes, values, value orientation and behavior. These dispositional have their strength, and resistance to change. All are interrelated and stem one from the other. So, for example, values and value orientation are evaluative component beliefs, opinions and attitudes. Persuasive ability of teachers is reflected in the art of originating targets which will be affecte.

### **The effectiveness of persuasive communication in education**

The effectiveness of persuasive communication in the educational process is conditioned by a number of factors. The most commonly cited are the following three:

- a) characteristics of the source of the message,
- b) characteristics of the message
- c) characteristics of the recipient and

We will briefly explain each of these factors of persuasive communication.

a) The impact of the characteristics of source messages to its acceptance Character of message origin can have short and long term effects of persuasive education. The value of the message reinforces the authority of origin. Social status, reliability and professionalism of communicators give specific gravity to broadcast message. Their synergy enhances the importance of the message (Anderson, 1971). The influence of character of origin on the process of communication in education is variable. We should particularly emphasize the importance of the authority of the teacher as a character of origin to persuasion in communication in the educational process.

b) The impact of the characteristics of messages on its acceptance Does persuasive character of messages in the educational process intensify if the message contains only part of the argument, or is it better to be fully substantiated? Research has come to a certain knowledge that offers an answer to this question. Relying on them, Scott Munson Cutlip (2006) and his associates propose the following rules that can be useful when you want to improve the convincing features of messages in the education process. These are:

1. If the recipient of a message has the opposite attitude of yours, provide arguments for both positions;
2. If the recipient agrees in advance with your attitude, your message will have a greater impact - is likely to be strengthened - if you introduce only position that coincides with the position of the recipient;
3. If the recipient of a message is well-educated, provide arguments for both positions;
4. If you use a message containing arguments for both positions, do not leave out important arguments for the opposite view, because in this case the recipient will notice failure and reinforce doubts in your presentation (Hovland et al., 1949) and
5. If there is a likelihood that the recipient of a message will later be exposed to persuasive messages that are contrary to your attitude, use double-sided messages to perform "immunization" of audience and create a resistance to later messages (Lamsdaine & Irving, 1953).

Empirical research suggests that the process of accepting the message (and successful persuasion) by the recipient very complex process. If the communicator is socially less powerful (and has no control over the recipient), it is advisable to apply a strategy of instructing.

Relying on the results of empirical studies English psychologist Richard Wiseman and his associates (1981) propose four basic strategies (approaches, methods) to improve persuasion:

1. *Strategy of sanctions* uses rewards and punishments that depend on the sender, recipient or the result of the situation.
2. *Strategy of altruism* invites recipients to help or come to help the sender or to a party that represents the sender.
3. *Strategy of argument* is used in a) direct requests, in which the sender does not provide a justification or motivation for the requirements, b) explanations, in which the sender provides the recipient with one or more reasons for acceptance, and c) hints, in which the sender adjusts the situation or circumstances from which the recipient extracts the desired conclusions and expresses consent.
4. *Strategy of deception* misrepresents the situation, gives false excuses or promises rewards or penalties that the sender is not able to implement.

Studies have shown that the efficiency of the impact of the message in the educational process depends on the order of presentation of parts of the message - "the first part of the message," as opposed to "the final part of the message" - shows that the first part of the message has a greater impact on recipients (students) who have a low initial interest, while the last part of the message has the greatest impact on those recipients (students) who have a high initial interest (Hovland, 1957).

- c) The impact of the characteristics of the message recipient to its acceptance

The manner of interpretation of messages in the process of education is an important factor of persuasive communication. Individuals have different interpretations of identical message, give it a different meaning and therefore can react differently. This indicates that there are no universal rules and approaches that should be followed in different situations of sending a message. According to the concept by Paul Lazarsfeld (1968) of "obstinate audience", the effects realized by the message recipient has a decisive influence because of "the meaning of the message contained in people rather than in words". Persuasive effect of the message causes the student with its own characteristics.

This failed to exhaust all aspects of effective persuasion. We have listed only what is considered the most important for the education process. We did not speak of persuasive speech characteristics such as diction, rhythm, intonation, facial expression, etc. Rhetorical qualities of teachers are a different issue.

## **The means and methods of persuasion in education**

To increase the efficiency of persuasive communication in the educational process it is possible to use a wide range of tools, methods and techniques such as:

- presentation of modern scientific knowledge (scientific argument, fact, scientific regularities)
- observation of processes and tendencies,
- developing awareness of the power of knowledge (Bacon, “Knowledge is power!”)
- development of humanistic value system,
- analysis and synthesis,
- class,
- interpersonal relations,
- emotions and social identification,
- optimization of self-concept (self-image, on its own characteristics and capabilities) and the like.

Teaching aids of persuasion are usually divided into three groups: a) non-verbal means (paraverbal communication, facial expression, gesture, mime, body language, contacts “eye-to-eye, etc.), b) verbal means (humor, puns, contrasts, absurdities, examples, etc.) and c) technical means (video, overhead projector, boards, PP presentations, pictures, posters, models, photos, notes, etc.).

This list has not exhausted all possible means and methods of persuasion and assurance in education. Their application produces significant results in education. It is necessary to introduce and train each specific method. Only when they are in practice, will the teacher learn their value and drawbacks and can successfully use them in teaching.

### **Conclusion**

Many questions about the phenomenon of persuasion are still open and ongoing. Some of the most common are: What is persuasion usually directed to? What are the circumstances in which it takes place? What are the goals of the person you convince or that assures? It is more than obvious that we live in a persuasive world of the XXI century. Every day we are influenced by lots of messages that are sent from different information sources, which are intended to create and / or change our belief. It is an integral part of the ability of any successful person. Persuasion is a widespread phenomenon, starting from the morning (an alarm clock which

assures us that it is time to get up). A number of advertising messages on radio and television assure us that we should buy something we already have, which is little or not at all necessary. A drastic example of persuasion are advertising with billboards that give you all sorts of things, and that divert your attention from the road and distract you in traffic. Many of our interlocutors, their trained smile assures to feel good, to be happy and successful. Do we resist this permanent persuasion and by the end of the day do not accept any of the numerous persuasive message? As much as we are confident that persuasion has not left its mark on us, it is simply not true. We have certainly absorbed some of the contents. Some of them remain in the subconscious and thus prevail in deciding to purchase, use services or vote in elections. Persuasion is a skill and knowledge - it is learned, and therefore persuasive skills are viewed as one of the most important elements to a successful knowledge transfer nowadays.

Suggestion is a very powerful means of motivation, encouragement and stimulation of individuals on a specific activity and the impact on certain behavior. Suggestion and self-deception are powerful means for achieving various goals. Often, they are seen as a way of “subliminal self-help”. Philip M. Merikle (1988) in his research suggests that younger generations are more susceptible to suggestion compared to the adult population. Practising suggestions and auto-suggestion is very useful in improving the educational process. Short relaxation exercises and suggestions at the beginning of class help interactive relationship in the process of consideration and adoption of knowledge.

In an effort to modernize the educational process and facilitate the transfer of knowledge, it has been continuously worked on the improvement of existing and creating a new method of teaching and learning. In this sense, we resort to persuasive communication that is achieved with the help of technical means, images, sound of music, media, etc. Good (persuasive) teacher must have the persuasive competence as an element of communicative competence. It he needs to convince students that the curriculum content is important and useful and it is worth to engage oneself in its adoption. He is constantly improving and perfecting his persuasive competence. So, a good teacher tries, in his own practice, to apply persuasive communication by which he achieves all the benefits of knowledge transfer in the educational process.

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# THE CONCEPT OF EUROPEANIZATION OF THE SYSTEM OF HIGHER EDUCATION IN THE WESTERN BALKAN COUNTRIES

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## Abstract

*The process of European integration represents a first class, social project for all Western Balkan countries. The concept of integration into the European Union covers all spheres of public life, where the reform of the system of higher education plays a significant role. The author considers the implementation of the Bologna Declaration and the Lisbon Strategy, as well as Tempus and Erasmus Mundus programs of the European Commission dedicated to the establishment of a “Europe of Knowledge” in the surveyed countries. The analysis shows that the Western Balkan countries are making great efforts to implement provisions of the Bologna process, particularly at the level of formal adoption in the form of law. However, numerous weaknesses are reported in the implementation of the Lisbon Strategy and the elements of strengthening the impact of the labor market. According to all relevant indicators, the level of “Europeanization” of higher education in the Western Balkans is below the EU average, which points to the unsustainability and necessity for the transformation of existing concepts.*

**Key words:** *Higher education, Europeanisation, The Bologna Declaration, The Lisbon Strategy, Western Balkans.*

## Introduction

The last decade of the twentieth century, testifies that he began a period of globalization, which is characterized by global competition, breaking the standards of the world market and the international orientation of the organization. Globalization represents a set of different processes which

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basically have the idea of developing and connecting the world and can be considered from different angles. However, most often defined as a concept, form and phenomenon that implies multiple and drastic changes in all dimensions of life. It has the ability to create change which affect on the whole world. Human knowledge has become the main source of wealth and an important pillar of any society. The quality of higher education determines the future of every country, which led to significant changes in this area. However, in order to education be productive and efficiently it has to follows the rapid changes of everyday life. It is quite clear that knowledge in today's world has become the most important potential, and the development of information and communication technologies contributed to the entire planet are increasingly relies on this "intangible" resource. New situation, which involves the modernization of administration and management, increasing demand for educational and scientific research activities, connectivity and networking, puts new challenges for the Western Balkan countries, which all have a common goal - accession to the European Union. The interest of the entire Western Balkan region is its own development and strengthening connection with Europe, whereby high education can play a significant role (Arandarenko and Bartlett, 2012, pp 201-205).

### **High education in the ambience of "Knowledge economy"**

The process of globalization in the last few decades has caused a series of technological, economic and social changes that have transformed the world market and the business environment. The era of industrialization has reached its peak and the factors that previously determined the performance of the economy were no longer sufficiently. Industrial era has been replaced by the post-industrial era - era of the new economy, which carries the epithet "Knowledge Economy". In the new economy, globalization is "downgraded the world" and companies and states are faced with a series of new challenges in the process of creating and maintaining economic development and competitiveness. Modern business is conducted globally and competition is enormous. In order to survive in the market today, it is necessary to constantly adapt, respond quickly to change, and strategically manage the sourcing of knowledge. According to the OECD, today's global economy initiates and carries specific knowledge. For this reason, in modern society, intellectual capital, knowledge and education are becoming one of the most important factors of development and an extremely important development resource. One of the most obvious characteristics of of the present time is the speed of the spread of knowledge. The average person

who lived in the 17th or 18th century in their lifetime could come into possession of information which nowadays are in a weekly edition of any newspaper. The overall knowledge of human civilization collected until in 1900 year, doubled by 1950 year and quadrupled to 1960 year. This trend has continued, and the total knowledge was doubled every 5-8 years. The development of technology and all the massive use of computers have led to that today on the Internet for one year appears more information than the total in all previous years of human history. It can be said that today a total knowledge doubled from hour to hour. Earlier, the monopoly on knowledge could keep long, and companies and states have had dozens of years to use their own specific advantages and uniqueness on a global level. Knowledge is expanding very slowly, so the competitors had a long time to find out what is happening and copied the idea. Today it is impossible, because knowledge is spreading throughout the world almost instantaneously. The success and survival in this environment can realize only those who are able to produce and permanently increase their own knowledge and manage with it strategically. According with new trends, successful future and the path of development of each country must be economy which is based on knowledge and quality of high education (Nešković et al., 2016, pp 445-459).

History has shown and proved that every economic development was essentially determined by scientific and technological developments. In the course of historical development of human society has been changing role of science but also the role of man as the main drivers of change. During the first scientific-technological revolution, man - worker was the main driver of change, and to produce important was the experience. The main role of science in this period was to analyze what happened and how something works. During the second scientific and technological revolution, the experience has been replaced by knowledge. At this stage, science is the driving force, and the bearer of development is man-expert. Today, during the third scientific-technological revolution, the key to development is a science. Science is the leader, because the progress achieved by the results of scientific research (Sundac and Svast, 2009, p. 9). An additional value which is created in the business process today, stems primarily from the knowledge, abilities and skills of the people who participate or cooperate in it. All modern companies that want to reach high standards in today's extremely competitive global market must rely on human knowledge. Very fast IT and technological development shows that modern society is going through major changes, the biggest in human society's development so far. Today's society has become a society of knowledge and has the following characteristics:

- has no boundaries and knowledge flows through it at high speed
- knowledge has replaced classical dominance based on natural resources, labor and capital
- revolution in the technology
- on the global market can be competitive only those who have the best technology and highly educated human resources
- domestic businesses has increasingly become multinational, transnational and global
- high education became the basis for the development and prosperity.

Modern economy is definitely economy of specific knowledge. The knowledge which is contained in scientific and technological achievements accelerates the process of globalization, enhances interdependency in the world economy and on the world market and determines the pace and processes of social development in general. Thanks to new technologies, communication and new economy globalization is imposed new rules, new content, new dimensions and new knowledge and created new conditions that have to adapt to all who want to succeed. It has precisely defined requirements: continuous investment in knowledge, technology, research and development and anyone who is not included in this process on the time, severely lagging behind (Jovanovic et al., 2016, pp. 242-254). Experiences and facts from practice indicate that the innovation and high technology (which are composed of human knowledge and unique abilities) have become one of the most important elements for the development of modern society. It is considered that today is one of the basic factors of economic growth and development continuous growth of knowledge and innovation capabilities which can't exist without each other. Increasing the knowledge allows new ideas, but without increased innovation capabilities this new and profitable ideas will not be able to be realized. Innovation is the key in the creation of growth and development strategy and in contemporary way of business very few organizations can survive without innovation. Only strategy of development which is based on knowledge and innovation guarantees success. The importance of technological innovation for the prosperity of one country is huge, because innovation and technology affect changes in production and export structures achieve a higher quality and more favorable prices - this has a positive effect on the overall competitiveness of the offer. The changes are too fast today, so it is necessary to be prepared for the business environment where ideas and knowledge are dominated more and more. Increase in population, growth in demand and limitations of resources have led to the fact that economies are searching for the best and the most creative personnel, able to imagine

and use the latest equipment and technology. That is why it is of the utmost importance for the every country to create its own “Triangle of knowledge” which is formed from education, exploration and innovation, because they represent the basis and prerequisite of economic growth, welfare and achievement of competitiveness. In this form of modern society, special importance lies with higher education. Educational content should prepare people for life in global society, therefore the role of education is considerably changed, and the expectations are higher than ever.

The impact of globalization on education is cause by the impact of globalization on production process. As the global economy expands, there is a need for specialized education and proper work force. Especially interesting is the impact that trend globalization in economy makes on education. Research show, and practice confirms, that economic globalization and IT revolution demand radical changes in the very nature of the learning process and educational system modernization. Education represents the cradle of society and the treasure trove of knowledge, but it needs to be constantly improved and enriched with new knowledge based on development needs of modern society. Modernization of education system means, above all, modernization of aids in educational process such as introducing new educational technologies (computers, videos, digital education etc.), as well as enrichment of educational content, internationalization of knowledge, globalization of education system, high specialization of educational profiles etc. changes that the IT development brings, possibilities of using different sources and not being limited only to books, as well as a new system of communication, bring with them a new atmosphere – teachers are not the only sources of knowledge and information any more, nor is the school the only center of learning and development. These situations make the value system change and deepen considerably, making the educators to always improve themselves, to be up to date with changes and to constantly work on their additional education, so that they could prepare their students for everything that could be asked of them in the future. Nowadays the schools are expected to give adequate basic education, develop ethical values, form the character and plant key values necessary for further life. All those values will in future give young people better chances for successful jobs and payment – economic security. However, the most important task of education is to follow changes in all the spheres and to change accordingly. Traditional designation of education, which comes from understanding education as systematic acquisition of scientific knowledge about nature, society and human opinion, must be changed with modern designation, which comes

from the fact that the education is a system of institutional knowledge acquisition and the teaching of people to gain knowledge, skills and habits they need.

Unpredictable and changeable high complexity environment demands adequate knowledge about the use and the evaluation of constantly new information. In the context of change dynamics, the need for education means the education on needed skills and information on the use of new working programs. That demands the new concept of education – modern society education. Conventional, traditional education is based on the presumption of reproductive, static and theoretical approach. However, that education system does not work in the modern society because it creates personnel that do not have the ability to adequately react to changes in the society. The modern concept of education sees the education as a process of continued study throughout the whole life. The modern society needs new skills and additional knowledge, with constant promotion of sustainability. It is clear that the education has become the basic instrument and the power of development, not only in the life and behavior of an individual, but also in the way of controlling states and communities on the global scale. No matter the basic goal, the quality of modern education should be the transit from reproductive to productive education, from static to dynamic, from unusable to operative. All of the above conditions the necessity that the educational system is developed in accordance with demands and needs of modern society based on knowledge. The more importance of the knowledge resource faces the individual with the new demands, choices and responsibilities. The concept of education means the education that will develop the abilities for understanding and the use of new knowledge, and that will provide needed readiness and literacy to every individual in the modern society.

Globalization, as the biggest world phenomenon which is reflected in megatrends, has great influence on education because the research of science and education is basically the research with the goal of finding new key to development of a country. Developed countries take the most care about science, education and the educators, as their main keys to success. In the modern world more and more money is being allocated into the development of science, education and personnel. Globalization in education means more key factors, among which the most important are: encouragement of lifelong learning and modernization of educational institutions through the use of the latest tools and techniques for studying. Modern education implies classes and teaching aids being adapted to the

future time. Everything else is outdated education, meaning education for the times behind us. World knowledge is changed day after day, and what is learnt today can tomorrow already be widened and complemented. This is why the modern education implies that students learn to use modern sources of knowledge such as internet, study applications and similar, instead of memorizing lessons out of books which could be soon forgotten. Lecture focus needs to be on students and not on the teachers. Instead of listening to previously prepared lecture, the students should be active participants of the process. That way they are encouraged to think critically and creatively, and to solve problems and apply knowledge in the real life. Effect of these types of lectures is the lasting knowledge which is the real preparation for the future life and business challenges.

Criteria that the modern education needs to fulfill:

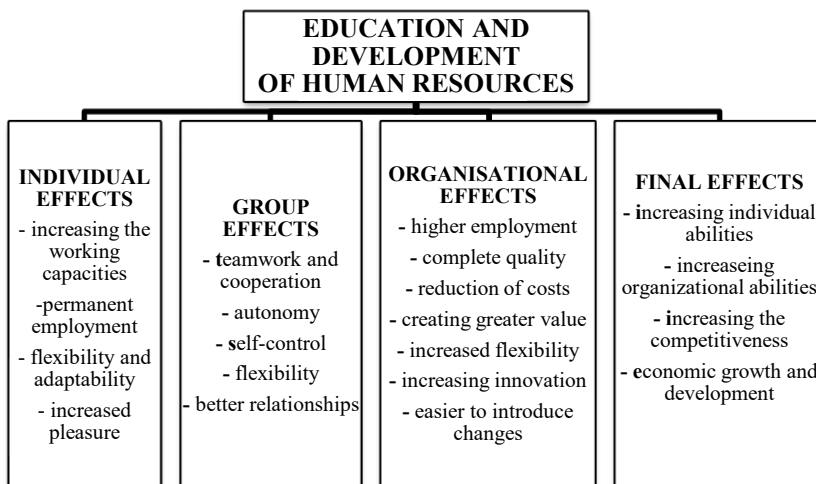
1. Quality, complex and comprehensive knowledge, which implies creative blend of theory and practice, as well as the blend of concretely applicable knowledge and basic education.
2. High degree of professionalism with lecturers, not only in the area of concrete subject, but also in all the areas that dominate the market.
3. Modern equipment of schools and colleges, especially with IT equipment.
4. Modern educational institution needs to encourage and develop those student talents which, based on their individual characteristics and tendencies, could be the most usable and profitable in the future practice. Should the colleges develop each student's most prominent talent, they will create leading experts in many fields.
5. Creative lecturing, as one of the priorities of modern education, has the goal of enabling the students to effectively adopt knowledge through the use of multimedia content, because only with that form of teaching the students can be actively prepared for the bond of theory and practice and are up to date with the changes that the development of new technologies brings into the everyday life.
6. Modern education demands more concrete examples, many real projects, trainings and practices, because learning from books can only expand horizons and give them necessary information, but it will not help them when they first enter real working environment.
7. Students need to be educated in the "ruthless" environment (which is the closest to the reality), because that will prepare them for what awaits them in the real world, outside the school desks.



8. New education implies the change of roles for the teachers. Instead of them leading the lecture, now they need to be the coordinators put there to follow students in their individual or group projects. Teachers responsibility is to teach students, but in modern education teachers have even bigger responsibility – to motivate them to go through the process of learning on their own, to expand and connect their knowledge, to explore and come to conclusions. All on their own.
9. Modern education needs to develop in interaction with science, technology and culture and to draw knowledge and inspiration out of them.

The number of criteria the society wants fulfilled by the modern education is constantly increased day after day, and in the future there will be demands on fulfilling even more complex tasks.

**Figure 1** *The effects of contemporary education*



**Source:** *The table is the result of the author's research*

The importance of knowledge in human life, living and functioning is ever increasing. It contributes to widening and deepening of human knowledge and cognition, to upgrading the practical functioning in all the aspects of human interests, to faster and easier business functioning, to the management of business processes and the distribution of available resources, to the fuller realization of human rights and freedoms, to the participation in making social and state decisions and to the direction of the way to the future. It all affects the motivation in acquiring more knowledge and developing of information-communication abilities and culture of

the individuals and every community, more so because the information-communication knowledge is becoming one of the main conditions for job advancement, in the field, in every aspect of human and economic activity, meaning in life and work of every individual and community.

### **Europeanisation of higher education system in the Western Balkans countries**

Rapid changes that determine the process of globalization have led to big changes on the market. Traditional market is exchanged by new market, which is dynamic, changeable and rich with all kinds of information. Competitiveness has become the basis which determines success from failure - survival on the market, which means the ability to achieve better business results compared to competition that works in the same field. Nowadays all the market participants are fighting to find such competition advantages, which will bring better financial and other performances. The goal is to be better from the rest, and nowadays that can be achieved solely with knowledge, innovation and creativity. In so called "old economy" the key to competitiveness was in cheap work force, materials and mechanization. In modern economy competitiveness is based in knowledge, high technology, innovation and global connection. Nowadays competitive advantage is based, above all, on intellectual capital (specific knowledge, abilities). Modern global environment is characterized by constant changes, competition strengthening and market uncertainty. Success is achieved only by those that learn fast, react quickly to changes and use all the available knowledge and information. Aside from that, of utmost importance to achieving the goals are well thought-out and implemented strategies, which represent the choice between several alternatives, with the purpose to direct the country in order to most effectively achieve the objectives and respond to changes in the environment. Basically, the task of the most strategies is to achieve sustainable growth and development and raise the degree of competitiveness to the highest possible level. The goal is to make competitive advantages faster than the competition can copy them, and therefore the activity should be focused on segments in which the country had already made positive status, with the most efficient use of production and intellectual resources and maximum protection of intellectual capital. That is the only way that ensures the competitiveness and survival in modern global business environment. Only through the use of these rules can the countries be capable to compete with anyone, anywhere and anytime (Miklavič, 2012, pp 93-108).

European initiatives of the utmost importance to the higher education of Western Balkans countries are The Bologna process, The Lisbon strategy and Europe 2020 document. In order to secure sustainable development and the safe future, European Union adopted a strategy known as The Lisbon strategy in 2000. The goals of the strategy were to make EU the most competitive and the most dynamic economy in the world, based on knowledge and able to sustain economic growth, by 2010. The key component of the strategy was development and improvement of knowledge, which meant greater investments in education and professional training, scientific and technological research and innovation. However, some of the goals of The Lisbon strategy have not been achieved so in EU started the process of making the new strategic frame that resulted in the Europe 2020 document: strategy for smart, sustainable and inclusive growth, whose goal was economic development of EU based on the knowledge and environmental protection, high level of employment, productivity and social cohesion. Education is one of the central themes of this strategy as well and it involves the use of alternative instruments and mechanisms in the implementation of the EU policy, such as Lifelong Learning Programme, Tempus, Erasmus Mundus etc. The strategy has set five goals, two of which are directly related to higher education and research: minimum 3% of GDP should be allocated for the research and development; at least 40% of the younger generation should possess a tertiary level of education or diploma; the share of adults (30-34 years old) with education at the tertiary level should be at least 40%; on average at least 15% of adults should participate in lifelong learning. This strategy is not important only for member states of EU, but it also represents important potential for EU candidate countries to whom belong all the countries of Western Balkans with the exception of Croatia.

The Bologna Declaration of 1999 refers to the reform of higher education systems in Europe and is the basis of the Bologna process, which includes: acceptance of the system of recognizable and comparable degrees, the acceptance of the system which is based on three main cycles of studies (undergraduate, master and doctoral studies), introduction of ECTS (ECST) scoring system and the Diploma Supplement, improvement of the mobility of students, teachers and researchers, ensuring the quality of higher education, the development of comparable curricula, inter-institutional cooperation, mobility schemes and integrated programs of study, training and research. All these instruments are intended to facilitate the employment by recognizing the acquired knowledge and competencies of graduates across Europe. The final aim of the declaration is to establish a single European educational space in which lecturers, researchers and

students can move easily and quickly. By accepting the Bologna process the Western Balkan countries have taken on obligations from this declaration. From a wider, euro integration aspect, this means the implementation of the necessary higher education reforms in these countries, in order to reposition their universities at European and international level and improve their own quality and competitiveness.

Lifelong Learning Programme is the cooperation program in the field of education of the European Union which supports the development of all levels of education. For now, the Western Balkans countries can participate in certain types of projects, only if their educational institutions offer expertise in an area which is the theme of the project and thus contribute to achieving the best possible results. Since LLP is one of the main sources of funding for education development in the EU, it is important that educational institutions of these countries start their preparations for full participation in this program on time.

Tempus (Trans-European mobility scheme for university studies) is the EU program that helps reform and modernize higher education in the partner countries, and is one of the oldest and most successful EU cooperation programmes. The program helps that the education systems of partner countries accept development trends of higher education in EU derived from the Lisbon agenda and the Bologna process and fund projects involving higher education institutions from the EU and more than 20 partner countries. Tempus program started in 1990 with main goal being the modernisation of higher education sector and to enable the institutional cooperation with Central and Eastern Europe. Yugoslavia joined the Tempus program almost immediately after its creation (1991). However, political situation in this region have stopped this cooperation and a lot of time had passed before newly formed countries rejoined the program (EACEA, 2012).

Erasmus Mundus started in 1987. It represents the program of support to cooperation and mobility in higher education through promotion of the best European master and doctoral studies. The goal of the program is quality improvement of higher education and inter-cultural understanding through cooperation with partner countries (which are not members of the EU). It aims to increase the attractiveness and recognition of European higher education around the world and the European Union as one of the centers of excellence. The program works by allowing students and teaching and scientific staff from all over the world the possibility of inclusion in postgraduate studies at the higher education institutions of the EU, and vice versa, it allows for

the mobility of students and teachers from EU to the partner countries. EU provides scholarships, both for citizens of partner countries who have been admitted to the Erasmus Mundus master and doctoral programs in EU countries, as well as for its own nationals studying at partner universities. All the countries of Western Balkans participate in this program.

In global terms, the issue of the countries' competitiveness is linked to the works of World Economic Forum (WEF) and its Global Competitiveness Index (GCI). This index is based on twelve pillars of competitiveness organized in three groups. Higher education and trainings are part of the second group that shows Efficiency Increase Factors of analyzed country. All the data are normalized on the scale from 1 to 7 (1 – the worst mark, 7 – the best mark), which is also the range for possible values for all the indicators, pillars of competitiveness and the Global Competitiveness Index (GCI) itself. The significance the pillars within the group have on the particular country depends on its development level. Taking everything into consideration GCI could be roughly defined as a collection of institutions, policies and factors that determine the level of a country's productiveness. Level of competitiveness shows the capacity of national economy to generate sustainable economic growth with the current development level in the medium-term period.

**Table 1** *Comparative overview of socio-economic data for 2015-2016 of Western Balkan countries and the countries with the most developed/top quality higher education in EU*

2015/16	Population (In millions)	GDP (US \$ In billions)	GDP per capita (US \$)	GCI of higher education and training 1-7 1 (the worst) 7 (the best)	Rankof competitiveness of higher education (Out of 140 countries)
Albania	2,9	11,5	3995,38	4,7	47
BiH	3,9	15,8	4088,21	3,8	97
Montenegro	0,6	4,0	6489,10	4,6	54
Macedonia	2,1	9,9	4786,84	4,8	46
Serbia	7,1	36,5	5119,76	4,3	71
Denmark	5,7	295,0	52114,17	5,8	9
France	64,3	2421,6	37675,01	5,3	25
Finland	5,5	229,7	41973,99	6,1	2
Germany	81,9	3357,6	40996,51	5,6	17
England	65,1	2849,3	43770,69	5,6	18

**Source:** *World Economic Forum (<http://reports.weforum.org/global-competitiveness-report-2015-2016/>)*

The transition period, structural economic reforms and economy transformation of the Western Balkans countries into the capitalism evidently have not led to an improvement in living standards of these countries population. Apart from that, the economic crisis had struck hard the Western Balkans countries, which had negative effect on the quality of many segments, including the higher education. As you can see in the Table 1. some of the main characteristics of this region are extremely low GDP and significantly lower GDP per capita compared to the examined countries of the EU. Also, in the terms of competitiveness the higher education of this region's countries is placed very low (from 43 to 97) in the 140 country span that were analyzed this year by WEF. Out of all Western Balkans countries the highest GCI rank in terms of higher education has Macedonia – ranked 46, while the lowest rank has Bosnia and Herzegovina – ranked 97. When looking at the EU countries higher education, according to the WEF report on global competitiveness for 2015-2016, the best ranked is higher education of Finland, ranked second out of 140 countries. The other examined European countries took high positions (from rank 9 to rank 25).

**Table 2** *Comparative overview of public investment and rank of competitiveness of human capital for the 2016 Western Balkan countries and the countries with the most developed/top quality higher education in EU*

2016	Part of GDP allocated for education (%)	Rank of competitiveness of human capital (out of 130 countries)
Albania	3.5	70
BiH	/	/
Montenegro	/	/
Macedonia	/	59
Serbia	4.4	57
Denmark	8.6	7
France	5.5	17
Finland	7.2	1
Germany	5.0	11
England	5.7	19

**Source:** *World Economic Forum* (<http://reports.weforum.org/human-capital-report-2016/>)

The Table 2. shows WEF data from Human Capital Report for 2016. It compares the Western Balkans Countries with the EU countries that have the most developed/quality higher education. It shows the countries investments into the higher education as well as the human capital competitiveness rank that is directly derived from the development level of higher education. As you can see, for its 2016 analysis, out of all Western Balkans countries, WEF analyzed only Albania, Serbia and partly Macedonia, which allocate only small percentage of their GDP for higher education. That makes their human capital competitiveness rank low on the competitiveness scale (ranks 57, 59 and 70 out of 130 countries). Unlike the compared EU countries whose higher education stands for the best and whose human capital is on top of the global competitiveness scale (ranks 1-19 out of 130 countries), which was directly affected by high percentages of GDP these countries allocate for their education systems. It is clear that public investments into higher education are the key for its success and competitiveness.

Many changes that the age of globalization brought before the companies and the countries have led to the new challenges in terms of sustaining competitiveness, and the future will demand the fulfilment of even higher quality tasks. Modern global markets are based on completely new rules of competitiveness, which resulted in company and country strategy changes. In order to create and improve competitiveness nowadays it is clearly emphasized the orientation on investments into intangible assets. Science and technology are built into the basis of every modern society and are part of every aspect of human life. Ever faster scientific and technological progress and IT development emphasize the importance of human capital. In the “knowledge society” competitiveness advantage is based on human knowledge and the use of potential chances and possibilities whose realisation asks for human knowledge. Nowadays key factor for competitiveness improvement is human capital which more often than not reaches up to 90% of company value. That is the acknowledgment that the knowledge, competence and skills are keys for positive competitiveness position. The country, the capital and the equipment are no longer the deciding factor in world market. Individuals, companies and even countries are becoming more and more dependent on the ways in which they develop their abilities and apply their knowledge with the goal of realising their goals.

## Conclusion

The term of globalization dates from the far off past, and today it is defined differently. The fact is that the globalization can be viewed from different angles, however, the definition of globalization that suits this phenomenon the best, is the definition by which the globalization is the process that brings many drastic changes in all areas of life. The last few years, we see substantial acceleration of this trend due to the rapid progress in technological innovation, especially in the field of information and communication technologies. The occurrence of this phenomenon leads to serious thinking, especially with regard to the changes in the labour market, in order to better adapt the educational system of the country, which in the modern knowledge society is becoming one of the most important development factors. Socio-economic changes that accompany rapid scientific and technological development, especially the expansion of modern technologies, need highly educated people who are able to function effectively in social processes and use the available technology. Economy competitiveness on the global scale demands high level of expertise and work force competitiveness, because the modern technological processes are based on highly educated population. Even the countries that have significant natural resources, nowadays cannot partake in further development race without educated and innovation-trained people. When it comes to the development and the application of new technologies, development tendencies of market economy oriented countries show that the education and the creation of highly skilled human resources are in the top of national strategy priorities and economic and technological development policies. Therefore the postmodern education must imply the development of highly educated personnel which can improve the national development and respond adequately to the demands of modern environment. The development of top education must be correlated to the modern development of science and technology, which means the education of human resources for specific needs and types of technical, technological, communications and innovation technologies. The new age called the digital age and the age of knowledge, demands new types of education as well. However, it is without a doubt that the institutionalised education remains the best form of education if it follows modern trends. Everything said leads to a conclusion that 21st century education needs to be guided towards the gain of specific knowledge and skills. In these new and changed circumstances, the education has a goal of increasing the human adaptability to the coming time and to increase the abilities that humans need in order to be able to fight and



adjust the changes. That means that the human's future will depend on its education.

Higher education plays significant role in the European integration processes and in the encouragement of economic and social development of Western Balkans countries. It is necessary to follow global trends and persevere through the higher education reform processes, and the reforms should be based on advanced knowledge and skills in different areas. When we talk about the Western Balkans countries it can be concluded that when it comes to the European integration processes, all of them are putting maximum effort into the implementation of all the parts of the Bologna process, and into the achievement of the goals of the Lisbon strategy and the Europe 2020 document considering the higher education. All the countries of the region have taken part in the Tempus, Erasmus Mundus and the other EU higher education programs. However, the achievement levels of these countries, as well as individual national investments into this field, are still below EU average. It is clear that the total quality of higher education in Western Balkans region is still not on satisfactory level and it needs to be put an additional effort in order to fulfil the set goals and create competitiveness of higher education and intellectual resources of these countries in the "Knowledge Economy". (Nešković, 2014, p. 22) The key to strengthen these transitional economies is the creation and development of higher education of European (and world) quality, compatibility of educational offer with the demand of a unified market, the creation and implementation of study programs that stimulate innovation and entrepreneurship and the development of innovation practices which would allow for postgraduates to gain new experiences and practical knowledge relevant to the quick employment.

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# WHAT DO TEACHERS NEED TO KNOW ABOUT BRAIN LEARNING

*Nada Protić<sup>1</sup>*

## **Abstract**

*Learning is permanent, or at least a relatively permanent change of the individual, which in certain conditions can be manifested as its activities and the results of the previous activity of the individual. In the today's knowledge society, education can no longer be the monopoly that belongs to schools but must pervade the entire society. Education that will be able to monitor changes based on learning, i.e. how to learn, adapt to change and how to think and reason based on the information that we will be surrounded by. Physiology of learning is the ability of the brain to acquire information and to process them in neural circuits engaging the whole physiology of the brain. The brain is a man's best organized matter. An amazing feature of the brain is its plasticity, or the ability to change its structure and organization during a lifetime. In response to genetic and influences from the environment, its ability to receive, systematize and store data is much higher than demanded by the necessities of life. The role of the teacher is to teach students how to be creative and communicate much more efficiently. A better understanding of the brain can help teachers to teach better.*

**Key words:** *learning, teacher, brain, brain plasticity, physiology of learning*

## **Introduction**

Across the world, information technology and communication technology has made many innovations in the field of teaching and also made a drastic change from the old paradigm of teaching and learning. In this paradigm, the role of student is more important than teachers. Nowadays there is democratization of knowledge and the role of the teacher is changing to that of facilitator. We need to have interactive teaching and this changing role of education is inevitable with the introduction of multimedia technology

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and the spawning of a technologically-savvy generation of youths. Current trends in society have initiated significant changes in education policy, understanding of nature, functions and goals of higher education, its efficiency, organization and management and consequently a united Europe set the challenge to respond to increasing global needs and prepare students for the competitive market work. All higher education institutions, as well as organizations for learning and training, should be adapt the processes of industrialization and globalization (Jarvis, 2000). Accordingly to restructure its organization and policy in order to become flexible and took a leading role in an environment that is changing at an accelerated pace united efforts of all the countries of Europe are focused on having the higher education system more competitive and more efficient for Europe to become a leading economy in the world and a society based on knowledge. Europe needs to become most competitive and dynamic knowledge-based economy, capable of sustainable development is providing more and better jobs and greater social cohesion. Globalization has brought with it the different way in education and the acquisition of knowledge, in particular, that is practical and applicable and meet the needs of the market, that is the way to personal success and self-promotion, the knowledge that contributes to competitiveness in the future development production and acquisition of higher profits. Such orientation has led to changes in the education system, reconstruction of existing or the introduction of new courses and teaching content, primarily practical character. Akcent is to develop skills, communication skills and different. Modern society, rapid changes in the economy, science and technology, art and culture affect the development of the individual, their position and role in society, design modern society with new needs and outcomes. All these changes require new study and acquire knowledge, skills, values and attitudes, i.e. new skills individuals (European Council, 2000). The importance of innovation, creativity, problem-solving skills, the development of critical thinking, information literacy is encouraged, but also the importance of holding social competence. The new requirements of society can not be achieved through traditional classes, which are focused on the transmission of facts and information, but in an open and flexible system that adapts to the needs of the knowledge society. As one of the strategic goals of progress is the development and establishment of a European knowledge-based society, which relies on two important constructs – European space research (European Research Area ERA) and European Higher education (European Higher Education Area EHEA). Such a society is one in which the education, research, development and innovation is fully focused on the realization of economic and social ambitions of the

European Union, as well as its expectations citizens. It is alleged that the European Research Area has become the cornerstone for Europe based on knowledge, especially in a situation of rapid globalization of research and technology and the emergence of new scientific and technological powers like China and India (European Commission, 2007). Tends to increase the efficiency study, which among other things includes restructuring of existing curricula and share extensive object less units in accordance with the planned syllabus, as well as to the time needed to overcome the pre-examination and examination activities and load of students (The Sorbonne Declaration, 1998, Bergen communiqué, 2005). It also improves the promotion and implementation of the mobility of students, teachers and administrative staff, exchange of experiences, knowledge, available resources, which in significantly contribute to improving the quality of work, teaching and research.

The goal of the paper is to explain teaching with the physiology of brain learning.

## **Teaching**

Recent developments in technology have allowed neuroscientists to come a lot closer to understanding the way our brain works; we are nearer to knowing how we learn. Teaching is a profession with its own body of knowledge, models, requires knowledge of techniques and decision making. Effective teachers take responsibility for their decisions. They should select content and processes on the basis of developmental appropriateness and educational equity. For both teachers and students, intrinsic motivation comes from within, and extrinsic motivation comes from outside sources. In terms of new development society expects teachers to respond to all requests that are set before them. That of the modest role of one who teaches, knowledge transfer (in traditional school) for a very short period take a series of far more complex, measuring teaching professionalism such as: cooperation and partnership with the pupils, the expansion work as a teacher out of the classroom and subject area. Teacher education needs to prepare tomorrow's teachers with the knowledge and tools to prepare their future students for the game-changing realities globalization. Teachers are, in essence, brain changers. As the research continues to build, it will be the obligation of those who prepare our future teachers to insure they understand and can apply the best current and future teaching strategies. This includes insuring that the teachers, who graduate from their programs, have the foundational neuroscience knowledge to use the fruits

of the expanding pool of research to the betterment of all their own future students. That is a fascinating and exciting challenge to meet at a pivotal time in the evolution of education. Teachers must understand that a neural pathway is like a new path in the woods. The more frequently that a neural pathway is traveled, the fewer the obstacles, the greater its capacity, and the smoother and faster it becomes. This means that they must help students to make connections to prior experiences, knowledge, and learning—and connections to other curricular areas. The more connections they make, the more are physically altering students' brains by creating and strengthening neural pathways. The brain's ability to receive, systematize and store data is much higher than demanded by the necessities of life. It is known that normally human exhibits an intense curiosity. For a number of information remains a curiosity noblest quality, and could be defined as a desire for knowledge. This desire to develop our mind. All this should have in mind the teachers in the choice of methods and forms of work with each student individually. Modern approach to the organization of university teaching training institutions presupposes young teachers (assistants and associates) and the training of university teachers to introduce new approaches, methods, forms and teaching aids in higher education. A teacher who is actively involved in the development of their scientific discipline and continuously improving their teaching skills, and develop its technical and scientific competence, contributes to improving the quality of teaching, and teachers are expected to possess competence of lecturers, scientists and researchers. The survey, which was conducted in two faculties of the University of Novi Sad, determined by the process of self-assessment, the educational needs of teachers: assistants, assistant professor of emergency and full professors with different years of teaching experience. Statistical analysis of data revealed that the educational needs exist, regardless of the profession of teachers, and that the line teachers and years of service a growing need for educational content pedagogy and methodology, while decreasing the contents of didactics (Babić-Kekez, 2011). These results are guidelines for programming work on the professional development of teachers to develop their teaching competencies and ensuring the quality of teaching.

Especially critical is teacher awareness of the vast potentials of neuroplasticity that increases their opportunities to influence the development of their students' brain networks of executive functions – their highest cognitive skillsets. Teachers with foundational understanding about the neuroscience and cognitive science of how the brain turns input into long-term memory and memory into transferable knowledge, will be the most prepared to guide all students to achieve their highest

potentials. Teachers are the caretakers of the development of students' highest brain during the years of its most extensive changes. As such, they have the privilege and opportunity to influence the quality and quantity of neuronal and connective pathways so all children leave school with their brains optimized for future success. Whole Brain Teaching is an approach designed toward maximizing student engagement, and focusing on the way the brain is really designed to learn. It is an integrated method combining effective classroom management and pedagogically sound approaches to student engagement that are effective with a wide range of student learning populations vetted through 15 years of classroom application. From this research and experimentation Whole Brain Teaching was born. Whole Brain Teaching can, and is being used at every level of instruction, kindergarten through college, with tremendous positive results.

### **Learning, memory, forgetting**

In educational psychology, as well as in psychology in general, learning is not understood only as school learning, but it represents a much broader concept. Learning outcomes are not based only on knowledge, but also the experience, habits, skills, traits or personality traits, abilities, attitudes, interests and motivation in general, the emotional experience, the development of personality. Early experience, early stimulation, are necessary for each variety of different, and even the development of some predetermined biological function. In educational psychology, as well as in psychology in general, learning is not understood only as a school learning, but it represents a much broader concept. Learning outcomes are not based only on knowledge, but also the experience, habits, skills, traits or personality traits, abilities, attitudes, interests and motivation in general, the emotional experience, the development of personality.

Today learning encompasses all that is man time of human life gained. Education is the wellspring of human health, wealth and happiness. It allows human beings to transcend the physical limits of biological evolution. We know that education works through experiences that are dependent on processes in the brain, and yet we still understand far too little about these processes (Wolinsky et al, 2010.). Education is about enhancing learning, and neuroscience is about understanding the mental processes involved in learning. Biological factors play an important role in accounting for differences in learning ability between individuals.

Cognitive psychology raises the question: In which elementary operations based mind? Cognitive psychology studies the complex cognitive processes (perception, attention, learning, memory, reading skill, numeracy, writing, problem solving, decision making). Neuroscience has disclosed important information about the brain and how it learns. It has uncovered unprecedented revolution of knowledge about the human brain, including how it processes, interprets and stores information (Sousa, 1998). Is the learning process the same today as it was in the past? It is necessary to study how students' brains work today so that it is possible to enhance their learning.

The brain never stops changing through learning. Plasticity is the capacity of the brain to change with learning. Changes associated with learning occur mostly at the level of the connections between neurons. New connections can form and the internal structure of the existing synapses can change. This learning theory is based on the structure and function of the brain. As long as the brain is not prohibited from fulfilling its normal processes, learning will occur.

People often say that everyone can learn. Yet the reality is that everyone does learn. Every person is born with a brain that functions as an immensely powerful processor. Traditional schooling, however, often inhibits learning by discouraging, ignoring, or punishing the brain's natural learning processes.

The core principles of brain-based learning state that: The brain is a parallel processor, meaning it can perform several activities at once, like tasting and smelling; Learning engages the whole physiology.

The search for meaning is innate and comes through patterning; Emotions are critical to patterning; The brain processes wholes and parts simultaneously; Learning involves both focused attention, peripheral perception conscious and unconscious processes; We have two types of memory: spatial and rote; We understand best when facts are embedded in natural, spatial memory; Learning is enhanced by challenge and inhibited by threat and Each brain is unique.

Memory is the faculty of the mind by which information is encoded, stored, and retrieved (Atkinson et Shiffrin, 1968). It is vital to experiences and related to limbic systems, it is the retention of information over time for the purpose of influencing future action. If we could not remember past



events, we could not learn or develop language, relationships, nor personal identity (Eysenck, 2012). Often memory is understood as an informational processing system with explicit and implicit functioning that is made up of a sensory processor, short-term (or working) memory, and long-term memory (Baddely, 2007). The sensory processor allows information from the outside world to be sensed in the form of chemical and physical stimuli and attended to with various levels of focus and intent. Working memory serves as an encoding and retrieval processor. Information in the form of stimuli is encoded in accordance with explicit or implicit functions by the working memory processor. The working memory also retrieves information from previously stored material. Finally, the function of long-term memory is to store data through various categorical models or systems (Baddely, 2007). Memory is a complex process that means mental activity, the distinctive skills acquisition and retention of experienced content, and use of such content and information when we need them. There are three stages through which the received information: the first phase of a sensor or receiving, in which our senses register information; the second phase of short-term or working memory where the data is processed, and then stored and the last phase of the long-term and it is unlimited. The data are permanently stored and still they can be reused. Everything we have experienced and suffered, we use every day, such as. our behavior, habits, actions, speech and so on. Physiologically, the establishment of long-term memory involves a process of physical changes in the structure of neurons in the brain, a process known as long-term potentiation, although there is still much that is not completely understood about the process. At its simplest, whenever something is learned, circuits of neurons in the brain, known as neural networks, are created, altered or strengthened (Caine et Caine 2000). These neural circuits are composed of a number of neurons that communicate with one another through special junctions called synapses. Through a process involving the creation of new proteins within the body of neurons, and the electrochemical transfer of neurotransmitters across synapse gaps to receptors, the communicative strength of certain circuits of neurons in the brain is reinforced. With repeated use, the efficiency of these synapse connections increases, facilitating the passage of nerve impulses along particular neural circuits, which may involve many connections to the visual cortex, the auditory cortex, the associative regions of the cortex, etc. In the human brain, information must be stored in order for learning to take place. So, the areas of the brain that are most important to learning are those involved in memory. Other crucial areas include regions involved in processing information from the five senses and information about your body. They serve as the input to the memory

system. Cognitive psychologists sort memory into three categories: short-term memory, routine-based memory and memory of events and facts.

The hippocampus, a part of the limbic system located in the basal medial part of the temporal lobe, is responsible for processing memory for context. The anterior cingulate cortex, a part of the cerebral cortex connected with the prefrontal cortex, is involved in retaining unpleasant memories. The amygdala binds memories together and initiates the storage of both contextual and unpleasant information.

Intelligence is the ability to abstract thinking, quick and accurate orientation in the new situations, based on grasp the essential relationship. Intelligence is the mental characteristics consisting of multiple skills: learning from experience, adapt to new situations, perception and understanding of new situations and use the acquired knowledge in interaction with the environment. Intelligence is a complex phenomenon with a multitude of characteristics.

Forgetting is the reverse memory. It is the inability to keep the contents of which are adopted by the inability of reproduction. It has long been thought to be the main cause of forgetting the time which is not true. On the contrary, it has been proven that with the passing of time, the process slows down forgetting. Absolutely, because we can not forget the content that was in the experience always leaves a trace which under certain conditions can be activated. The main causes of forgetting are: lack of repetition, interference or obstruction and repression or suppression of us unpleasant content of consciousness. Forgetting or disremembering is the apparent loss or modification of information already encoded and stored in an individual's long-term memory. It is a spontaneous or gradual process in which old memories are unable to be recalled from memory storage. Forgetting also helps to reconcile the storage of new information with old knowledge. Problems with remembering, learning and retaining new information are a few of the most common complaints of older adults (Baddely, 2007). Memory performance is usually related to the active functioning of three stages. These three stages are encoding, storage and retrieval. Many different factors influence the actual process of forgetting. An example of one of these factors could be the amount of time the new information is stored in the memory. Events involved with forgetting can happen either before or after the actual memory process. The amount of time the information is stored in the memory, depending on the minutes hours or even days, can increase or decrease depending on how well the information is encoded. Studies show

that retention improves with increased rehearsal. This improvement occurs because rehearsal helps to transfer information into long-term memory, practise makes perfect (Foerde et Poldrack, 2009).

Forgetting is a process during which temporarily or permanently, in whole or in part, loses what it was remembered. In no forgetting playback, recognizing, not saving in learning. Forgetting is the beginning of the entire fast, then more slowly and depends on the content of learning. Hermann Ebbinghaus (1908) performed an experiment in which subjects had a task to memorize nonsense syllables. The experiment wanted to establish a relationship of forgetting the time since learning.

These data are from his research:

- 20 minutes after learning forgotten the 42% content
- 1 hour after learning forgotten the 56% content
- 9 hours after learning forgotten the 64% content
- 1 day after learning forgotten the 66% content
- 2 days after learning forgotten the 72% content
- 6 days after learning forgotten the 75% content
- 1 month after learning forgotten the 79% content.

Forgetting may arise because of some brain diseases, injuries and poisoning. Causes of forgetting: progressively losing trace of distortion - the passage of time and the non-use of information; The inability to find information in the long memory- information should be stored so that the more we connect with old knowledge; pushing or repression – intentionally or unconsciously forgetting content that we adverse and interference- learning a material interferes with learning another especially if the material is similar (to increase the distance between learning). Spontaneous forgetting - the theory of non-use - spontaneous forgetting occurs because the acquired knowledge is not used. Theory of active forgetting: a new learning, present new activities interfere with memory material prior lessons. Retroactive inhibition-interference with each other and the conflict more material where it's winning recently. Theory eternity of memory: there is only more or less permanent disability playback or forgetting the true sense does not exist. This is corroborated hiperamnesia, hypnosis and electric stimulation of the cerebral cortex. The theory of spontaneous forgetting: two assumptions, it is a passive, spontaneous loss of traces due to non-use and is an active forgetting that there are multiple causes of which break down and destroy previously remembered. The physiological theory of disuse due to the continuing process of metabolism in the brain.

## The nervous system

Starting from the school, to the workplace, we are forced to act according to pre-established rules. All to suppress our curiosity and the ability to think. Despite the restrictions, people do not leave the desire to explore and to discover new information. Every time you do anything, the nervous system is discreetly includes every level of operation.

The human nervous system is by far the most complex system in the body histologically and physiologically and is formed by a network of many billion nerve cells (neurons), all assisted by many more supporting glial cells. Each neuron has hundreds of interconnections with other neurons, forming a very complex system for processing information and generating responses. The adult brain contains about 100 billion brain cells, neurons. Each neuron consists of a cell body, from which are connected dendrites and an axon. (Junqueira et Carneiro, 2009). The majority of the nervous system is tissue made up of two classes of cells: neurons and neuroglia (*Ghysen, 2003*).

The basic unit of the nervous system is a nerve cell or neuron. Neuron consists of axons, dendrites, cell body (some) and presynaptic compound. Information about the condition of the nervous system transfers the electrical or chemical means. Neurons are electrically active cell, along which there is an equilibrium membrane potential as a result of the distribution of charged particles with various sides of the cell layer (the potential of the inside of the cells for 50 to 100 mV lower than the external potential of a cell. By bringing external energy to the cell increases permeability channels responsible for the movement of ions, allowing it to be short-changed a value of potential of the membrane (membrane depolarization occurs). This reversible phenomenon is called action potential (AP). AP represents the transfer of information along an axon and dendrites of one cell are electrically in the duration of a few milliseconds (the potential inside the cell is about 25 mV higher than the potential of the outer cells). One of the important features of neurons is the inconsistency of the cytoplasm (there is no direct contact of consecutive cells), which causes the transmission of a specific mechanism of action potentials between adjacent nerve cells. This mechanism is called a synapse. Synapse provides forwarding information chemically. When the action potential occurs in the presynaptic end of a cell, it emits neurotransmitters. Neurotransmitters are enzymes (dopamine, serotonin, noradrenaline, adrenaline, histamine, etc.) that are removed from the lump of the membrane presynaptic neurons. Neurotransmitters

at post-synaptic neurons, induced changes in the permeability channels for  $\text{Na}^+$  ions, which in this case can cause excitatory or inhibitory effects (postsynaptic potential - PSP). In the case of excitation of the postsynaptic neurons leads to depolarization and its creation of an action potential, which is then transferred as described above. In addition to neurons and the nervous system and consists of the glial cells, which constitute the supporting, and conveying the tissue and have a role in the local homeostasis perform phagocytosis of the particles and unnecessary part in the construction of the myelin sheath of the axon. Nerve tissue is made up from a large number of blood vessels and nerve glia cells are supplied with oxygen and nutrients. Human nervous system can be divided into the central nervous system (CNS) nervous and peripheral system (PNS). CNS consists of the brain stem, cerebellum, cerebrum, thalamus and hypothalamus. Each of these parts is responsible for performing certain functions integral action affecting the operation of the whole organism. PNS consists of the spinal cord with peripheral neurons. He includes in his work autonomic (sympathetic and parasympathetic) nervous system that affects the operation of the connective tissue of organs (especially the heart). The largest part of the brain or cerebrum makes a big brain. Longitudinal fissures of the corpus callosum comprising a tape with more than 200 million cells, it is divided into two parts (left and right). The cell bodies (some) of nerve cells that make up the brain tissue are collected in the gray matter, which makes the surface layer of the brain tissue. Below are gray and white masses consisting of axons and dendrites of these neurons. Brain tissue of the brain is protected by a membrane (meninges) and is located within the skull, which protects the tissue. Between the skull and the brain is cerebrospinal fluid. The surface of the cerebrum represents cerebral cortex, which can be divided into lobes, named after the bones of the skull beneath which they are located. Each of these lobes is responsible for some sensory-motor activity of man. By measuring the electrical activity of nerve tissue can be obtained activity data individual cells or groups of cells, which can indicate the current status of the subjects. There are different methods for the preparation of this relevant information and their hierarchy is fixed to methods that measure the activity of the brain, or central nervous system Electroencephalography is a method which measures the activity of the peripheral nervous system - Electroneurography. By performing an activity activates certain regions of the nervous tissue, which is responsible for the execution of the task or response to excitation, and its measurement obtained important information about the condition of the nervous system of patients. Brain electrical activity is a result of the summary activity million cells. Every brain needs periodic rests during

which neurotransmitters can be replenished and executive function can process the new material. The use of the word “Syn-naps” is an example of the use of word play to help build memory. The synapse is the gap between nerve endings where neurotransmitters like dopamine carry information across the space separating the axon extensions of one neuron, from the dendrite that leads to the next neuron on the pathway. The creation of a word like *syn-naps* helps teachers recall that after repeated release of neurotransmitters from a nerve ending, there needs to be a brain rest when the neurotransmitter can be restored to be available for release when the next message comes traveling along the neuronal circuit. These syn-naps are restorative breaks that are as important for successful memory retention as are other elements such as surprise, positive emotional state, sensory memories, and other relational memories. Not only do these “naps” prevent overloading of the circuits and interference with maximal memory storage conditions, but they also help maintain positive emotional states.

Neurons transmit information transmission of electrical impulses. As with other cells of the the body, the transmission of neural impulses is conditioned by the existence of the potential difference in the vicinity of the membrane of the cell wall. For polarized quiescent neuron worth the interior axons, in relation to its surroundings, negatively biased, normally with a stationary membrane potential of about -70mV. This is due to the existence of about 10 time’s higher concentration of the positive sodium ions  $\text{Na}^+$  outside the cell than inside of the axon. Activating (stimulating) a cell membrane of neurons, increasing a potential difference is created as due to the change in the concentration of ions outside the cell, and (on one side and the other side of the membrane). Along the axon is transferred to the resulting pre-synaptic action potential of cells, and at some point arrives at the synaptic terminals (ends) of the cell. Then the molecules of the transmitter information (transmitter molecules) exempt connection with this axons down into the synaptic gap, and then transferred to the receptors of the postsynaptic cell. Such a flow of the molecule forms specific ion channel through the membrane of neurons. By opening (generating) ion channel moving processes of depolarization of neurons. In addition to the sodium ions  $\text{Na}^+$  main charge carriers are potassium ions,  $\text{K}^+$  ions and chlorine. Generating postsynaptic potentials on the membrane and the formation of ion flow through gap, the conditions for the occurrence of the electric field and the currents along the postsynaptic cell that represents a current source. The field strength of the power source decreases with distance (spacing) of synapses. The amplitude of the presynaptic action potential is about 10 times greater than the

amplitude of the postsynaptic potentials. The duration of presynaptic action potential amplitude is about 10 times less than the duration of the postsynaptic potential. Therefore, a neuron does not express the electrical activity in the steady (equilibrium) state until it does not exceed the threshold excitation. An imbalance potential around the membrane of the cell is the result of physical - chemical processes during the exchange of substances and diffusion the transfer of ions through the membrane CNS composed of gray matter "substantia grisea" and white matter "substantia alba". Gray matter contains bodies of neurons, dendrites, the initial parts of the axons and the glial cells. The centers gray matter is evaluated, synchronization and integration of stimuli. Gray mass is located on the surface of the cortex "cerebral cortex" and a small "cerebelli cortex" of the brain and the spinal cord columns. White matter consists axon extensions, dendrite cells and glial cells "oligodendrocyte". Axonal extensions of the white matter are wrapped in myelin sheath. Unlike gray weight, white matter neurons or less is because white mass "furrowed" neural pathways CNS. Neural pathways grade axonal bundles of extensions each synaptic combined and represent functional neuro chains. From the biochemical point of view, neuro pathways are sets of axons containing the same neurotransmitter. From the morphological point of view, neuro pathways connecting the gray matter ipsilateral to (the same) side of the central nervous system, the opposite half of the of the same part of the CNS as well as a variety of remote parts of the CNS.

Conducted an experiment based on a study of more subjects, the data of S1, which is aimed at recording brain waves in the problem of selective visual observation of the screen image. During the experiments, the stimulation or irritation of the subject (the respondents) S1 is implemented in the form of a short flash of light occurrence of circular shape in one of the five squares in the monitor in front of the subject. Different colored squares are mounted horizontally above the central axis of the screen. With every appearance of a circular light flash green square, the respondents were required to register the touch of a button.

An entity is required to ignore the light stimulation caused by the advent of flash in one of the squares of another color. The first event of interest to the study is the emergence of flash light in the green square "square", while another event is the response time of the central nervous system subject to stimulation or excitation (speed key press). Data subjects are grouped in EEG Epoch duration of 3s. They are stored as a set of original continuous EEG data subjects and are used in the treatment of EEGLAB. Number of stimulation via a current value in all respondents was 10, only in the case of those 1 this number was 5. Alpha rhythm has been detected only in certain subjects, while

the activity in the range of the gamma rhythm could not observe significant changes that could be considered valid (Milovanović, Sovilj, 2014).

The brain expresses functional lateralization or asymmetry. Sometimes, under the functional asymmetry of the brain meant that each hemisphere of the brain responsible for specific functions that can only be carried out there. This concept has been abandoned and is considered that in carrying out the tasks involved both hemispheres, and that one hemisphere dominant for specific functions or different aspects of the same functions (Kosslyn et al, 1999). It is extremely important for new knowledge about the functioning of the brain (Bear et al, 2007.). Previously it was thought that all functions have their specific, specialized part of the cortex, however, it is now clear that all the parts work together, even if they are distant from one another, and coordinating their activities produce complex functions. Simply put, the area towards the rear of the cerebral cortex is mainly responsible for the observation - that is processing the data they receive from the senses such as hearing and vision. Frontal parts are more concerned with reacting to this information, such as speech and movement. Cognition is everything that happens in the brain from the first minute to the observation of action that will follow, and the means and processes associated with memory, thinking, learning and language.

The more regions of the brain that store data about a subject, the more interconnection there is. This redundancy means students will have more opportunities to pull up all those related bits of data from their multiple storage areas in response to a single cue. This cross-referencing of data strengthens the data into something we've learned rather than just memorized. For example, when we learn about our cars, we store the information in brain association areas under multiple categories that relate to the context with which new information about cars is learned. When we see a car, it goes into the visual image cortex. When we see the word C-A-R spelled out, that information goes into a language-association region. After learning about the internal combustion engine, the association is made with "jet and rocket engines are also powered by internal combustion." Later we build associational memories with the cars we've grown up with. That is the reason for teaching important material through multiple learning pathways such as several senses (hearing, seeing, touching) as well as through several subjects (cross-curricular topics).

Brain uses 20% of the energy consumed by the body. If for 8 to 10 seconds to the brain does not get enough blood, you will lose consciousness. Brain cells



can live for 4 to 6 minutes without oxygen, and then starts to die. If no oxygen and leave for 5 to 10 minutes, the brain will remain permanent damage. In the brain, there are over 100,000 kilometers of blood vessels. Consumption of energy (glucose) is 20% of the total consumption and consumption of O<sub>2</sub> is 20% of total. Blood flow to 20% of cardiac output at rest (Shulman et al, 2004.) In the genome of 50% from 30 000 gene was expressed only in the brain, 70% of the remaining gene is also expressed in the nervous system:

The main function of the nervous system is to process the incoming information to form appropriate mental or motor responses (more than 99% of the information is discarded as irrelevant or insignificant). After selection, important information is routed to the appropriate motor regions of the brain to cause the desired response. This guidance and implementation information is called integrative functions of the nervous system. When information is once stored in the nervous system, it becomes an integral part of the mechanism for processing.

The human brain possesses an incredible capacity to adapt to new conditions. This plasticity enables us not only to constantly learn but also to overcome brain injury and loss of function. Take away one capability, and little by little we often compensate for these deficits.

The brain is the only organ that expresses functional lateralization or asymmetry. Sometimes, under the functional asymmetry of the brain meant that each hemisphere of the brain responsible for specific functions that can only be carried out there. This concept has been abandoned and is considered that in carrying out the tasks involved either hemispheres, or that one hemisphere dominant for specific functions or different aspects of the same functions (Kosslyn et al, 1999). The cerebral hemispheres differ in some of their anatomical characteristics, which could be the basis for the functional differences (Kosslyn et al, 1999). The anatomical asymmetry of brain hemispheres occurs in humans, and in animals (vertebrates). In humans, it exists still in the fetal brain in the middle period of gestation, according to recent research much earlier. The left hemisphere of the brain is responsible for language and speech and is called the “dominant” hemisphere. The right hemisphere plays a large part in interpreting visual information and spatial processing. In about one third of individuals who are left-handed, speech function may be located on the right side of the brain.

The human brain is often called a biological computer or biocomputer. “Biologics”, because it represents a part of a living organism, a “computer”

because it can collect, use and store information and to act in accordance with them, like any computer. Comparison of the human brain with a computer gives some idea of what a complex brain function, but it is only brought true. First of all, our brain can deal with more than a computer and can use data in many more ways than the computer. No computer can not think, nor to draw conclusions, nor to own emotions.

Weight of the brain represents approximately 2% of total body weight. In most vertebrates surface of the cerebrum is smooth; however, in higher mammals, particularly humans, it has increased the appearance of furrows and folds. Layout of the furrow is the same for all people regardless of their intellectual abilities.

### **Conclusion**

What is the Bologna framework makes it particularly necessary to fix the focus in the transfer of knowledge directed towards communications perspective. Create critical thinkers means to develop personalities. They must be partners in teaching and become partners in professional discussions. Critical thinking assumes competence in a particular field, a topic or group. It is never without risk, part of the attitude to life, not just a set of intellectual competence, and is expressed by what comes out of the usual framework, which examines and stated that he gives direction. The one who educates critical thinking students should be aware that they emancipate themselves to make their way and must first test their critical thinking on your speakers. Critical thinking is the first element that can help the intellectual autonomy and achieve sustainability in education (Halpern, D.F. 2007).

The process of education, including pedagogy as a science, is a fundamental change; teachers are the keys factors, conditions, causes that determine the ultimate success or failure of any education reform. According most general definition, classroom management is the creation safe and supportive learning environment in which every student to achieve the best achievements possible in accordance with their capabilities. As pointed out Marzano et al (Marzano et al., 2003), the teacher is the only factor that affects the achievement of students, and to which a significant influence (than, for example, in the abilities of the students we work or school authorities that deliver programs, and determining educational standards covering).

Curricula make the content, form, shape, manner of implementation of some reforms, and the teachers are the ones that will be achieved, diminish its

value. All the reforms are based on changing content, plans and programs, a “changing” the teacher was in the background. A teacher may be motivated by the reward, evaluation, status, safety at work, support i.e. ability to meet their basic social and personal needs. It can be shaped according to the demands and needs of society and become an indispensable factor of his existence. The teacher performs multiple roles and functions in order to approach the knowledge of students and to learn, we can ask a legitimate question whether it can be removed from the educational process as some think, propose and argue that knowledge “can not be borne, transmitted and retrieved from the second“. It is necessary to improve the social status of teachers compared to other “harder” profession and give them adequate significance and the role and impact on the understanding of the general public for their contribution to society. Profession “teacher” can and should be interdisciplinary study and viewed from different perspectives, angles and perspectives of psychology, pedagogy, sociology, philosophy and cultural studies. It is complex and challenging, and changing present, irreplaceable and necessary, eternal and constant. Without it you can not and that’s why we have to give her the importance and the roles it deserves, i.e. people who maintain, painstakingly realized and improve. Motivation and love of children form the basis of the teaching activities. They determine more or less characteristic of all forms of their work. Biological and genetic heritage can not be changed, but can mitigate their negative side, because the teacher pleased to invest more in their work and thereby compensating for their possible shortcomings. Children must be more than a sense of security knowledge in the sense of having different information. I’m sure many a man can and love to learn. He rarely acquired negative traits to yourself and others.

As the research continues to build, it will be the obligation of those who prepare our future teachers to insure they understand and can apply the best current and future teaching strategies. This includes insuring that the teachers who graduate from their programs have the foundational neuroscience knowledge to use the fruits of the expanding pool of research to the betterment of all their own future students. That is a fascinating and exciting challenge to meet at a pivotal time in the evolution of education.

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# CHALLENGES FOR EDUCATION SYSTEMS IN TERMS OF NATIONAL SECURITY IN THE INFORMATION AGE

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## Abstract

*This article looks into a trend in education, aimed at meeting the needs of the information age, analyzed from the perspective of interests of individuals as social beings. The subject is problematized in the value context, primarily in the community which is the framework for the functioning of individuals. To this end, the response of education systems to the circumstances imposed by the information age have been analysed functionally and phenomenologically, with respect to the fact that the value context involves perception of challenges as well. The information age is imposing important changes in daily activities of professionals, in terms of the speed and quantity of information they deal with, as well as the globalization of markets. These changes require the adjustment of production and acquisition of knowledge in the direction of training individuals for professional competitiveness at a global level. The result is expressed in specialized education, that treats knowledge primarily as problem expertise. A consequence of this trend is the lowering of education in terms of economic functionality and overriding its function of producing professionals who are able to lead countries, through the deprivation of value components. These consequences have a direct effect on national security, as an expression of the vital values of survival and the free development of a political community. The analysis shows that education solely targeted at fulfilling economic needs in the information age does not imply any concern for the quality of life of individuals, primarily in terms of democratic preconditions, and in that sense presents a challenge that requires special attention and analysis from the point of view of national security.*

**Key words:** *knowledge, quality of life, democratic capacity, information age, national security*

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## Introduction

In information age, knowledge may be regarded as power, coming from having information. The effectiveness and access of information encompasses and relies upon the use of different communication channels or information technologies. Information technologies may extend knowledge beyond the geographical boundaries or country borders, providing relevant information to the relevant people round the clock (Hussain; Safdar, 2008, 47).

Today, familiarity with the information technologies is a necessity required for the use of the electronic databases in searches; electronic mail to ask questions and to submit assignments; familiarisation with the advantages and disadvantages of the technologies and exploring the capabilities of CD-ROM, tele/videoconferencing etc; for keeping notes, editing, recording, reviewing, updating or data analysis include visual elements as part of projects; or spending time as a multimedia workstation. Minimizing physical problems arising from the use of information technologies requires certain practical capabilities or skills for their use for students as well as for lecturers. Preparation for the age of information technology, therefore, necessitates gradual encountering with the necessary technologies.

The information age, above all the speed and the quantity of available and accessible information, imposes specific aspects to be addressed in education.

The values of information age are rationality, effectiveness and precision, which impose the value of the planning function in education. Education should providing closing of the competence and adjustability gap, through providing different needs according to the individual requirements. To meet this, the doctrine has identified the need to gather information about institutional and individual requirements, and use these information to adjust the levels (Ogilvy, 2011, 68).

In the information age, legitimate need of the public becomes cost-effective and affordable access to information. The public good preference or fair use determinations requires the development of education as a factor that benefits society as such, in terms of its pro democratic interests and human rights (Sun; Baez, 2009, 32).

On the value level, the doctrine has identified some qualities which are expected in the information age. Among those are responsibility for



outcomes, including assumption of leadership; differentiation when needed; the construct of knowledge, skills and ideas as a resource in the information age (knowledge economy); transfer of knowledge as mentoring; learning in the context of culture (socialisation); and the opportunity for each individual (social justice) (Wilson; Kendall-Seatter, 2013, 24).

Evolving national and local infrastructure, culture and context, as well as individual interests and needs should find a response in the curricula. As new developments are forged in ICT and education, principles remain more relevant than itemised competencies. As the change, even continuous and chaotic change, offers a possibility for growth, individuals should be prepared to adjust to the new conditions, which introduces a consumer aspect in education (Davis, 2001, 43).

The rhetoric concerning the potential for effective participation in development process in the world of increasing international cooperation, exchange and interdependence, and is recognised as fundamental to long-term development has led to the the internalisation of higher education (to attract international students, or a a commodity on international market) (Michelsen, 2015, 44). Whether perceived as a policy, or a program, or event or a proces, it consists of the international content of the curricula; the international movement of scholars; the technical and education cooperation programs; and the creation of an attitude of global awareness. Discourse of internationalisation of higher education involves the crucial role and responsibility of higher education institutions to develop students and all types of learners into critical and creative thinkers and professionals. They are expected to provide acquiring of relevant competences and capabilities for future-oriented innovation in order to find solutions to complex, transdisciplinary and transboundary issues, and to foster understanding and practice of collective values and principles that guide attitudes and transformations, respecting the environmental limits of our planet, through education, training, research and outreach activities (Global, 2014). All concerned stakeholders, in particular on national levels, higher education institutions and the scientific and other knowledge communities are expected to engage in collaborative and transformative knowledge production, dissemination and utilization, and promotion of innovation across sectoral and disciplinary boundaries to enrich decision-making and capacity building for sustainable development with emphasis on involving and respecting youth as key stakeholders (UNESCO, 2014). Generally, information age is percieved with potential and as a vehicle towards the age of sustainable development (Sachs, Jeffrey, 2015, 11).

## **Facing education with challenges of information age**

The system of higher education consists primarily of three elements: the creation of knowledge and evaluation of its validity; the preservation of information; and the transmission of this information.

Today, the education tools include computers and software, and networks, multimedia-based systems, e-mail and the Internet allow interactivity and the access to an enormous amount of information. Mandatory courses in information technology familiarise students with computers, allowing them to do their assignments using word processing, presentations and research from the Web, and to communicate with professors and classmates through e-mail, without constraints in time and location. But, through such courses new technologies are simply added to other topics, and not really integrated into transfer of knowledge and learning.

Adaptation to the requirements the information age is met with the development of concepts of open mind for equality, shorter progress, task-driven teaching, case teaching, active thinking, strong impact, visualisation, interesting, large amount of information (Wu; Sun, 2014, 184-186). It is thus less orientated towards general knowledge, and more towards problems.

Problem-based learning/teaching model engages students through examining problems connected to real life and finding meaningful solutions. It is a constructivist approach to cognition, by helping strengthen understanding and constructing knowledge while creating solutions to complex problems. This approach leads towards a more active participation in the learning process, itself. But, it does not address the problem of technology integration, nor does it facilitate developing the independence of judgment.

On one side, new methodologies strive for the creation of effective and motivational learning systems (Hazari; Penland, 2012, 22), while on the other, students need to be able to use information as independent, reflective decision makers (Moore, 2015, 51). When students develop the abilities to work more independently, lecturers are able to work more efficiently and effectively on the expected curriculum. Goal setting, and education, unlike traditional, according to each student's specific conditions, can adjust the most appropriate teaching/learning objectives and teaching goals according to the needs of learning. The role of teaching in information age

in the function of development is amplified, but also stressed, through the new multimedia teaching.

These changes are above all oriented towards the workforce, in the sense of obtaining information and ability to access and use available sources and tools. Thus, the education system is expected to facilitate virtues like technological literacy, collaboration, and media fluency, rather than theoretical knowledge (Larrota; Ji, 2016, 24).

This dimension of learning has a universal impact. Today, the Internet and networking have laid the foundation for a large part of the economy, and at the same time effected the educational process. Networking technology has become an essential pedagogical tool in academic programs. For example, key principles in the process of the study program of “Information Technology”, according to Soleša and Blagojevic (2011), are:

1. The curriculum must reflect the integrity and character of information technology as an independent discipline. It is a discipline that combines theory, practice, knowledge and skills.
2. The curriculum must respond to rapid changes in technology, but also to encourage students to do the same. One of the main goals of the study program “Information Technology” that qualifies students for lifelong learning.
3. The curriculum as a whole must maintain a consistent ethos that promotes innovation, creativity and professionalism. At the same time, students must be encouraged from the outset to maintain a professional and responsible attitude to their work.
4. Designers have to be constantly seeking the better ways of implementation of the curriculum, the continuous improvement in all areas of the study program “Information Technologies“ (p. 524-525).

### **Sustainability of education technologies**

The conditions under which the knowledge is acquired and produced are inseparable from the framework of the global transformation of capitalism (Fuchs, 2016, 223). Education has also become a commodity, market-oriented and privatized. In the social context of production of knowledge, the main change is the massification of education. The result is that more people are studying, leading to higher spending on education, which is today manifested in ever more people wanting to study, but fewer of them can afford it.

Knowledge has two functions, firstly, in the production of surplus value (on the market) and, secondly, in the production and reproduction of inequalities. It is identified with the acquisition of practical skills and abilities required to perform a specific task, on the one hand, and with the acquisition of broader knowledge, which included a “general culture” and building aesthetic judgments (to produce enlightened individuals whose function was to improve the society), on the other. So, today, knowledge differentiates between those who possess and those who do not possess technical knowledge, as well as between those with and those without broader understanding of the objectives and use of technologies. In that context, it should be considered that, today, most young people use collective web intelligence based on collaboration, which can have various implications on collective web intelligence in practice (Soleša-Grižak; Soleša, 2015).

The problem with knowledge as the base of economy, however, is in elusiveness of different contributors, which makes transformation more prone to statistical manipulations than to reality. Findings confirm that knowledge-intensive encompasses the synergy of not only technology and education, but also organisation, economic and technological system, and even geography (Leydesdorff, 2006, 5). In that context, knowledge-based economy seems to be a discourse which highlights the need to adapt to technological changes through acquiring necessary skills.

In the doctrine dedicated to development, primary alternative to the disputed growth model is the paradigm of human development. According to this concept, there is a necessity for the capabilities that each person has in the key areas of life, health and bodily integrity, including political freedom, political participation and education. This perception of development recognizes individuals as possessors of inalienable human dignity that must be respected by all laws and institutions. A rational political community recognizes, as the most basic minimum, that its citizens have rights in these and other areas, and develops strategies that in each of these advances people over a certain threshold of possibilities.

If the interest of the nation is promotion of democracy dedicated to developing opportunities for “life, liberty and the pursuit of happiness” for all people, but also sensitive to human needs, the education system should include the dissemination of value-capacities of an individual. Among them, Nussbaum considers as crucial:

- to competently reason about political issues affecting the nation: to examine, reflect, argument and debate, without submitting to tradition, or authority;
- to recognize citizens as humans with equal rights, to view them with respect, as a purpose;
- to care about the lives of others;
- to perceive the variety of complex issues affecting the human life, in a manner informed understanding of human stories, not just data sets;
- to critically think about the political leaders, but with an informed and realistic sense for the possibilities open to them;
- to think about the good of the nation as a whole;
- to see own nation as part of a complicated order in the world in which some questions require intelligent transnational deliberation for solutions (Nussbaum, 2012, 25-26).

During the eighties and nineties, the international agenda has produced a discourse about nature, the environment and sustainable development. From the recognition of sustainable development in the context of the global agenda, education regarding the environment is recognized as a key way to affect change attitudes and behaviors necessary to encourage respect for nature, stop environmental destruction that threatens nature and thus ensure the survival of the human species that depends on Earth's resources (Ferguson; Thomas-Hope, 2012, p. 92).

Higher education reacted through instrumentally meeting the demands, through transdisciplinary and participatory approaches, but still remains to be more opened for qualitative advance in researching and understanding (Muller-Lindeque, 2016, 428). Its functional role, in the sustainable development aspect, should be in bridging the theoretical and practical, through building individual potential in the sense of capacity, action and realisation (Vega-Marcote; Varela-Losada, 2016, 83-84).

Generating information on the market leads to the use of the information being perceived as a quality, which establishes the importance of statistics and other comparative methods (Matzler; Abfalter, 2013, 145). The problem is that statistical methods do not provide for a value-enhanced, but a goal-enhanced reactions.

The concept of education for sustainable development is based on two assumptions: firstly, that sustainable development is undeniable concept and, secondly, that education should be used to improve predetermined

goals. Hence, education is, in that context, expected to exert influence on the modern world - “sustainability literacy” (Selby, 2009, 208). Today, education for sustainable development is being constructed on the three concepts environment, sustainable development; and education, which have multiple and changing the meaning. For example, some approaches add the concept of nature, which others subsume under the concept of environment. On the other hand, environment in terms of its value content concerns human surrounding in general, i.e. including nature. Since a globally dominant perception of what constitutes sustainable development is only one of the possible views, it follows that the other perceptions are marginalised. Consequently, the paradigm sustainable development is problematic in practice. Thus, if a system of education for sustainable development relies on problematically conceptualized economic interests as the base of sustainable development, it actually exerts influence towards the reproduction of these values, underlying beliefs and systems. Such a system, if directed only on one way of looking at things, is not appropriate and, as such, can even be contrary to national and local needs.

The paradox is that education is proclaimed as essential to sustainable development, but at the same time established for unsustainable societies, i.e. simultaneously a part of the solution and a part of the problem.

Education is also expected to convey the reality of living with people. It should, thus, develop the sensitivity to alternate realities, critical evaluation and substantiated decision making about appropriate interactions, including the prevailing ways of living with nature and existing in social, economic, political and cultural reality. The practical challenge of value-conceptualisation of education for sustainable development at the international level is generated from the fact that if in a projected discourse of sustainable development incorporates hegemonic constructions of the basic values, education system becomes necessarily institutionalized in a way that the dominant values and knowledge play in a convert manner.

In the context of sustainable development, Rio Declaration recognizes *inter alia* that children and youth are subject to the consequences of environmental degradation, but also their proneness to thinking in accordance with environment. Education is widely recognized as the most appropriate forum for the inclusion of children and young people in sustainable development. Formalising curriculum for still discordant concept of sustainable development, threatens to educate brokers and objects, instead of subjects of change.

This has emphasised the virtue of leadership as a goal in education. In this context, it is noted that for a change of outcome a dedication is needed in the culture that produces desired result, i.e. that the change is produced by people (Buller, 2015, 217).

The need to integrate sustainability has also, as a side-effect, led to the proliferation of international instruments dealing with this issue. The discourse of education for sustainability promotes as key themes lifelong learning, interdisciplinary approach, partnership, multiculturalism and the empowering (Fien, 2002, 106). Education for sustainability implies redistribution (including digital competence), thus also a lifelong learning process (Stomquist, 2013, 30), which recognizes that problems exist within a socio-economic, political and cultural processes. Within the auspices of UNESCO, states have proclaimed commitment to work on “improving the competence and involvement of civil society in dealing with environmental problems and development problems ... integrating environment and development in all sectors of adult learning and developing an ecological approach to lifelong learning“. (UNESCO,1997,12) Adoption of the resolution Decade of Education for Sustainable Development and related decisions, such as the Framework for Action and the Decade of Literacy, (UN, 2001) has articulated the impact of sustainability on the framework of education. In this context, adult education, based on a culture of sustainability, is encouraged, and highlighted is its importance for “the construction of equitable, tolerant, sustainable and knowledge-based companies“ (World Conference, 2009).

### **Conceptual perception of education in Serbia**

Serbia has signed the Strategy for education for sustainable Development, (UN, 2002), and has confirmed its commitment to education for sustainable development by the acceptance of the Declaration “Building bridges for the future” at the UNECE Ministerial Conference (UNEC, 2007).

According to the National strategy for sustainable development (NSDS), the concept of the economy based on knowledge requires educated people who learn fast, that are innovative and creative and who change their own skills in line with technological developments and global trends of development, and this should be achieved through education for sustainable development. On the other hand, the dissemination of knowledge on sustainable development in the narrower sense is a prerequisite and an important tool for good governance, decision-making and the promotion

of democracy, strengthening the capacity of individuals, groups, communities, associations and state and judgment in the choice in favor of sustainable development, and to achieve this, education for sustainable development must ensure the integration of knowledge from all relevant sectors (dimensions), with emphasis on the use of that knowledge in order to provide better quality of life for all citizens (NSDS, 2008, 9). This strategy explicitly distinguishes sustainable development education and education for sustainable development, and capacity building for sustainable livelihoods in relation to the capacity building of adapting and creating change agents, “which is essentially taking place in institutions of higher education” (Sherrie; Leavitt, 2015, 240).

The reason for establishing the transformation for sustainable development on education, NSDS bases on two assumptions. Firstly, “dominant factors of the development of modern economics are applied knowledge, education and science, and that the Republic of Serbia can not choose whether to join the globalized world economy and new technologies, or whether to continue the market and political reform, as it has already opted to join the EU with all the economic and legal, political, administrative and environmental consequences of such a choice.” Secondly, “given that the global changes in the structure of production factors indicate the increasing dominance and superiority of the so-called intangible factors of economic growth, such as knowledge, information, organization, culture, information, education, the legal system, the Republic of Serbia has no choice but to accept a strategy to support the development of human capital” (NSDS, 2008, para.3).

Part of the argument, which is based on market and political reforms, however, does not contribute to the functional role of education as a factor of development. The universalisation of the values and application of modern technology has already led to the development of fundamentalist concept of consumer society, which has its reflection in education, which is characterized by the destruction of the individual self-confidence, because, like every dogma, it imposes a way of thinking and uncritical attitude towards the decision-making power. For this reason, and due to privileged access to global information resources, economic and social development of rich nations and individuals unidirectional such a system is unsustainable in the long run. Therefore, functional logic imposes that a key segment of the education system must include a transformation in the sphere of ethics, as a basis for the establishment of justice, security, efficiency and honesty in the information age (Stevanović; Djurdjević, 2015, 50-52).



Education is perceived both, as factor and as a carrier of development. As a factor, to be facilitated through education is the improvement of the quality and adaptability of the workforce, for what is necessary to achieve: investment in knowledge and skills of people through quality, efficient and practically applicable education and continuous training for members of all groups in society, based on the principles of equal opportunities; social inclusion of young people, women and members of marginalized groups and measures to encourage their employment. On the other hand, in the carrier function, education should promote and develop public awareness of sustainable development. In this sense, the NSDS adopts a concept which considers education and continuous improvement as factors of the knowledge economy (NSDS, 2008, para.4). The result is the integration of adult education in numerous higher education institutions in the Republic of Serbia, and it has been conducted by numerous state owned higher education institutions: Faculty of Agriculture; Faculty of Architecture; Faculty of Forestry; Faculty of Geography; Faculty of Organizational Sciences; Faculty of Philosophy, Faculty of Philology; Faculty of Technology; Belgrade University, Center for Strategic and International Studies (Orlovic-Lovren, 2013, p. 313).

The importance and the role of new technologies for the improvement of the education system is recognised in the Education Development Strategy in Serbia until 2020. The governments, Social Inclusion and Poverty Reduction Unit released a publication “Research on the Use of ICT in Schools in Serbia” recognises the need for a commitment to the use of ICT in formal and non-formal education, to adequately meet the challenges of the information age and contribute to socio-economic development. The publication focuses on topics, such as: understanding the concept of ICT application in the teaching process, systemic environment for using ICT in education, institutional framework and strategic approach, the availability of equipment and computer software, levels and opportunities to develop teachers’ competences, access to development of competencies in teacher training colleges, levels and forms of ICT application in education, forms of ICT use by students for learning purposes, the practice of distance education and the prerequisites for improved application of ICT in teaching. The study finds that the existing digital learning materials are under used and creation of new materials depends on the enthusiasm of individuals and proficiency in English, which is a prerequisite for accessing international websites.

Findings of this study represent the guidelines for promoting the linear role of ICT in education, as a way to improve the quality of the education system and adapt it to the needs of the information age. It opens a question

of perception of information, since knowledge of foreign language, becomes a systemic precondition for participation in gaining necessary skills (Durrani, 2008, 24). Those seeking education and/or information are, namely, in the position of recipients, which fosters inner inequity, through privileged availability.

Concerning education, the concept is generally based on inclusion, or in a broader sense the principle of fairness. Objectives to be achieved, however, seems to remain in the realm of modernisation, by following the path of developed countries in terms of economic growth, free market and liberal-democracy.

### **Conclusion**

The technological revolution has not, in and of itself, changed the method of production, which still remains mass production, and that it instead only adapted the method of production to a highly-digitized and information-based environment. Information, in a networked and interconnected setting, *eo ipso* becomes a consumer product, and as such is produced and manipulated on an industrial scale. Therefore, when contemplating in the social context, the education needs in today's information age only exceed those of the industrial age, in terms of the demands imposed by increasing technological possibilities. In practice, this means that education in the information age requires augmenting an individual person's capacity to properly absorb and perceive information, given the quantity and speed with which it is produced.

The ability to manipulate information does not necessarily contribute to the overall knowledge of the labor force, instead lowering the capacity of participants to adequately handle the enormous amounts of mass-produced information they are deluged with. Paradoxically, this results in the perceived need for labor-force participants to be permanently increasing the number of skills they possess, while not simultaneously improving their quality or effectiveness, which could consequently lead to a nominally "highly-skilled" labor force, but one that is actually less capable of utilizing the skills it possesses for real economic development. This further implies that the type of education required for dealing with the needs of the new information age cannot be based simply on increasing the number of different skills that labor-force participants possess, especially in terms of skills espoused as being necessary for a "knowledge-based economy." The concept of a "knowledge-based economy," while laudable

as it was imagined, currently has the tendency of being oriented toward results that have demonstrated little palpable benefit for the societies, particularly in the financial-services sector.

The transformation of information into an industrially mass-manufactured consumer product requires a parallel transformation of the broader society into one oriented toward genuine knowledge. The currently prevalent concept of a “knowledge-based economy” should, therefore, be updated and advanced to one of a knowledge-oriented society. Consequently, the education system in a knowledge-orientated society would go beyond simply increasing the number and type of skills labor-force participants possess, focusing instead on their ability to properly absorb and perceive the information being mass-produced around them, while also developing and nurturing a system of values that is capable of meeting the needs of specific communities and providing them with the support they require to adapt and thrive under changing conditions in the broader social and economic context. Humanity requires a value-distance from technology. The compliance with the ability to predict a population’s behavior, making population controllable, necessitates the developing of an individual moral profile in sense of critical stance towards power. This seems to be a crucial value for the healthy competitiveness of a nation.

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# ENHANCING EFFECTIVENESS IN BUSINESS MANAGEMENT CURRICULA AND TEACHING: THE SERBIAN PERSPECTIVE

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## Abstract

*The main aim of this paper is to examine the improvement of teaching methods in transition economies. The analysis of circumstances in Serbia includes these aspects. The objective of this paper is to examine management teaching methods and the importance of further development of management curricula through appropriate structural advances. Methodology used by authors includes teaching process modeling techniques, analysis and comparison of curricula, programmes and accreditation requirements, project technique of monitoring and evaluation. The results and implications obtained in this work acknowledge some US and EU approaches, advocacy of innovative management teaching and learning processes followed by the modeling of teaching methods. Apparently, curricula should be optimized so that they reflect the importance of corporate responsibility, capacity of managers and specific needs in SMEs as learning organizations, and as largest employers in both EU and Serbia. The authors have formulated the research problem by establishing that management lessons, lesson work, monitoring and effectiveness need to be structured better in order to enhance management teaching methods and they have proposed a model reflecting their experience optimizing specific student and teacher roles with time. In the described structure, discussion is followed by recommendations and future research directions. Lastly, the paper ends with conclusion and literature.*

**Key words:** Curriculum, Management, Serbia, teaching methods, lesson, learning organization.

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## Introduction

The main goal at university and college level education based on the modern curriculums in management in Serbia is a reflection of advancements and contemporary trends mainly in US and EU, while the regulatory framework is focused on EU standards and guidelines. Management education in Serbia is in the process of defining a more specific focus on how to prepare students for real business life in corporate environment of the future. Although management is a science, graduates should possess sound academic and tested knowledge to become business leaders with effective practice based on a proven set of soft and hard skills and capabilities (Kanter, 2003, p.56). Emphasis is on practice oriented teaching, which is balanced transferring of hard knowledge with proven and efficient practical soft skills. The students should be prepared for the needs of future practice, e.g. a business environment in which students shall become efficient and successful practical managers. Therefore, curriculums should be updated reflecting not only EU trends, but also some specific circumstances of the Serbian economy, businesses as employers in the second decade of the 21st century.

Universities in Serbia are facing a complex process of curriculum reforms and updating to reflect the changes in EU, while taking care of the needs of the national economy and business environment in the process of Serbia's accession to the EU. New teaching methods based on reformed and newly created curriculums are therefore an inevitable strategic development pathway in transition. Obviously, the underlying premise is that comparative advances, methods and experiences are valuable, and there are vast opportunities to utilize the methods and techniques to improve quality. Part of this process requires the application of enhanced teaching methods, to follow main approaches, modernize literature, exercises and curricula. Recent studies highlight the value of using life-long learning programs, coupling management education with labor market needs and revisiting the case study method (European Commission, 2015a & European Commission, 2015b). Therefore, the theoretical view presented in this paper is based on the development of a model showing the movement of planned curriculum content through student activity, teacher activity, time required, monitoring and lesson effects. This theory is enhanced by the existing teacher practice of the authors and the model presents a hierarchy of their concepts. Authors present the case in this paper that the next step after modeling, can push management schools (Bennis, & O'Toole, 2005, pp. 96-104) to develop long term visions that may not have been

possible without comparative teaching analytics and logical structuring of management education. Arguably, this model will be relevant in both the private and public sector management schools. Private sector examples were mostly used to support the model, but the future focus will be on opportunities in both the private and the public sector of education.

Some of the rewards of the author's proposals include increased transparency, better decision making and transformation of internal processes. On the other side, some challenges include concerns about curriculum quality, structuring literature and exercises. Enhancing management teaching methods can sometimes be constrained by political, economic and social conditions in the government domain. It is thus vital to recognize challenges, mitigate some of the risks by effectively and efficiently managing development of teaching methods and techniques.

### **Methodology of research and collection of empirical data**

This study is primarily qualitative in research nature and is based on the method of analysis of the content of teaching curriculums at Serbian universities and colleges in the field of business management. Fundamental constructivist perspective is a solid foundation for the perspective initial research and as Merriam (2014) rightly pointed out, the primary goal of qualitative research in social sciences, namely in the field of management sciences, is to gain a solid, deeper and profound understanding of the phenomena analyzed. Authors examined on a comparative basis the representative sample of five prominent state owned and five private universities and business schools in Serbia. The qualitative case study envisaged a research strategy aiming to reach deeper meaning and understanding of the researched topic, involving data collection and analysis of curriculums published on public websites of the universities and higher business schools in Serbia. This approach is a starting point for further investigative strategy aiming to obtain more complete analytic conclusions based on precise analysis of university and college contemporary management curriculums. Partly observed in the real life teaching context this case study analytic approach is an enquiry on the representative sample. As suggested by Yin (2008), and as defined by Merriam (2014) this case study includes ten university level educational and teaching institutions in the field of management sciences in Serbia.

Data was gathered through internet analysis of the public domain websites during the first quarter 2017, representing only the data and

information from websites. Authors analyzed under-graduate, graduate and post graduate curriculums in a close correlation. In the second part this methodology is then followed by practical experience of authors in business and management teaching and implementation of management curriculums. Similarly, according to Stanković (2016), an analysis of the study program of engineering management at the State University of Novi Sad – Faculty of Technical Sciences, was methodologically based on the modern management approach, focusing on leadership skills and engineering management in Serbia

In the field of enquiry of the authors the total number of universities and high business schools was less important than the representative sample based on the selection of the five state owned and five privately owned educational institutions, since it is presumed that in such research enquiry, by selecting the ten items of the total population, there is rather small or even negligible element of chance and risk vis-à-vis accuracy of the research results. Therefore, the total research sample is rather small, but the selection of the “target” institutions is representative since the authors used adequate criteria in the sampling procedure (Kotari, 2004), notably the university size, number of students and diversity of various programs.

### **Research results on management education in Serbia**

Management curriculums should aim to assist and guide students to explore core problems and discover practical solutions, to develop student leadership skills, assist them in finding adequate answers and responses to complex and demanding real life questions, to stimulate creativity and deep analytical insight, to use analysis and knowledge attained through rigorous exploration of management sciences.

Following is a basic analysis of availability of management programs, classified by titles of main programs, at 5 state owned and 5 private universities and business schools in Serbia.

**Table 1** *Basic analysis of management education programs in Serbia*

	<b>University/faculty</b>	<b>Undergraduate level</b>	<b>Master level</b>	<b>Specialist</b>	<b>Doctoral level</b>
1	State University of Belgrade – Faculty of Organizational Sciences	Management Operations Management Quality Management & Standardization	Management. Management & Organization. Business Policy E-Commerce and Systems mngmt. Management of Operations.	Management Information Systems International master Studies	Management. Information Systems and Quantitative Management. Healthcare Management.
2	State University of Belgrade – Faculty of Economics	Marketing mngmt. Accounting, Auditing & Financial mngmt. Commercial mngmt. & Marketing. Tourism & Hotel Management.	Business Economics & Management	No	Business Management
3	State University of Nis – Faculty of Economics	Accounting, audit and financial management Business management	Accounting, audit and financial management Enterprise mngmt. Tourism mngmt. International management	No	Business management
4	State University of Kragujevac – Faculty of Economics	Business economics and management	Business economics and management	No	No
5	State University of Novi Sad – Faculty of Economics	Agricultural Economics and Agribusiness Management Business Information Systems	Agricultural Economics and Agribusiness Management Business Information system	No	Business Economics and Management Business Informatics
6	University Business Academy Novi Sad Faculty of Economics and Engineering Management	Business economics and finance Engineering management in agribusiness	Business economics and finance Engineering management in agribusiness	No	Business economics and finance. Engineering management in agribusiness.
7	University John Naisbitt Faculty of Business Study	Business economics	Business study	Health management	No
8	Singidunum University – Faculty Biz. Study	Business economics	Business economics	No	Contemporary business decision making
9	University Union – Belgrade Banking Academy	Economics and finance	Marketing mngmt. Banking, finance and business.	No	Finance
10	Int.University of Novi Pazar	Business Management	Business Management	No	No

**Source:** *Author's findings*

Table 1, with research findings, shows that the study of management is well represented at undergraduate and master's level of study. Some space obviously remains for both state owned and private universities to expand the scope of study through specialization and doctoral studies. Both findings will be studied in more detail by authors in subsequent works.

### **Introduction to some innovative management teaching and learning processes**

Throughout the world, the industrial production paradigm has shifted from material and labor-intensive products to knowledge-intensive products and services. This places a high value on knowledge institutions, particularly those involved in management education. Authors therefore focus on how to best support this critical sector by improving the management teaching and learning process, particularly in higher education institutions.

For subjects that normally and logically belong to management education teaching courses and study content are typically implemented through lectures, seminars, exercises, developing term papers and projects. Examinations are aimed to check the level of acquired knowledge and should nevertheless focus on core professional competencies as suggested in one study for corporate strategy and businesses as learning systems (Campbell & Luchs, 1997). As such, they are implemented as individual examinations (written and / or oral), colloquia, seminar papers and defending study projects. Before the teaching process starts it is required to provide adequate literature, supplementary materials and auxiliary teaching materials. Teaching and learning processes according to this specific methodological approach is consistent with the experiences and methods that both authors applied at different Schools of Management in Novi Sad and Belgrade, Serbia. In addition, authors proceed from higher education and study programs accredited in Serbia (Commission for Accreditation and Quality Assurance, 2017). On the basis of these assumptions authors proceed neither from conventional (i.e. scientific management, systems theory, functional, sociologic and contingency approaches) nor neo-conventional theories (i.e. attributes of excellence and eternally successful organizations) but are closer to that of an elaborate learning organization theory (Senge, et. al., 1999). Essentially, the remaining two modern theories relate to total quality management and reengineering. It is, therefore, presupposed that the reader is moderately acquainted with all of these theories.

## **The main pros and cons of management teaching methods**

The (EC) 'Ex cathedra' approach is a classical teaching method meaning that the teacher lectures by providing instruction in the foundations of theoretical management. This teaching method includes previously prepared computer presentations (Power Point). The content of computer presentations consistently matches the content handout representing a teaching aid for this type of lecture. Given the nature of the study of management and modern curricula the EC method in courses accounts from 30 - 40% of the total study requirement. Lectures involving EC method are held only by teachers elected for a specific scientific-teaching position however guest professors can also be valuable to determine the workloads for students in the EC method of lectures every hour of lectures is counted as 1 hour of student workload. Contrarily, the (CB) "Case" (case based) teaching method represents lectures in which the teacher presents examples from practice (or prepared written cases for a teaching purpose), which practically illustrate the theoretical content presented through the above described EC method. A class of 20-30 students may be divided into *syndicates of 4 to 6 students*, and the bulk of work consists of tasks carried out on a cooperative basis or in the *Pigors incident process* of case study (Bazala, Kvasnička and Razum, 1962). Power Point presentations with CB examples that represent auxiliary teaching materials are used either by teachers elected to a scientific-teaching position, guest professors or more preferably experts from business practice. It is expected to attract active student participation in seeking solutions to a practical problem. The teacher assumes the role of a facilitator rather than an instructor. For determining student workload in class CB method every hour of CB lectures is calculated as 2 hours of student workload as the student must be prepared using literature and additional teaching materials before the actual class takes place.

### **Lectures, seminars and projects remain key elements of management teaching methodology**

Special attention in lectures is attached to those parts of the management curriculum which can benefit from oral interpretation, in order for the students to better and more completely understand of the subject matter. Certain parts of the curriculum open opportunities to take into consideration the contemporary developments in the various management subjects. To perform lectures in the envisaged program content applied is a combined method. This method consists of a combination of "ex cathedra" and "case" method of teaching.

Seminars are a form of application of professional or scientific education of students. The aim of the seminar is actual implementation of education of professional or scientific activities of management subjects (procedures, projects, analyses, processes, methods, functions) or a simulation, in order to introduce students to the real conditions of professional work or scientific research. As a rule seminars are run by assistants. Each management subject, for which seminars are prescribed, includes the development of at least one research paper. Seminar is carried out in the form of written reports and presentations or in the form of a computer presentation to be used as part of a defense of written work. A seminar is defended during a colloquium and defense is assessed with grades from A to F or 5-10. To determine student workload in seminars a one hour seminar counts as 1 hour of student workload, preparing a seminar paper counts as 20 hours of student workload while preparation of computer a paper presentation is calculated as 5 hours of student workload. To determine student workload the time required for the whole project is calculated as 40 hours of student workload. During the semester students can do a thematic essay in order to demonstrate that they have mastered knowledge of management in a certain field up to a greater degree. Structure of essays are discussed and agreed with the teacher.

### **The role of exercises, management literature and auxiliary teaching aids**

Management exercises are a form of teaching within which practical application of the course content is exhibited or in which applications of theoretical content from lectures is made through numerical examples. Exercises can be practical in a business organization, a laboratory or involve an auditory performance. As a rule exercises are run by assistants. Management subjects for which exercises are prescribed require taking two tests and two sets of numerical examples. Each management subject that contains exercises should be methodically developed to include workbooks organized with exercises (15 exercises for each subject). Achieved success in the colloquium is assessed with grades from A to F or 5-10. To determine the student workload an exercise of one hour counts as 1 hour of student workload, while preparing a colloquium is counted as 30 hours of student workload.

Management forums represent argumentative defense of positions in relation to specific business problems. It is desirable to form two groups of students with 2-5 members so to confront opinions, and an 'audience' with other students which will decide which group is more

convincing and more successful in the debate. Students who prepare for the discussion will the better understand management lectures, and their contribution to classes will be uniquely appreciated. Case studies from practice with experiences from a particular segment of international business or finance can be used to support the arguments of the debate. Here it is also possible for debaters with different views „to cross spears.” Literature incorporates compulsory and auxiliary sources which include teachers’ textbooks, thematic books, scripts, professional and scientific articles that are available for students in the faculty libraries. All compulsory professional literature that serves to master the content of the study program must be reviewed and approved. If authorized lectures of teachers are envisaged as mandatory or optional form of literature they must also be professionally reviewed.

Additional teaching materials are electronic or soft copy handouts, case study examples and a methodical collection of exercises organized by individual teaching units within a particular management subject. Using handouts and examples in teaching significantly reduces the volume of student notes taken during lectures, which secures a better concentration of students in the teaching content and increases the range of used material per hour of instruction. The methodical collections of exercises are additional educational materials designed to assist students in preparing exams and tests. They are organized by hours of exercises and follow the actual management lectures organized by weeks of instruction. All additional teaching materials should be made available to students on the website of the faculty before the beginning of classes.

### **Developing pedagogical counseling programs for students**

The pedagogical program, once developed by a management school, offers ample opportunities to discuss and reflect on key counseling design questions, explore counseling programs from a pedagogical perspective and implement and evaluate new tutoring designs of benefit to students. This section describes some of the lessons learned from the implementation of the pedagogical counseling exercises of the authors:

- Regular attendance at lectures is good and is recommended for the final success of the student.
- The presence at lectures is mandatory (min 80%).
- Irregular attendance at lectures is a waste of time.
- Previous preparation is very useful for a successful following of lectures and active student participation.



- For successful understanding of the content of lectures it is necessary to master the previously handled management themes.
- Continuous work throughout the semester provides conditions for best success with minimum effort.
- Detailed taking of notes is neither necessary nor beneficial.
- Concentrated listening and directed thinking about management content and active participation is more efficient for success.
- At the beginning and at the end of the lecture it is recommendable to allow questions about issues or lack of understanding from previously processed management content.
- During the lecture it is desirable to establish a two-way communication through mutual questions and answers forming a dialogue between the teacher and students.

### **Developing assessment tests, written and oral management exams**

The knowledge and competencies acquired by students are periodically checked after lectures. This is especially achieved by producing and defending seminar papers, through tests, oral and written exams. A colloquium and defended seminar papers with an above average grade may replace a part of the written exam. An oral part of the exam is required, a student takes it individually and achieved success in the oral exam must make up at least 30% of the final grade. The actual grades for all forms of assessment will be discussed in much more detail later on in the section on ranking of knowledge.

Student workload in preparation of an exam is calculated as follows:

- With light teaching materials such as scripts the time needed to prepare as exam is calculated as 12 pages per hour of learning.
- When using more difficult teaching materials for exam preparation (books and collections of examples) the student workload as time required to prepare the exam is counted as 8 pages per hour of learning time required.
- When utilizing teaching materials in a foreign language student workload is calculated as 5 pages per hour of learning.

Based on the pedagogical program and stemming from the author's experience and development of the science of management exams should be structured be to build student knowledge and assess their progress. Therefore, this section describes some of the lessons learned from the implementation of management exams by the authors:

- The exam typically consists of a writing section of 30 points and an oral part also comprising 30 points. Students must pass both.
- A prerequisite for taking the examination is an obtained teacher signature and completed pre-exam requirements.
- A prerequisite for the written part of the exam is positively evaluated and orally defended term paper and regular attendance.
- The exam must be declared for the period within which the student wants to take it under the regulations of the management school.
- The date of the written exam is published on the notice board and / or web sites of the management school.
- The oral part of the exam is taken immediately after the written.
- The exam is considered passed with a total of 31 or more points.

In the next section described are some of the lessons learned from the structuring of exams by the authors. The exam objectives are defined and structured by learner or practitioner level of knowledge.

Learner questions test foundational grasp and require comprehension (which is quite separate from mere recognition or memorization of management issues). For example a learner question would require from the student to define a basic management project of a company, to explain a specific management strategy or to illustrate the basics of team management. Practitioner-level questions present management scenarios and require the student ability to integrate and apply knowledge in new contexts, analyze, troubleshoot and solve problems from practice. An example of a practitioner-level question would require the student to critically reflect on management of project implementation involving planning, organizing, controlling and implementing key activities with time and resource constraints, quality management and change management aspects as well. The cognitive aspect of the practitioner level testing is crucial for student and professor development and may involve more complex issues such as independent establishing of goals, setting right priorities and managing time, employing effective communication skills for management within a virtual team.

- The test typically contains 20 questions; some learner level questions with 5 answers marked A to F or 5-10, only one correct.
- Every question must be answered by circling.
- Part two holds practitioner level written answers and calculations.
- The correct answer carries one point, without negative points.
- The duration of the exam is limited to 90 minutes.

According to the experience of authors an oral exam is complementary with a written one. Normally it includes some of the following aspects:

- The questions are in the field of management curriculum studies.
- An oral defense of seminar papers lasting maximum 15 minutes.
- The student takes the floor according to the order which was agreed in consultation with the teacher based on completed papers.
- Questions are asked interactively regarding the seminar paper, one by one according to the student's presentation.
- Tempo of candidate presentation of: An excellent pace enables a student to say the most important things about the asked question in 3 minutes without pause and reflection. A minimum tempo for a passing grade requires at least 2 minutes of coherent responses and point out essential things from management, without repetition, errors and additional follow-up questions.
- Repetition: Means a repetition of already said or permutation of the same sentence reducing student's points on the issue at stake.
- Errors: The condition of having incorrect or false management knowledge helping reduce student's points on the issue at stake.
- The sub-questions to help: It helps reduce the points on the matter.
- Specific sub-questions: A student who has achieved an exemplary pace receives specific sub-questions requiring very short answers for a high score. Each correct answer is half a point more.
- The overall impression of the candidate: Stability and confidence in a given exposure brings half a point more.

### **Ranking of knowledge by types of management subject questions**

One methodology (Walvoord and Anderson, 2011) effectively categorizes the multiple roles that grades serve as an evaluation of student work as a means of communicating to students, parents and colleges about performance, as a source of motivation to students and as a means of organizing a lesson a unit, or a semester in that grades mark transitions in a course and bring closure to it. Accordingly, and in the experience of authors, ranking of knowledge was performed as illustrated in Table 1.

**Table 2** Standard ranking of knowledge on the basis of student's art, technique, or process of narrating.

Type of question	Grade	Student narrative
Any	Poor (5)	Candidate has not seen or heard, has no clue
What	Sufficient (6)	Candidate heard, saw, recounts or simply retells the management subject matter
How	Good (7)	Candidate knows and describes the management subject matter in detail
Why	Very Good (8)	Candidate critically explains the management subject matter
What if	Excellent (9) and (10)	Candidate compares and analyzes the subject matter from different angles offering own opinion and judgment

**Source:** Author's classification.

In the description of their teaching methodology authors also point out to the students that there are no explicit answers to questions such as 'what if question'. Obviously grades can be very relative. Therefore answers are not written in the above materials and textbooks, but rather there is an implicit student knowledge sought and developed that can lead to a variety of possible answers. This knowledge needs to be found and adopted through a quality learning process involving an active student and professor attitude towards the content of specific management subjects. Similarly, in one ground breaking research (Davenport and Beck, 2003) it is emphasized that curriculums are more important than ever while test scores alarm some education experts.

As shall be observed later, particularly in Table 4, this is exactly why authors point out the significance of student-teacher dialogue, mutual attention and consultations which become very significant both during and after every lecture.

This then reveals some potential for further success in emergent collaboration (McAfee, 2006) in management studying and teaching. Authors also shared these practical recommendations with their students:

- In the modern world knowledge is certainly the main means of success and a factor of student professional development. Good education should therefore be the creed of modern Schools of Management and the professor is there to help students in this. Students' success is a professor's success but vice versa also holds.
- For the vast majority of students, knowledge is the only factor on which they can build a successful and happy future.

- Students should learn primarily for themselves, to be competitive by knowing more than others and not exclusively to pass an exam. More difficult times and the struggle for survival are always ahead which requires solid student-professor preparations.
- Up-to-date training and field experience is strongly recommended.

### **Structuring management teaching and learning processes**

Stemming from the practical teaching experiences of the authors proposed management teaching and learning processes can be structured as suggested in Table 3 and Table 4. First, the authors have taken an unfolding order consisting of specific student and teacher roles in Table 3. Obviously the planned time for individual units is efficiently structured to ensure optimal benefits from the teaching process. In the second step authors transformed the content and activities into methods of work and monitoring followed by key expected effects in Table 4.

**Table 3** *Suggested organization of management lessons*

<b>Planned curriculum content</b>	<b>Student activity</b>	<b>Teacher activity</b>	<b>Planned time</b>
<b>Defining lesson goals and forming student groups</b>	Listen to definition of goal, break up into groups <u>in which they function from before and</u> in other activities.	States precisely the lesson objectives, divides the groups: 8 groups with 2-3 students and with 5-7 tasks	5 minutes
<b>Group management case study refreshers</b>	Group activity: Students analyze given case or task, execute instructions, work with them according to teacher's guidelines	Once the guidelines are explained and shared in written form the teacher provides additional instructions to each group individually	10 minutes
<b>Joint critical review of key points and combination with previous lesson to discover basic management principles</b>	During the presentation of results of research a reporter from each group of students provides responses on raised questions and share a conclusion reached by his specific group	Invites group reporters, encourages their presentation, redefines certain tasks, possibly regroups some students to achieve optimal results	5 minutes
<b>Lecturing a new lesson from the relevant management subject</b>	Listen to teacher's presentation, take note of significant information, record homework task, sketch basic ideas, make basic calculations, write formulae and learned mathematical expressions	Presents curricular content, gradually includes conclusions previously formulated by formed groups of students, develops mathematical expressions, presents models, schemes and definitions from relevant management field.	20 minutes
<b>Integration</b>	Briefly respond to questions, comment and evaluate activity of their groups	Raises questions and starts a dialogue on the curricular unit, comments group activity of students and confirms their homework	5 minutes

**Source:** *Author's classification*

**Table 4** *Suggested methods of lesson work, monitoring and effects*

<b>Planned curriculum content</b>	<b>Methods and forms of lesson work</b>	<b>Methods of monitoring students</b>	<b>Expected lesson effects</b>
Defining lesson goals and forming student groups	Verbal monologic method, frontal and group form, sane verbal receptive learning	Monitoring of non-verbal signs of attention	Students recognize objectives of planned curricular activities from the relevant management subject
Group management case study refreshers	Dialogic method, group form, learning through discovery and cooperation with teacher moderation	Monitoring group activity, engagement of students individually, interaction	Students know how to analyze management issues, simulate/ synthesize views on basic management issues
Joint critical review of key points and combination with previous lesson discover basic management principles	Verbal dialogic method, group form of work, cooperative learning with teacher moderation	Monitoring of individual activity of group reporters	Students independently present conclusions and demonstrate the studied management phenomenon
Lecturing a new lesson from the relevant management subject	Verbal monologic method, dialogic teaching method, method of demonstration, frontal method of work, sane verbal receptive learning	Monitoring of non-verbal signs of attention and listening of students, inclusion of teacher's comment from management practice	Students understand functions from the management science, recognize role, significance, functions, authorities of management, can explain that in and out of group
Integration	Verbal dialogic teaching method, discussion, frontal method of work, cooperative learning with teacher moderation	Monitoring of established dialogue and group comments. Monitoring of student responses and assessment of activity	Students are able to set aside the most important knowledge from relevant part of management science, are aware of group functioning and see learning effects.

**Source:** *Author's classification*

## **Discussion**

There is a questioning today of the basic postulates of the organization of management lessons and its various systems across the world. At all levels there is a growing realization that the existing models have not fulfilled expectations and that there is a total lack of relevance between the student needs and the complex, contemporary management in real business life. Management education is not only learning from

management books, memorizing some definitions, but also learning how to observe, how to listen to what the real business life is saying, whether it is saying something true or false. All this is indeed as a significant part of management education. Similarly, management education is not just to pass examinations, take a degree and get a job in business. So, the question is how to bring about the right kind of management education of relevance for real business life. As shown by authors in Tables 3 and 4, lectures do remain important, especially timewise. Authors don't deny that. However, listening, questioning, responding, commenting, monitoring, evaluating, dialogue and group activity obviously represent the *conditio sine qua non* of enhancing teaching methods in higher education. Ultimately, integration of management knowledge and ideas improves the results of both the teacher and student. Only then education can become of prime significance in the communication of that which is central to the transformation of the practice of management teaching.

Following are several further recommendations of authors for developing, enhancing, monitoring and evaluating management teaching methods:

- Develop Strategies for Competency-based Higher Education.
- Transition from Verbalization to Substance in Accreditation, Change and Quality in Higher Education.
- Develop Appropriate Assurance Models for Valuing Learning and Quality in Higher Education in Management.
- Develop Effective Internal Quality Management in Higher Education Institutions.
- Facilitate the Role of Leaders in Higher Education (e.g., stakeholder engagement process).
- Increase Involvement of Women as Professionals and Family Managers in Practical Training of Students (as pointed out before).
- Transition Academic Libraries to Digital Content.
- Build and significantly improve Student Employability Pathways in Higher Management Education. In one comparative research coinciding with author's findings (Tempus project CONGRAD, 2014, p.44) observed is very low correlation between (self) employment after graduation and the former study programme.
- Improve Leadership and Management Competences (Daniel, Boyatzis and Mckee, 2002, pp. 249-251) in particular for Faculty Deans and Department Heads in Higher Education Institutions.
- Optimize Class Size in both Campus and Online Settings.
- Harness ICT for Accessible Learning in Higher Education.



Stemming from the experiences, findings and recommendations of the authors in the development of management education, several avenues for future projects exist. One primary area would be to reexamine its potential impact on business development and new leaders, particularly in developing and emerging economies. A second area of further future inquiry for research projects is correlation of management teaching curricula with actual business needs or skill mismatch (vertical and horizontal) as pointed out by several comparative researches coinciding with author's findings (Tempus project CONGRAD, 2014, p.58; European Commission, 2015b, p.48).

## Conclusion

The theme of the paper reflects the significance of management education. Central to the appreciation of this field, is an understanding of how it can be used to improve the benefits for students and business organizations. This paper examines these issues. Further, it highlights the theoretical basis for using a structured approach. Authors find that the perception of management education as an important factor of economic development has eroded. Management education is viewed by some as a private good with the benefits accruing to the student in the form of higher future wages and quality of life while this paper made it clear that traditional models of management education service delivery are under stress. Declining quality appears to be a structural issue, and changing real business life expectations require new service delivery models. Most university instruction is delivered in the same manner as it was generations ago and this paper suggests innovative forms of restructuring management education. Even if instructional productivity has remained increased, it has fallen relative to other segments of the economy. Therefore, an ultimate question for education policymakers and educators alike is: If management education is essential to business and economic growth, how to best support the enhancement of this critical sector ?

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# THE ROLE OF BUSINESS ETHICS IN MODERN BUSINESS OPERATION

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## Abstract

*Business ethics has been growing from a philosophy discipline to an applied science. That explains its significance for more efficient functioning of various systems in the business world. For that reason, organized societies with developed economies invest in empiric, theoretic and theoretic-empiric investigations of various sectors and applied dimensions of business ethics. Its epistemological sense reflects on increased productivity, more successful establishment of a system of hierarchy within an enterprise, appropriate formulation of the strategy of management, improvement of market reputation, increased profitability and strengthened social responsibility. The complexity of a modern and successful business is based on a series of social factors ranging from anthropological, socially- psychological and cultural characteristics of a human being, to quality characteristics of the global society. That is why the scientific information available to business ethics is synthesized from various scientific perspectives. This paradigm is a starting point of this project which is about the abovementioned subject. Its cognitive aim is presented through the description, classification and explanation of the influence of business ethics to a successful operation of every kind of business institution. As a theoretic investigation which grows from verified scientific information and their critical analysis, it relies on standard, general scientific, basic special and general methods which are typical of the applied scientific disciplines. Business ethics has clearly established two key cognitive bases of its investigations: 1 - Personal value attitude and 2 - Interests of a company, groups and individuals in them. This project is only a small contribution to explaining elementary functions of applied ethics in the business world.*

**Key words:** *business ethics, applied science, business culture, management strategy, system of relations, interest of an enterprise.*

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## **Introductory- methodological notes**

The sense of business ethics reflects to its cognitive ability to practically apply its knowledge. In that way, it directly assists an enterprise to function more successfully and efficiently, to provide the morality of acting in all the levels of business and to strengthen social responsibility. Its sense builds its significance as an applied scientific discipline which does a useful social function. It has to pervade every segment of a firm. Such the ethics is absolute because it is expected to be applied constantly. Its application depends on the obtained knowledge, in the context of micro and macro social and business conditions. Micro-conditions refer to the system of relations in a business organization and macro-conditions relate to a wider range of social circumstances and social influences to business and business ethics. If its application is based on these assumptions, then its success can be expected.

Balanced, harmonious and professional relations in an enterprise strengthen its stability and professional capacity. And by that, its competitiveness at the market increases, too. That is why some writers point out that it is one of the most important roles of business ethics. (Nordstrom and Ridderstrale, 1999, p. 281-282). Moral norms are equal for everybody. They refer equally to all and they have to be applied to each person. Of course, the norms are not the same in every culture, every society, space and time. That is why we talk about the relativity of moral. In order to apply the study of business ethics and in order to implement it in the practice of enterprises, it is necessary to valorize it through specific models which would standardize the acting of the employed according to the moral (Crane and Matten, 2004, pp. 144). And that is usually done through ethical programs, procedures of resolving ethical issues, ethical codices and corporation codices. With the same purposes, ethical boards (ethical committees) are founded, and they are mostly organic parts of administrative boards of enterprises. The professions dedicated to working on a moral organization of enterprises are established, ethical trainings are held and ethical education of the employed is performed, the mechanisms of keeping relations among the employed and those ones who in the first degree take care of the morality of acting are determined etc. There are also the cases when the institutions, which do the works which are exclusively in the domain of business ethics, are founded. Of course, we should not neglect the scientific institutes which study the complex and sensitive questions of ethics in business.

The work has been founded as a theoretical research based on the examined and confirmed scientific attitudes about scientific and social character of business ethics, conditions of its development and practical application. The subject of researching is operated as the role of business ethics in a successful planning, organizing and implementation of any kind of business activity through the establishment of an appropriate strategy of management and establishing the system of relations among the employed. The description, typology and explanation of the way in which this applied science directly causes successful functioning of a business institution in all, and especially in the aspects of interest, are emphasized as central aims of the cognition. For that purpose we have constituted the following individual hypotheses:

- the sense of business ethics is contained in the practical contribution to more successful and more profitable functioning of business institutions,
- business ethics contributes strengthening social responsibility,
- institutionalized and standardized ways of acting according to moral principles and norms improve the competitiveness of an enterprise at the market,
- respecting moral principles in business is the assumption of respecting the market laws,
- verified scientific information of business ethics cause establishing an efficient system of business,
- scientific-theoretical knowledge of this applied ethics enable regular formulating the strategies of management and relationship with employees,
- developing the relations in a firm, which are based on moral principles, provides a higher level of motivation of employees and with that, a better productivity,
- business ethics directly influences the reputation of a business institution as a valued and interest category.

The subject of the study and the established cognitive aims of work determined the use of the methods in various stages of investigation. The methods used as fundamental ones were: generalization, induction and synthesis, and of general scientific methods the authors decided to use the axiomatic and comparative methods. Since it is about a theoretical research, in the procedure of collecting data, the method of document analysis was primarily used. It is about official and public sources of data. The predicative indicators served us to set individual hypothesis as correct as possible. In the investigation, we operated logical and predicative

constants. In the procedure of arranging and displaying the data we lean on the standard methods of classification and the method of correlation. The analysis of collected material was published with the help of the comparative method.

### **Functions of business ethics as an applied science**

Business ethics does a series of useful social functions which can be regarded through two basic aspects: a) the functions that refer to an enterprise and b) functions that refer to employees and other participants in some part of business activities.

If we start from the function of business ethics that refer to an enterprise, we highlight:

1. Participation in defining the strategy of doing business and management of an enterprise. In our opinion this is one of the most important roles done by business ethics. By its scientific knowledge, business ethics contributes the strategy of doing business and management to be formulated as successful as possible, starting from both moral principles and moral norms. In that way it is created such the atmosphere in a collective which is optimal and complete devotion to business activity on internal and external plan. By that, it is significantly strengthened the mutual trust of the employed, their solidarity and loyalty to the firm. When motives are increased, better results will be achieved as well as higher profit will be realized.
2. Establishing moral relations among employees, clients, associates and business partners. This function is founded on the previous one, and represents its practical concretization. The consequences produced by it are identical to those ones in the said example.
3. Stability of functioning and development of an enterprise. The business environment without tensions, arguments and conflicts, without wasting work and creative energy and money on resolving frequent and rather serious problems, contributes a business organization to function by economic commands and according to social norms. Balanced business relations within an enterprise reflect positively to the relations with clients and associates. All that creates necessary conditions for a desirable development of the firm.
4. Providing cognitive frames, ways and means for approving an ethics program, ethics and corporation codex. Business ethics obtains and applies its knowledge. That aim is first realized regarding the approval of those documents which standardize moral acting in doing business



of an enterprise. It is not enough only to issue the program and codices, but to know how to adapt their contents to the character of the organization and the set of more general social circumstances. Besides that, business ethics formulates the ways, as well as the techniques (acting and means) of practicing ethics programs, ethics and/or corporation codices.

5. Establishing the content and the way of ethics training. Without a professional training of the employed in an enterprise, standardization of ethical business would be mostly reduced to improvisation. As it is about a complex and sensitive topic, it is necessary for this kind of activity to be completely professionalized. That means that it would be performed by the persons who are educated to devote to the practical application of business ethics knowledge. For that kind of activities specialized institutions for only those activities can be engaged, or some specific educational and professional profile in firms would be trained for successful doing that job. Depending on the range, financial ability of a firm, as well as the appropriate understanding the seriousness of this profession, in an enterprise, that job would be given to a professional team, or, possibly to an individual. Besides these bases which determine the firm in which extent will the activities of business ethics be institutionalized within the firm, the leaders of a firm (directors, managers) (Daft and Marcic, 2009) have a significant influence. Their consciousness about the importance of business ethics, discernment and readiness to face unethical phenomena; influence the level of the presence of this profession and activity in an enterprise. An also whether it will exist at all, in which way it will function and with which formal, or maybe, informal objectives and so on.
6. Strengthening personal and social responsibility. Moral considerations and moral acting in each collective directly influence the strengthening personal responsibility of each member of that collective. In that sense social responsibility is developed, too. It is important not only for a social community but also for business functioning of an enterprise. As a result of these processes, other positive processes for a business organization appear.
7. Establishing business atmosphere which contributes the development of the competitiveness of an enterprise at market. It is about the environment in which a firm can devote to itself and to its market opportunities. Considering the mentioned advantages of the institutionalization of moral standards, it is clear that in that way, it will become more serious competitor to other similar enterprises at market. The trust of consumers, business partners and associates, the quality of

goods and services, their acceptable price and enough quantity, result a good and reliable market position<sup>3</sup> (Singh, 1989, pp. 51-56).

8. Contribution to more stable functioning of the market laws. This role is also derived from the previous one done by business ethics. If such a practice stabilizes in the business world and if it appears as a rule which is assumed and become a custom behavior, then the laws of market will function in their full extent.
9. Strengthening productivity and profitability of an enterprise. The sense of personal value and importance for a collective develops the satisfaction of employees, the sense of belonging to a team and strengthen their motivation to work. The persons become more professional and devoted to their activities. Productivity also increases with these fact and then profitability, too. Of course, if there are no other complicating circumstances, primarily from the outer surroundings such as: reducing the demands for our goods of services, economic crisis in the country and internationally, international isolation of the country, complete restructuring of the economy, inflation etc.
10. Creating a desirable image of an enterprise. A successful, firm and stable enterprise creates a good image about itself. It is the most important recommendation for the market (Salam et al., 2013).
11. Improving the reputation of an enterprise on a local, state and international plan. The reputation and the image of an enterprise go hand in hand. Business reputation is the identity cart at market. If enterprises identify themselves through the reputation in business, their competitive and market abilities will increase.
12. Developing the awareness about the necessity of morality in business. One can develop the necessity for his own moral acting according to his personal system of values. He creates his conscientiousness on his consciousness and experience that it is correct to act in a specific way. The will to act morally joins consciousness and experience. He expects that from the others. As a rational being he noticeable in experience thinks and makes a decision about what is correct and what is wrong to do. If he has enough experience arguments that ethics in business brings good both for him and for the others, he will develop the consciousness about the necessity of morality in business.

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<sup>3</sup>Many authors write about the significance of business ethics for the satisfaction of consumers and strengthening competitiveness at market. Even in the late eighties J. Sing pointed out that subject. Referring to the European study about the attitudes of consumers he emphasized that over 70% of the examinees decided the response that A basic criterion for buying some goods is the knowledge that its manufacturer respects business ethics.

13. Establishing the environment in which there is a necessity to respect social standards. As in the previous example, a man notices, thinks, checks on experience and makes conclusions about the usefulness of respecting social standards. He understands social and economic significance of the arranged order which grows on values and social norms. Through rationalization, he joins the useful and the valuable, realizing how and for which reasons these categories are complementary.
14. Strengthening the sensitivity to moral problems. Cognition and experience of the importance of morality in business, on one side, strengthens human sensitivity to moral problems. The consciousness about values and usefulness of the morally correct in business produces a kind of accustomed behavior. The absence of such standards or their temporary avoiding in a team creates a worry. A man who has realized the sense, importance and usefulness of one way of acting, and who is constantly being confirmed by experience, will simply notice, feel and understand its absence.
15. Development of freedom to express one's own moral worry. As the consciousness of correctness of moral acting is stronger and an official business environment in an enterprise encourages it, insofar a personal freedom to express one's own moral worry is developing. And also the demand for solving such situation in a regular way, according to the standards and procedures which are formalized in the enterprise.
16. Determining the ways and techniques of preclusions of the violation of moral standards. It is better to prevent than to repair. The sense of this function of business ethics is simply expressed through this proverb. It is better to act before a problem appears. Professionalism, experience and continuous training of ethics, significantly contribute to the prevention of immoral acting. The atmosphere in a team itself, the level of using moral standards, their experience formalization and the degree of sensitivity of the employees to moral problems, also influence to the determination of mechanisms for prevention immoral acting in doing business.
17. Adopting, checking, confirmation and formalization of the ways and techniques of fast and efficient solving the appeared problems concerning moral. The practice of ethics is in serious question in this functional part, too. The verified scientific information and the experiences of business relations and relationships in a moral perspective give answers to the questions which ways, techniques and means should be used to discover (if they have not been prevented) moral problems and to solve them as fast and successful as possible.

18. Determining ethical predispositions for the persons on leaders' positions. Ethics in doing business, besides the established systems, depends on the employees, too. The important role provides higher position in a firm, and with a higher status the possibility to have influence grows. Leaders define the strategy of doing business and management. They are paid to do that. They can formulate the strategy in the context of ethics, but they don't have to. And that is the first level of the power of their influence to the life of a firm. Knowing the relations of the authority and power, we keep in mind that they don't have to stick to the standards of value which are signed by they themselves, or they inherited them. A moral imperative can stay just something that is written. That is why it is necessary to establish the ways and techniques of checking the relations to the business ethics of those ones who in any way aspire to come to one of the leaders' positions. The program and codices of ethics can clearly determine the standards of ethics and as well the ways of their checking. However, none of these checks is absolute. That is why practice always gives answers to these questions for the answers of which we cannot be always sure without it.
19. Establishing the cooperation with a social community. Conscientious, homely business creates presentations about an enterprise with reputation. Every community wants such teams in its surroundings. Of course, conscientiousness is considered to be keeping ecological balance and so many other considerations, too. Employees, associates and consumers are in such the surroundings. And that is one of the reasons why it is necessary to cooperate with it.
20. Development of the culture of moral doing business. All this said factors, as well as those ones which have not been mentioned, if they are firmly established and continuously practiced, so we can talk about such moral business from the aspect of business tradition, they create the culture of moral doing business in an enterprise (Daft and Marcic, 2009, pp. 48).

If we consider the functions of business ethics related to the employed and other participants in a part of business activity, we make the following conclusions:

1. Enable people, through ethical training and other ways, to obtain the consciousness about the importance of ethics in doing business. Establishing systems in order to function according to moral principles and norms and education of individuals to understand the importance of moral acting in doing business are complementary processes. In this

way, persons will, besides adopted representations about morality which they have obtained during their upbringing and socialization and their own experience, develop the consciousness about the necessity, sense and usefulness of practice moral values. If it is about the person who does not have moral habits, by this process he will have the opportunity to realize in which way ethics helps the efficiency and success of doing business, and for the good of all the participants.

2. Developing the sense of common belonging to a team, solidarity to colleagues and loyalty to the enterprise. Through education for moral acting and personal business experience, through respecting his personality by others and realizing his useful role as a whole, one makes stronger connections to the team feeling that he is a part of it. One spends a great part of life at work. If he feels pleasure and recognizes his importance there, he will more reliably develop the loyalty to his firm and the solidarity to the colleagues at work, as well.
3. Developing the devotion to profession, professionalism and permanent professional education. In the said circumstances the employed feels the need to be as useful part of a team as possible, and his work of high quality. In order to achieve that he realize that he has continuously obtain new knowledge, attainments and skills. He has to educate. Besides that, it is necessary to devote himself to his profession in order that he, as an individual, contributes that the team to which he belongs functions in a better way. He will express his professionalism through the relations in all the directions - to the employed, consumers, associates and business partners.
4. Creating the standards of acting out of the enterprise. The seriousness of the work we do influence our behavior out of the enterprise. Harmonious relations at work, satisfaction with work atmosphere, relations to us, good salary, reputation of our enterprise and so on demands from us to organize our behavior according to the said circumstances, both at our workplace and in the community of which we are members. And in that way, regarding business ethics, we contribute the reputation of our enterprise with all the expected positive feedback.
5. Development of the need of planning and organizing our obligations at work and out of it. The arrangement of business order makes us to have harmonious habits or it confirms them as correct in the value and functional sense.
6. Obtaining the consciousness about the importance of regulated and just order of an enterprise. As we have pointed out, the consciousness and experience about the existence of the good, and by its importance and usefulness good for the team and for us, directly influence our decision

to act in a morally correct way. With that, we will be decisive to protect that order by our work and behavior. By education of the younger to these value coordinates, we help them to learn what we know in the easier and less complicated way. That is how the good, as a value, is standardized in comprehension and practice turning into a sort of tradition of a business team.

### **System of relations in an enterprise**

The functional ability and successful doing business in a firm depend on the established system of relations among the employed. We are interested in a moral dimension of this system of relations. What do we mean by the determinant system of relations? A system is an institutional-normative element of a team. It contains specific parts which have to be firmly integrated in the whole. In other words, it is necessary that there exists a factor which unites them keeps them united, building a system. In this case, it is the system of relations among employees. In a society and various social groups there is always a factor which is the center of integration of parts into the system. That role can be done by a value consensus, an authority or social rules, for example (Nikolić, 2011, pp. 243-245). There are open and close systems. Open systems have edge elements or channels which spread along the whole system, and which enable mutual influence of the system with the environment. Such things do not happen in close systems. The elements of close systems can be found in the mutual relations only with the other parts of such systems. In rigid close systems there is not even that possibility. The parts do not have any autonomy and possibility for circulation with any other element or that possibility is limited to a determined number of elements.

Regarding this, we can conclude that the system of relations in an enterprise represents its institutional and normative part. Even more precisely, the relations among employees will be institutionalized, i.e. adopted, formalized and standardized. As being such, they should be in the function of harmonious functioning of a business team and realization of its aims. The normative dimension of the system of relations among employees in an enterprise points out to two facts: a) they grow on some norms of the enterprise, which means that they themselves are standardized and b) as a standardized part of an enterprise is in the function of its way of realization of the set aims. Norms organize the relations among people and also the way how to, through the behavior of employees and their mutual relations, achieve the intended aims (one or more of them). The parts of the system of relation are

their participants – employees, but also the norms (written and unwritten rules), work operations, sectors of business process and administrations. Which of the factors does gather the parts of the system of relations in an enterprise? An enterprise is a business organization. The parts of the system of relations of employees integrate interests, and values can support this integration. A moral system enables the existence of social unities; values are centers of their integrations. However, people in firms provide existence. That is their basic interest. Nevertheless, a business organization is not a moral institution. That does not mean that there should not practice moral acting. If we come from the fact that within an enterprise people gather and integrate on the basis of interest, then we claim that they will do anything which they are convinced that protects and secures their interests (safety of a work place, appropriate working conditions and a good salary). Business stability and success of an enterprise is the basis of their existential security, too. Owners are focused on better business and realization of more profit. That is completely natural and understandable. Managers are interested in appropriate managing of an enterprise, in order to keep that function and have higher income, more important position, both in the enterprise and in the social community. Therefore, all of them have the same mutual interests. They connect them. Besides the common interests, employees have their own interests but they must not confront the common interests. That is the essence of existing and functioning of every business organization. For that reason we say that it is an interest organization.

As all of them are governed by the common aims and interests, they will do everything that makes the aims to be realized and interests to be protected. If the practice shows that values can be a rather important factor of business success, then the values will be practiced. In this case we think about generally accepted social values, not the values of a business team which can be harmonized, related or inconsistent, even opposed to the social values which are based on virtues. We have to be cautious in considering the relations between interests and values, and also the relations of social values and enterprise values. We have made a conclusion that employees estimate what they should do, how to behave and what kinds of relations they should develop, in order to protect their own interests. These actions are not always based on moral values. But they are not based on the unquestionable opposing to them either. Moral acting is not expressed through absolute determination to do good deeds to others, especially if it is not for their own benefit. Why would anybody in a business organization, where he earns salary, do against himself and for the benefit of somebody else? Morality supposes the appropriate behavior to oneself, too. Simply, you do your job well and that is

useful both for you and other participants. Sometimes, other participants in your activity are the buyers of the goods you have manufactured. The quality of goods that you sell them and their satisfaction by that is parts of your business conscientiousness, not only of the skill. And if you sell the quality goods at affordable prices, no matter that, for example, you don't have a competition at least at a local market, then, your acting get more important moral dimension. And the result of this is that professionalism at work, devotion to a profession and obeying market rules represent completely appropriate moral acting. The most successful companies in the world have built their cultural identities, i.e. business culture. That is what, in the case of the USA, T. Peters and R. Waterman determined even in the seventies of the last century. Their systematization of eight principles that provide a higher level of competitiveness at market and higher profitability of companies is well known (Peters and Waterman, 2008, p. 4550). Without corporation culture an enterprise cannot count on good business and desirable position at market. They presented their consideration in the book *Corporate Cultures: The Rites and Rituals of Corporate Life* (Deal and Kennedy, 2000). Business ethics is, in the context of its own subject area, devoted to the study of enterprise culture i.e. business culture (Nikolić, 2016, p. 121-125).

Let's go back to the interest. If one finds out that a strict regime of work is practiced in a firm, and that it somehow usurps his freedom and rights, that the relations among employees are cold and strictly professional, that a working process itself is difficult, but that the salaries are excellent, do you think that he will accept such the system of relations? In most cases, he will, no doubt. Why? Because his basic motive in that kind of social group is – interest, before all, the salary. No matter that the conditions of work are difficult and the relations among the employees cold, one mostly accepts them because of the money he receives as his salary and because of the fact that nobody treats him in an immoral way and the conditions of work are equal to everybody. In a society established in this way, people live on their work and they get money for that. With that money they buy what they need for life, educate children, and go on vacations and so on. This is a material world and we have to adapt to it.

That would mean that the discussions about moral in an enterprise are unnecessary? No, they aren't. We only stick to something which exists in experiences. If moral system of relations among employees contributes more successful business of an enterprise and the interest of the employees, then it will be integrated stronger in the existing order of an enterprise. The practice shows that it is one of the most important factors of successful business of a



firm. That is why there is so much interest for business ethics in the business world. Let's go now to the other direction. Imagine that immoral relations dominate in a firm and that there is no standardization there. Therefore, the relations among employees who are opposed to moral values and that no social norms are respected in the firm, or they are applied selectively (which means again that they are not respected because the law is equal to all, and so are the other norms). Such the condition would lead to a serious decline of the enterprise, its functioning and reputation. And a reputation is a category of value. That also can be functioning if we come from value frames of doing a specific function. The other reason which is in favor of practicing moral principles and moral norms in behavior and developing mutual relations in an enterprise refers to those reasons which are indicators of the inner atmosphere in an enterprise in which the best results are achieved. What is the importance of satisfaction of the employed and their motivation to productivity and profit of the firm? And those are the two groups of the most important reasons for developing morally valuable relations among the employed in an enterprise. If we analyze these facts we notice that the motives of establishing and practicing moral relations in a business team branch into two groups: 1. Personal value attitude of an individual and 2. Interest of an enterprise which has business financial and value dimension.

There are several experience variations of the relations of moral system of an enterprise and moral system of a society<sup>4</sup> (Nikolić, 2015, pp. 607-608).

1. Moral system of a society and moral system of an enterprise are completely identical.
2. Moral system in a society is in disagreement with the moral system in an enterprise, because the moral system of the enterprise is not founded on the universal moral values both on the other values which are compressed through utilitarian moral and the moral of duty as two types of moral.
3. Moral system in a society is in disagreement with the moral system in an enterprise, because the moral system of the society is built on quasi values which are different from the well known standards of values and virtues.
4. Moral systems of a society and of an enterprise are identical, both are built on quasi values which are elevated, promoted and practiced as real moral values.

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<sup>4</sup>Don't forget the fact that the system of values represents a structural category which consists of several values of which one represents moral values. Since it is about the structured whole, it really exists in experience if there are all the elements that make the whole of the system of values.

These experience variations picture the relations which are being settled on the level of entire society and an enterprise as well. How would we define the system of relations among the employed in an enterprise? A system of relations among employees in a business team is an arranged, formalized and relatively permanent whole of which the parts are in a harmonious interdependent relation with each other and with the whole, and possibly, with the environment (if it is about open systems). In determining the concept system of relations among employees, we have left out the functional component because there are such systems of relation which are dysfunctional.

### **Instead of the Conclusion**

The morality of the relations among employees in an enterprise primarily depends on the system of doing business and strategy of management. The relations can depend on characters of individuals, their needs, inclinations and habits to stick to moral acting. The persons on leader's positions have the opportunity to determine the direction of development of relations among employees, clients, associates, both in moral and in immoral direction. If such acting is in accordance to the presentations about successful business of the owner of capital, then manager will be free in their intentions and actions. If it is done without the consent of the owner of the property, then he is forced to find the ways to hide that kind of activity. He himself is not capable for such activities without the assistance of the others. We consider all that and conclude that nevertheless the system of relations among employees is directly dependant on the system of doing business and the strategy of enterprise management. The will of an individual or more of them, who are in a position to make such important decisions, will direct the total order of doing business of a firm. In that way a system is projecting and building. This system also depends on the existing social standards, cultural and historical characteristics of the time and social space, culture of business and so on. Beside other things, it will also determine ethical dimension of business and of course, human relations, too.

Essential characteristics of a system of doing business and the strategy of management pretty simply and reliably confirm our thesis<sup>5</sup>. It is about related and complementary categories, but not identical. A system of doing

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<sup>5</sup>Do not equate the term „system of doing business“ and „business system“. In the text it is explained the meaning of the expression system of doing business, while a business system is a denominator for an enterprise as a structured whole.

business is a wider and more comprehensive category which integrates a management strategy. And in this case, the system represents a union of connecting parts in mutual functional interaction that make a whole. It also can be open and close, like every other system. A system of doing business consists of the following elements: participants (individuals and groups, which depends on the size of an enterprise), aims of business, ways and means of the realization of aims, interactions among the elements, standards, functions and system functioning, business sectors, enterprise management. Every business system has the aim to function successfully, be well positioned at market, provides its own strength and safety, and growth and development (Zver, 1989 p. 246).<sup>6</sup> An enterprise has to determine its aims and sub-aims appropriately, according to its well estimated possibilities at market. A hierarchy organization has to exist among them. The principal aim of each business team is achieving its own interest, but not at the expense of others. Successful business of an enterprise supposes the existence of the following inputs: material resources which are of a permanent character (buildings, equipment, tools, projects, models etc) and variable character (raw materials, materials, financials, semi-products and spare parts etc), personnel and information resources. The following outputs primarily exist for the same purpose: products, services and information (Zver, 1989, p. 248-249). The concept of strategy of management comes from the concept strategy. In such a way, the strategy of management could be determined as the activity of systematic planning, organizing and doing the activity for the purpose of completing the aims of successful managing of the enterprise or a part of it. It has to come from the characteristic of the enterprise and the environment. As it is related to the managers in the first place, it is necessary to formulate the obligations and also the abilities of the managers. However, we are interested in the context of business ethics. Both literature and modern practice warn that in defining the system of doing business and strategy of management the starting point has to be business ethics. The reasons for this have their legal, social, political and economic aspect. The legal orders of modern societies come from respecting human and civil freedoms and human and civil rights. Both these areas of rights and freedoms directly or indirectly cover the sector of doing business, i.e. ethics in doing business, as well. Legally and ethically the established enterprises contribute strengthening social responsibility and respecting the institution of free market and fair

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<sup>6</sup>The same author states the following properties of the system of doing business in an enterprise: dynamics, flexibility, openness, stochastics. Note: stochastics is a skill of guessing the true fact, a measure for probability in prediction.

competition. That is the basis of a liberal and democratic ideology and order derived from it.

The enterprises which develop moral relations among employees and also with consumers, associates and partners in doing business, with no doubt, realize better results and represent more successful teams. On the previous pages we have pointed out why such relations create higher degree of mutual commitment, support, cooperation, assistance, trust and solidarity among employed persons. For the same reasons the trust of a client to an enterprise and the quality of its goods and services increases. The employed are motivated for work, the productivity of work and quality of products improve and so the profit. It is the interest of all to settle, cherish and strengthen such the relations in a team. What would the system of doing business and especially strategy of management, have to keep in mind?

The relations with all employees have to be fair. They sometimes don't have to or because of some circumstances cannot be ideal, but all employees have to be treated equally. A different approach creates suspicion and dissatisfaction of people. A person who is not treated equally will not be devoted to the firm, he will be cautious in contacts with the others and that will reflect to the work results. Only the exceptional professionals who are beyond standards devoted to the profession will keep the same level of loyalty to the firm and with the same quality do their work obligation even if they are discriminated.

A management has to give adequate money compensations for the jobs the employees do on the basis of complexity, importance, quantity and quality. Every employee should be paid identically for the same job.

An enterprise functions normally if professionalism and knowledge are respected there. In that sense we should be careful because of ethical reasons.

Not only a moral management but also a capable management will know why it is necessary to treat everybody equally and to practice identical relations to everybody. It means that nobody must be favored comparing to others for any reasons. Each of these reasons is extremely unjust and returns bad to the team.

If a management does not want to obey the rules of ethical doing business, but wants to manage in a completely contrary way, without the knowledge

of the superiors (owners), then, it will have to rely on those persons whom it estimate as suitable for realization of their intentions. Dignity, honor and professionalism will be changed for the position in the firm and at the expense of the colleagues. They would work according to the command of managers, spread false information, defamations, and intrigues, make conflict situations, if there are not affairs they would make them up. They would create bad atmosphere. Such the environment creates fear of employees, increases their dependence of the manager and his obedient. People in fear see things which do not exist. Maybe the points of view will not change, but the need will affect their behavior, acceptance and agreement. The discord among individuals and groups cannot be avoided. The system then derives the worst characters of people. Because, those who are endangered, instead of moral will decide to protect their personal interest. That is why such phenomena and such so called managers exceptionally harmful to a professional team, employees and also for a social environment out of the enterprise. If such the condition lasts for a longer period, a great damage will be done do the enterprise and the employed. The enterprise can come to the bankruptcy, too. No matter how such actions are covered and camouflaged by other activities, the reputation will be the first to be affected.

Psychological violence to employees is forbidden by Law in most countries in the world. However, it is practiced. Frightening, blackmailing and threatening employees should provoke their fear and convince them to behave in the way the management wants them to behave. However, the results of such activities are pretty bad for the enterprise. Since psychological violence is mostly expressed through mobbing and discrimination, we will take the indicators related to these kinds of violence to the employees. According to the empiric investigations H. Loyman made a conclusion that because of mobbing a medium developed enterprise, loses averagely 30.000 to 100.000\$ per a worker – victim of mobbing. In Germany, the worker who is the victim of mobbing costs the enterprise from 25.000 to 75.000 € a year (Nikolic, 2009, p. 47). It is enough to estimate what kind of damage to the enterprise it is. This is without considering the value dimension; it is clear why immoral and inhuman behaviors in a team should be prevented. Physical violence to an employee should also be added to this context. It also appears in the practice of enterprises.

A management must not use their personal positions in the firm for personal gains in any way. That also relates to the members of their families, friends and others. There are many ways and experience confirms that. The results, as in the previous examples, are the same.

Presenting fictive employees, forging accounts, taking money for works that have not been done, tax violations and other delinquent phenomena endanger employees and enterprises. Doing business on the foundations of frauds and scams, forge and many other immoral and delinquent activities sooner or later end with bad results. A regulated society sooner discovers and sanctions such phenomena. In unregulated and still close societies they are a kind of *modus vivendi*. On that base the system/anti-system functions until the true and complete social changes.

Revealing business secrets can be a profitable activity. With no doubt, it is immoral and illegal. There are no various motives. The interest is a predominant motive. A completely different thing is informing the state authorities on illegal activities in a firm, about the phenomena which are harmful and can make a great damage to a close and wider social environment.

Unlike these examples, we should develop moral relations in teams, build trusts and need for solidarity. Employees should be respected. You should respect them and try to make them aware of that. By that, their self respect will grow and also the pleasure and motivation to do their part of the job with much quality and to be completely loyal to the firm. To respect other people is not only the matter of someone's politeness and culture of behavior. It should be based on the consciousness of the importance of every member of the team for its proper functioning. Besides that, moral consideration to other people should not be neglected.

In a serious enterprise, which is profitable, it is necessary to formalize and procedurally determine the ways of expressing moral worry, one's own or somebody's threat. These rules and such surroundings which cherishes homely doing business and the relations derived from it, will reduce unethical behaviors as possible as it can. They always exist. But, it is different if it is about a sporadic act that appears from time to time and if we are dealing with something that usually happens. The freedom to report somebody's behavior that endangers an individual or a group, is one of the best prevention for them, or reducing to a small number of successive deviations of normal behavior.

For good managers it is said that they are squint-eyed, i.e. that in the same time they look at several directions. They should work on a good reputation of the enterprise. A harmonious surrounding in which people work, satisfaction of clients and associates in business will create a good reputation to the enterprise. The feedback is clear.

If it is capable, an enterprise should give money rewards to employees beyond the limits of determined salaries, whenever it is possible. Besides that, it is necessary to open.

The possibility of their promotions, assist them in some other ways according to the law and acts of enterprises, promote them in a social community. A folk wisdom says: do the good and hope the good be returned to you. Once again we remind that the most successful companies are on the list of the most ethical enterprises in the world. It is not hard to understand why it is like that.

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# STUDENT ATTITUDES TOWARDS THE ORGANIZATION OF INTERNSHIP IN THE CONTEXT OF CAREER DEVELOPMENT

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## Abstract

*The increasing need for the development of mutual cooperation between education and economy has been recognized recently. Internship is becoming an increasingly popular element of higher education, and it provides many potential values to students and business organizations as well. The experience gained through internship can help students in connecting their academic knowledge to the world of business thus providing them with adequate professional competence necessary for the labor market. By analyzing the existing relevant literature, research papers, laws and other regulations, as well as by means of empirical research through the application of survey method, we tried to address the issue of student attitudes towards internship. The aim of this research is to conclude whether students see the need for the organization of the internship, which factors influence their attitudes, and whether their age influences their interest in performing internship. The obtained information answers the question to what extent we have been successful in applying the theoretical knowledge of internship in real life. Likewise, we point out the guidelines and proposals for establishing a more efficient system for the organization of the internship.*

**Key words:** *internship, student attitudes, career development*

## Introduction

Internship is one of the crucial elements in the career development at institutions of higher education, and it is of great importance and

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significance for personal and professional development of students. The research about the students' attitudes on the question of the need for organization of the internship was conducted at the Faculty of Economics and Engineering Management in Novi Sad, and it yielded the expected results, which will be presented in detail further in the paper. Career guidance and counseling can begin quite early, and this practice is present in the developed countries, whereas in the Republic of Serbia it has been increasingly gaining in importance recently.

The Faculty of Economics and Engineering Management in Novi Sad is an institution of higher education that has recognized the need for parallel development of the theoretical knowledge and career development and counseling, *inter alia*, by organizing internship. For that reason, the Office for Career Development, whose work will gain importance and show concrete results in the years to come, was formed based on the survey that was conducted. The results of the research primarily served for the internal organization of the Office, all its activities which are aimed at career development, and first and foremost, for the organization of internship. By providing services with the aim to help career development raises the students' awareness that through participating internship they become more active, agile, and by improving their professional competence they contribute to the overall market potential.

### **The significance of internship in career development**

In Nebojsa Brankovic's paper (2010), career guidance and counseling is defined as a service which helps individuals to assess their abilities, interests, and values, to obtain information on the possibilities of additional education and employment, position themselves on the labor market – both in relation to its requirements, and in relation to their own abilities, interests and experience as well. Working with individuals does not finish when an adequate employment is found, but rather they are still being monitored for continual professional development in accordance with market trends Brankovic (2010). Various research points out the significance of internship.

Internship plays an important role in helping students make good career choice (Brooks et al., 1995). It also enables learning and acquisitions of specific business skills that are not included in traditional business programs (Garavan & Murphy, 2001).

Some of the benefits of internship can be reaped only after graduation. The research shows that students who participated in internship have greater business stability during their first business experiences (Richards, 1984), and greater business satisfaction (Gault et al., 2000). On the other hand, other research shows that internship makes students more ambitious (Pedro, 1984) and helps them with transition from school to work (Paulson & Baker, 1999). Students are often encouraged to perceive internship as a means of providing possibly permanent employment (Callanan & Benzing, 2004).

The research conducted by Michael Hergert (2009) discusses about the significance of organizing internship from pedagogical and demographical point of view. He points out that the value of internship will be maximized if educators provide the necessary and appropriate structure and integrate experience with students' academic background. It is clear that students appreciate the benefits of internship programs, especially if they are designed to satisfy their needs. These types of programs represent the key element of education in the 21<sup>st</sup> century (Hergert, 2009).

Nowadays, graduates with the certain kind of "experience" are increasingly favored by companies. Therefore, the need for organizing internship at institutions of higher education is extremely high. Even the original research of authors such as Porter and McKibbin (1988) indicated that the programs that had been studied were too narrow and disconnected from the real world of business (Porter & McKibbin, 1988). Therefore, we can observe that a number of authors had been studying this issue and thereby indirectly indicated the necessity of forming the connection between institutions of higher education and the labor market.

### **Overview of the state of internship in the Republic of Serbia**

Considering the fact that Serbia is on the road to becoming a member of the European Union, and that the issue of mandatory internship is incorporated into legislation at all levels in most countries of the European Union, and that there is a greater number of binding documents that deal with this issue, it is necessary for the importance of internship to be recognized at the highest level in the Republic of Serbia (Gardasevic et al., 2016). Putting students into focus and satisfying their needs should be a priority. It is not enough for educational institutions to provide students with just theoretical knowledge. Institutions should enable them to get familiar with the business climate during their studies as well, and thus prepare them in

time for the upcoming challenges arising from the business environment (Vucurevic et al., 2015).

In the document Strategy for Development of Education in Serbia until 2020, a few very important guidelines for eliminating the problem of the lack of regulations in this area are given. The initiatives of schools and institutions of higher education could alleviate problems appearing in practice to a great extent. According to the above mentioned Strategy, schools and faculties are given a certain degree of autonomy in cooperation with the social partners from the region and the realization of joint activities of schools and the local community is supported. Direct contact with professionals from different fields, organization of visits to companies and institutions from different economic sectors would enable young people to make decisions about the choice of faculty or future occupation much easier. Visits to companies, public discussions and lectures intended would represent an ideal opportunity for young people to hear and see what certain professions actually imply (Miskovic, 2013).

### **Overview of the state of internship in some European countries**

In his paper, Stojsavljevic (2012) deals with the issue of internship in some European countries in context of career guidance, naming Scotland, the Netherlands and some Nordic countries as examples. Careers Scotland is a part of the institution Skills Development Scotland which provides the services of career monitoring and guidance, as well as the information on employment possibilities. In this way, the citizens of Scotland are prepared for work engagement in an ever changing business environment, which is in the best interest of both individuals and employers as well, and thus in the interest of the entire national economy (Stojsavljevic et al., 2012). Dutch researchers (Meijers, Kuijpers & Bakker, 2006) conducted an extensive research on the national level about career guidance in Dutch educational institutions. This research indicates that many schools have not constructed a policy concerning career guidance, as well as that they are not developing fertile ground for such activities.

The Public Employment Service, which had previously been a public institution entirely, was divided into 28 regional organizations. Independent offices that had been in charge of career counseling, education and trainees were organized into 16 regional centers for career guidance. The financing was organized in such a way that each center had to set priorities: employment or education. Northern European countries have

a long tradition of vocational training and counseling in the career field. For example, in Iceland, the career guiding practice has been present since the beginning of the 20<sup>th</sup> century. In Norway, there is also a practice of organized career guidance within the system of formal education, whereas providing these services to the citizens is somewhat lessened. Sweden has a long tradition in developing mutually independent social services, including education. Different ministries and their departments are in charge of career guidance and continuing education, thus, although being independent of one another, all these bodies are under the jurisdiction of the state. Finland has two systems that complement each other in achieving these goals: career guidance and counseling within the education system intended for students, and vocational training services provided by the employment service available to all other citizens. This organization clearly divides responsibilities, whereas the employment service is also at students' disposal (Stojšavljević et al., 2012).

### **Research methodology**

The aim of this research is to establish whether the students of the Faculty of Economics and Engineering Management in Novi are interested in internship, and whether there is a correlation between the respondents' age and their interest in doing the said internship. This research determines the students' need for organization of internship at the Faculty, and gives a general theoretical framework on the importance of internship in Serbia's higher education system. With this research, we are trying to prove that students see the need for organization of internship and that they show high interest in doing the said internship, as well as that the respondents' age does not have an influence on their interest.

The survey research techniques were used to analyze the students' attitudes. The research sample includes 55 students from the following study programs: Business Economy and Finance and International Economics and Economic Diplomacy at the Faculty of Economics and Engineering Management in Novi, during one semester (summer semester). Data collection was carried out via questionnaire. The questions are both open and closed questions, and the survey is anonymous. A list of specifically formulated questions that are in accordance with the research objective was prepared for the survey. After the completion of the survey, the analysis of the questionnaire was conducted. First, the questionnaire was redacted, the questions validity check was carried out, and finally the mistakes in filling out the questionnaire were eliminated. 15 questionnaires that were

complete were rejected; thus the final sample was finally reduced to 40 respondents. What followed was questionnaire coding, i.e. data coding. Since the data were entered in numeric form, they were just verified. There were no corrections.

The third phase included organizing and tabulating of the data in Excel sheets so as to be able to use the SPSS package: 1. Descriptive statistics, where we used arithmetic mean, mode, median, standard deviation, minimum, maximum and sum, and 2. Correlation (according to Pearson).

## Research findings and discussion

**Table 1** *Tabular presentation of research findings*

		Gender structure	Age structure	Place of residence during studies	Interest in professional practice	City where professional practice would take place	I would do professional practice in Belgrade	Sector of professional practice	Work experience	Which companies to give lectures at the Faculty
N	<i>Valid</i>	40	40	40	40	40	40	40	40	40
	<i>Mean</i>	1.7	2.1	1.18	1.1	1.25	1.6	1.88	1.78	3.35
	<i>Median</i>	2	2	1	1	1	2	2	1	4
	<i>Mode</i>	2	2	1	1	1	2	1	1	4
	<i>Std. Deviation</i>	0.464	0.928	0.385	0.304	0.63	0.496	0.853	1.121	0.949
	<i>Minimum</i>	1	1	1	1	1	1	1	1	1
	<i>Maximum</i>	2	4	2	2	3	2	3	4	4
	<i>Sum</i>	68	84	47	44	50	64	75	71	134

**Source:** *Authors*

Table 1 shows the survey results grouped altogether. The results for each variable will be presented separately below.

**Table 2** *Gender structure*

		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>Male</b>	12	14.3	30	30
	<b>Female</b>	28	33.3	70	100
	<b>Total</b>	40	47.6	100	

**Source:** *Authors*

As far as the gender structure of respondents is considered, in Table 2 we can see that from the total number of 40 respondents, there are 70% female respondents and 30% male respondents who completed the questions from the survey.

**Table 3** *Age structure*

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Up to 20</b>	10	11.9	25	25
<b>From 21 to 25</b>	21	25	<b>52.5</b>	77.5
<b>From 26 to 30</b>	4	4.8	10	87.5
<b>Above 30</b>	5	6	12.5	100
<b>Total</b>	40	47.6	100	

**Source:** *Authors*

In Table 3, we can see that the majority of the respondents (52.5%) are between the ages 21 and 25, followed by 25% respondents under the age of 20, 12.5% are respondents above the age of 30, and only 10% respondents are between the ages of 26 and 30.

**Table 4** *Place of residence during studies*

		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>Novi Sad</b>	33	39.3	<b>82.5</b>	82.5
	<b>Another city in Serbia</b>	7	8.3	17.5	100
	<b>Total</b>	40	47.6	100	

**Source:** *Authors*

According to research findings, the majority of respondents (82.5%) lives in Novi Sad, where the seat of the Faculty is located and where the teaching process takes place, during the studies, while 17.5% lives in another city in Serbia during studies.

**Table 5** *Interest in internship*

		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>Yes</b>	36	42.9	90	90
	<b>No</b>	4	4.8	10	100
	<b>Total</b>	40	47.6	100	

**Source:** *Authors*

Based on the obtained results, we can see that 90% respondents are interested in doing internship, whereas only 10% are not interested.

**Table 6** *City where internship would take place*

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>The city I currently live in</b>	34	40.5	85	85
<b>The city which my parents live in</b>	2	2.4	5	90
<b>Another city</b>	4	4.8	10	100
<b>Total</b>	40	47.6	100	

**Source:** *Authors*

The findings concerning the city where respondents would like to do internship, show that 85% respondents would like to do internship in their current place of residence, 10% respondents opted for another city, while only 5% respondents said they would like to do internship in the place of residence of their parents.

**Table 7** *I would do internship in Belgrade*

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	<b>Yes</b>	16	19	40	40
	<b>No</b>	24	28.6	<b>60</b>	100
	<b>Total</b>	40	47.6	100	

**Source:** *Authors*

Taking into account that the Office for Career Development signed a significant number of contracts with organizations in the Belgrade area, we asked students whether they would do internship in Belgrade, and 60% responded with “no”, while only 40% responded affirmatively.

**Table 8** *Sector of internship*

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Public institution</b>	17	20.2	42.5	42.5
<b>Private sector</b>	11	13.1	27.5	70
<b>No preferences</b>	12	14.3	30	100
<b>Total</b>	40	47.6	100	

**Source:** *Authors*

As far as the sector of internship is concerned, i.e. opting for public or private sector, the research findings indicate that 42.5% respondents would do internship in a public institution, 27.5% respondents would do internship in the private sector, whereas 30% respondents have no preferences as to which sector they would do internship in.



**Table 9** *Work experience*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No experience	24	28.6	60	60
	Up to 1 year	7	8.3	17.5	77.5
	From 2 to 5 years	3	3.6	7.5	85
	More than 5 years	6	7.1	15	100
	Total	40	47.6	100	

Source: *Authors*

As far as the work experience of the respondents is concerned, by looking at the table, we can see that the majority of them (60%) have no work experience; 17.5% respondents have up to 1 year of work experience; 15% respondents have over 5 years of work experience, whereas 7.5% respondents have from 2 to 5 years of work experience.

**Table 10** *Which companies to give presentation at the Faculty*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some of the mentioned	1	1.2	2.5	2.5
	Not mentioned	10	11.9	25	27.5
	No preferences	3	3.6	7.5	35
	Not filled in	26	31	65	100
	Total	40	47.6	100	

Source: *Authors*

Based on the obtained data presented in the table, we can see that 65% respondents did not complete the question stating which company they would like to see present at the Faculty. 25% respondents believed that none of companies they would like to see is mentioned in the survey; 7.5% respondents answered they have no preferences as to which company they would like to see, whereas only 2.5% said it is one of the companies mentioned.

**Table 11** *Correlation between the age of the respondents and their interest to do internship*

<b>Age</b>	<b>Pearson Correlation</b>	<b>Age</b> <b>1</b>	<b>I would like to do internship</b> <b>0.145</b>
	<b>Sig. (2-tailed)</b>		0.37
	<b>N</b>	40	40
<b>I would like to do internship</b>	<b>Pearson Correlation</b>	<b>0.145</b>	<b>1</b>
	<b>Sig. (2-tailed)</b>	0.37	
	<b>N</b>	40	40

**Source:** *Authors*

The program gives Pearson correlation coefficient (Pearson Correlation) and statistical significance Sig. (2-tailed). Person coefficient indicates the strength of a relationship between two variables, and Sig. (2-tailed) indicates with how much confidence we should observe the obtained results. If Sig. (2-tailed)  $< 0.05$ , it indicates that the correlation is significant. Therefore, in our research we can see that Sig. (2-tailed) = 0.145, i.e. that our correlation coefficient of 0.145 is significantly higher in comparison with the parameter Sig. (2-tailed)  $< 0.05$ , which indicates that the correlation between the variables is weak.

Based on the survey, we answered the key questions such as: the interest of students for doing internship; opting for Novi Sad as the city where the students would like to do practice, considering the fact that the majority of respondents said that they would do internship in their current place of residence and the highest percentage of students lives in Novi Sad during their studies; the students would mostly like to do internship in public institutions; the majority of respondents possesses no work experience; they have no preferences as to which company they would like to get acquainted with through a presentation at the Faculty; and there is no significant correlation between the age structure of students and their interest to do internship. Based on the research, the following results were obtained: the majority of respondents are females (70%); the majority of respondents (52.5%) is between the ages of 21 and 25; the majority of respondents (82.5%) lives in Novi Sad during their studies; the majority of respondents (90%) is interested in internship; the majority of respondents (85%) is interested in doing internship in the place of their residence; the majority of respondents (60%) is not interested in doing internship in Belgrade; the majority of respondents (42.5%) is interested in doing internship in a public institution; the majority of respondents

(60%) possesses no work experience; the majority of respondents (65%) did not complete the question as to which company they would like to hear presentation at the Faculty; the correlation coefficient is 0.145, thus there is no significant correlation between the age structure of respondents and their interest in doing internship.

Therefore, based on the obtained results we can conclude that the majority of respondents are female students between the ages of 21 and 25, that they are very interested in doing internship, that the majority of them would like to do practice in Novi Sad, as it is the place of residence for most of them during studies, thus, we come to the logical conclusion that they would not like to do internship in Belgrade. Furthermore, there is no significant correlation between the age structure and the respondents' interest in practice. According to our assumptions, the students' interest for doing internship may result from the lack of work experience considering the fact that the majority of respondents possesses no work experience. The students are interested in doing internship. The respondents' age has no influence on the interest in doing internship.

### **Conclusion**

In the theoretical part of this paper we dealt with the issue of the significance of internship and career development in general. We gave a brief overview of current state both in the Republic of Serbia and in some EU countries through the theoretical analysis of the relevant scientific papers and regulations. We come to the conclusion that although the career development and internship area is coordinated and regulated in some European countries, and in some countries such as Iceland and Sweden it has a century long tradition, there are still certain countries, such as the Netherlands, which are trying to find an adequate solution. The Republic of Serbia is also falling behind when it comes to finding the right solution. Traditional problems are certainly not the lack of regulations, non-compliance with EU regulations etc., but rather their implementation in practice, lack of communication between institutions, inadequate division of responsibilities, etc. There is a gap between theory and practice. However, we can argue that the highly educated are definitely interested in doing internship.

According to the research, we can conclude that the need for organization and implementation of internship does not just arise from the aspect of institutions of higher education that need to educate future personnel

and therefore prepare them for the labor market, but as well as from the aspect of the economy that desperately wants adequately trained and quality personnel, which we established through theoretical overview of research on this subject and through literature overview of different authors, but that need also arises from the aspect of students themselves who are very interested in participating in internship, mostly female students and mostly in their place of residence during their studies, which is Novi Sad, as pointed out in the research. The reason for that might be found in the lack of work experience and possible needs and desires for experiencing specific business tasks, challenges and business climate in general as soon as possible, in addition to theoretical knowledge. There is no significant connection between the students' interest in internship and their age structure, with the age between 21 and 25 being the predominant one. Students are mostly interested in doing internship in the public sector (companies). Based on this research, the Office for Career Development was formed at the Faculty of Economics and Engineering Management in Novi Sad, with the aim to enable students of this faculty to do desired internship. In this regard, a great number of contracts was signed with the public and city organizations, institutions, and with institutions from the private sector as well. Thus, by proving and confirming the hypothesis set at the beginning of the paper, we can conclude that the objective and the purpose of this research are justified. The good practice in organizing internship will be continued at the Faculty of Economics and Engineering Management in Novi Sad, and the research will be continually conducted within the Faculty and the Office related to students' needs, desires, attitudes with the aim to improve the quality of the Office and the Faculty.

Some of the measures have also been proposed in Strategy for Development of Education in Serbia until 2020 (available at [www.serbia.gov.rs](http://www.serbia.gov.rs)). Firstly, it is necessary to achieve close cooperation between the academic studies and the economy, followed by 6 basis points:

- Harmonization of academic studies programs with the needs of the economy, as well as cooperation in realization of internship;
- Further formal and informal education of employees in the economy;
- Involvement of prominent experts in the economy in teaching;
- Working together on innovative projects;
- Joint applied research and development, where universities' resources are involved;
- Providing conditions so that every university can establish at least one business incubator that would promote the entrepreneurial initiatives of students (Strategy for Development of Education in Serbia until 2020);

In this regard, the Strategy proposes introducing the following measures:

- Developing a system of accreditation and certification of employers where internship is implemented,
- Adoption of laws and regulations for financial incentives for employers where internship is implemented,
- Including at least 10% employers in the work of sector assemblies, examination commission and realization of internship (Strategy for Development of Education in Serbia until 2020).

Internship is an important part of every higher education curriculum. Economists and the labor market policy creators have recognized that career development can improve the efficiency of all market participants. There are many ways in which the career development can improve efficiency and effectiveness of the labor market. For example, career development usually: helps people understand their interests, skills and qualifications so that they would be able to find the desired job and keep it, to enjoy and be good at it. It also teaches people how to collect, understand and evaluate information about vacancies and how to apply for a job, write their CV and prepare for the first interview.

Finally, as we mentioned in of the previous research on this subject, the human capital, as the most significant element of the labor market, which requires continuous investment and modernization, as well practical knowledge that students gain during practice are in the function of Life Long Learning – and also in the function of the improvement of their professional knowledge, business skills, transversal skills, professional capacity and competence. Well mastered theory will make sense only if it is applied in practice, otherwise, we will continue educating “unusable” personnel, deprived of any sense of professional and personal responsibilities.

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# EDUCATION OF EMPLOYEES IN COMPANIES IN REORGANIZATION AS AN IMPORTANT SUCCESS FACTOR IN CHANGE MANAGEMENT

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## Abstract

*The aim of this paper is to present the results of studies that show the importance of education of employees in companies that have entered the reorganization process. Any change in business leads to increasing the stress among employees that can result in the failure of the reorganization process. Working with employees through training and further education can mitigate the negative effects and lead to the formation of a “winning coalition” that would support the introduction of changes in the business processes. Throughout the paper, we shall present experiences and attitudes related to education and the changes that have been induced by the reorganization process.*

**Keywords:** *reorganization, education of employees, change management, teamwork*

## Introduction

The paper presents the results of research and training model of employees in companies that have entered the reorganization process. Each company has its own life cycle, in the last stages we have the decrease in business activity. One way to recover the organization is launching a reorganization. The aim of the reorganization is to improve business processes. This overall objective is hiding a very wide range of actions that can be taken in order to recover business.

Reorganization can go from minor “cosmetic” repairs to major radical solutions. In other words, reorganization ranges from changes of personnel to the way of doing business. One of the more radical solution is a change of business model and leaving the market.

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The human factor plays a great role in this process. The new business model may be compromised if it does not take account of human resources. Careful management of change and continuous education of employees is possible to reduce the negative consequences of the reorganization greatly.

### **Reorganization**

“Since the 1980s, more and more economic organizations of different industrial and service sectors have been confronted with volatile and unforeseen socio-economic environments that – above all – can be attributed to economic globalization.” (Becke, 2014: 3) In other words, market trends make the enterprise in a constant process of adjustment. The previous business becomes unsustainable and there is a need for changes in business processes.

On the other hand, we have the impact of competition, which may affect the operations of the observed system through a faster and better acceptance of change. The most striking example is the application of information technology (IT) in the field of business. Those companies that have accepted IT solutions faster and better have achieved a higher level of competitive advantage. New business opportunities are opened by introducing changes in the business.

“Any reorganization is a rigorous, time-consuming exercise that can become very personal in that it changes the jobs of many people as well as the balance of power“(Karlöf, Lövingsson, 2005: 138). This leads to the fact that we have a certain resistance to the reorganization, the various interest groups in the organization can affect not only the current of reorganization, but also the speed. In extreme cases, it is possible even to stop the process of reorganization.

Each organization has its own characteristics that must be taken into account. “A business should be organized according to its orientation, which is why any organizational change should involve decisions on the organization’s vision, strategies and business mission“ (Karlöf, Lövingsson, 2005: 133). From this, it follows that the strategic orientation greatly affects reorganization in all segments. If you ignore the strategic component of the company, the reorganization will experience an even higher level of resistance.

“All the activities carried out within an organization are logically grouped together (based on their business outcome) and documented. Each such group of activities is termed as a *business process*” (Mohapatra, 2013: 163). The definition of the process has always been problematic, some processes take greater organizational space and are difficult to identify in the organization.

In the heart of reorganization lie business processes, which are by their nature different. “Regardless of their type processes are generally complex, require deep understanding, and need to be communicated well” (Mohapatra, 2013: 117). Without well-communicated process, it is impossible to complete the reorganization successfully.

To solve problems in the organization it must first be analyzed the process. There are numerous techniques, tools used in the analysis of the process, however. It must be taken into account, and that the process should not be too much analyzed. If it goes too far in analyzing process, new solutions may be very close to the initial state. In other words, it is necessary to find a balance between understanding the process and creating a new improved process.

### **Employee training**

“Individuals invest in their human capital through education and training, migration, and search for new jobs” (Brickley, Smith, Zimmerman, 2016: 443). The same goes for companies, if companies are not able to recognize the importance of training, they soon be in a position to remain without significant competencies. In the past, education should not be part of the business ethos, but this is no longer the case. Rapid changes in markets and technologies create the need for new competences.

Classical education system is proving to be insufficiently reliable. Knowledge and competences gained in the course of education become obsolete very quickly. Changes modes of operation have become part of everyday business, are focus of business systems is on knowledge. Knowledge becomes the main backbone of the business. In order to gain the necessary knowledge organization needs to invest in information system. The information system consists of two components; the first is related to human resources and second to hardware and software. Without these two components it is virtually impossible to create a competitive business system.

The reason for the training of employees in the organization is that the “... knowledge work tends to be more fluid and dynamic in nature” (Colquitt, Lepine, Wesson, 2015: 47). In recent decades, the development of science was done, so that the entire human knowledge is constantly increasing as never before. Every couple of years we are doubling the pool of knowledge. Some areas has been so dynamic that after three to five years, existing knowledge and postulates are no longer valid.

Price of knowledge is extremely high from the standpoint of the organization. This price can be seen as a cost that organizations must submit. On the other hand employees who are in training are unavailable for daily operations. However, the highest price has been paid by those organizations that do not invest in human potential development. Unfortunately, many organizations have regarded training costs employee as unnecessary.

Without knowledge, it is practically impossible to implement radical changes in the organization. Successful reorganization has move in the direction of radical changes based on the use of new technologies and new organizational chart. Increase of organizational knowledge should lead to easier reorganization.

### **Change management**

“Change typically results as a reaction to specific problems or opportunities the organization is facing based on internal or external stimuli“ (Voehl, Harrington, 2016: 5). It follows from this that changes in the organization have different initiatives. The way in which the organization refers to changes define the further course of development. Dynamic organizations usually have internal incentives of change, passive organization are waiting for the external stimuli. This means that in the market there are organizations that are leaders, and those who are the followers.

On a personal level, changes define the role in the organization and that leads to the new social dynamics of organization. “The change readiness assessment helps each individual understand their unique change profile, as well as the unique profiles of their colleagues and team members” (Larson, 2016: 22). This leads it to create new conditions for business which individuals must fit in. This is the main source of stress and resistance in introducing changes in organizations.

“Undoubtedly, part of the goal of the new organizational psychology was to understand worker behavior and improve worker well-being, but at the

same time, a close reading of the major authors of the time makes it clear that the primary goal in studying organizational climate was to improve organizational effectiveness“ (Ehrhart, Schneider, Macey, 2014: 32). From this, we can see that for the reorganization it is necessary to have a certain organizational climate. Organizational climate can also be seen as the immune system of the organization. For the introduction of changes, the organization must be able to accept them.

“A system that will facilitate the culture of continuous improvement is the improvement suggestion system. Problems should be analyzed and solved in a preventative manner so they do not reoccur in the future. “ (Voehl, Harrington, 2016: 188). Waiting to show up external stimuli lead to a loss of pace with the competition. Competition could prove to be more agile in the field of implementation of the changes.

“Change management has always been at the heart of innovation. Innovation in itself involves bringing something new to the world, and accepting something new always requires some level of change“ (El-Ella, Bessant, Pinkwart, 2015: 115). Innovations are extremely diverse term that includes a number of factors. In to innovation could be counted, new product development, the introduction of new work processes and the like. In any case, an organization that does not adjust to the changes has difficulty in innovation management.

In order to introduce the changes it is necessary to change the culture, “...cultural change is very complex because it not only addresses procedures and organisation charts“ (Nieswandt, 2015 :27). From this we can conclude that the human factor is of great importance for creating an enabling environment that will lead to the implementation of changes in the organization. Finally, it must be emphasized that the reorganization in the largest part of it’s a change-oriented organizations.

Any change in the organization is stressful for human resources but to maintain business processes fit it is extremely necessary. However, the reasons and extent of the reorganization are of great importance for the further course. If the reorganization imposed by creditors then it can happen that the aim of the reorganization is not increasing the competitive advantages but paying debts. In this case, the creditors do everything to leave the company enough “fit” in order to service the debt. Unfortunately, this strategy excludes investments in development. On the other hand,

initiate reorganization due to attempts to achieve a competitive advantage is directly aimed at improving business.

On a personal level, employees will try to obtain personal benefits in terms of coming to a better position. If the training and learning new skills proves to be the best alternative to achieve that, then the reorganization may not be a big stress factor.

### **Research methods**

For research purposes, we used a questionnaire that reveals how much the training of employees in organizations in restructuring has helped employees to fit into the new way of working. The questionnaire is divided into two parts: the first part of the questionnaire gives us information about the respondent and the other part that reveals attitudes toward education in the organization.

The first question is related to gender of the respondents in relation to this question, we can determine the distribution of respondents by gender. The second question reveals the core activity, we have six choices (Insurance, Banking, Production, Government Institutions, Trade, Service). The third question reveals the age of the respondents, this question has offered five categories. Qualification of respondents reveals a education degree, this question offered respondents five categories (Less than high school, High School, College, Institute, More then faculty).

The second part of the questionnaire is composed from a number of statements, but for the purposes of this study, we chose four statements. Respondents are evaluate statements according to degree of agreement, we offered five categories (1 - I completely disagree, 2 - I do not agree, 3 - I agree and disagree, 4 - I agree, 5 - I completely agree).

The first statement: In an organization where I work we often have trainings, this statement reveals the frequency of training in the organization. The second statement: The training I have been through helped me very much to overcome new way of working. This statement reveals the extent to which the training helped in coping with the new process in the organization. The third statement: I believe that in an organization where I work should be more training. In this statement, we can determine attitude of respondents on the need for more trainings. The fourth statement: I have difficulties with the new way of working. This statement provides us with information about the difficulties

with my respondents encountered in the field of mastering new work processes. Through the questionnaire we use the term training, the reason is that the term education many of respondents linked to formal education.

The sample, which we included in our study, is 55 individuals randomly selected from the population of employees whose companies have passed some form of reorganization. In this way, we selected respondents who have some knowledge related to the reorganization.

In the first part of the analysis, we have done a descriptive analysis of the response of our questionnaire. In the second segment of the analysis, we used statistical analysis of variance - ANOVA. In this way, we can determine differences among groups of subjects by gender. In that, way we can determine which groups of respondents have a statistically significant difference.

Based on everything said so far we can formulate research questions.

**Research question 1:** Are there any statistical significant differences between the statement „In an organization where I work we often have trainings“ and gender of the respondents?

**Research question 2:** Are there any statistical significant differences between the statement „The training I have been through helped me very much to overcome new way of working“ and gender of the respondents?

**Research question 3:** Are there any statistical significant differences between the statement „I believe that in an organization where I work should be more training“ and gender of the respondents?

**Research question 4:** Are there any statistical significant differences between the statement „I have difficulties with the new way of working“ and gender of the respondents?

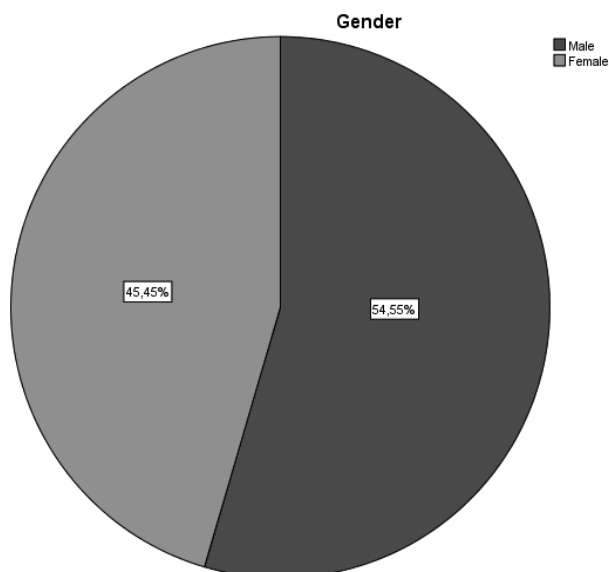
## Results

Processing of first questions we can observe that we have 30 (54.5%) male respondents and 25 (45.5%) female respondents. This distribution could be seen in the table below and the following chart.

**Table 1** *Gender*

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	30	54.5	54.5	54.5
Valid Female	25	45.5	45.5	100.0
Total	55	100.0	100.0	

**Picture 1** *Distribution of respondents by gender*

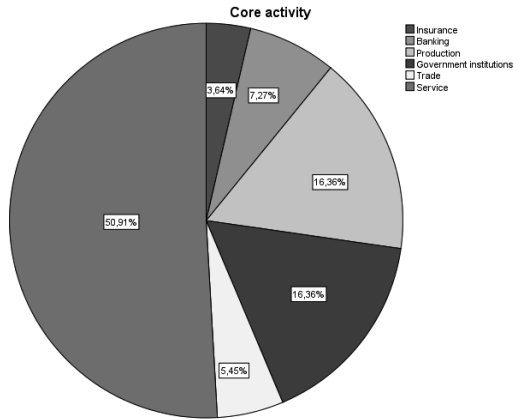


Processing of questions related to the core activities we can see that we have 2 (3.6%) respondents who are from the insurance sector, 4 (7.3%) respondents from the banking sector, 9 (16.4%) respondents from the manufacturing sector, 9 (16.4%) respondents from government institutions, 3 (5.5%) respondents from the trade sector and 28 (50.9%) respondents from the service sector. This distribution can be seen in the following chart.

**Table 2** *Core activity*

	Frequency	Percent	Valid Percent	Cumulative Percent
Insurance	2	3.6	3.6	3.6
Banking	4	7.3	7.3	10.9
Production	9	16.4	16.4	27.3
Valid Government institutions	9	16.4	16.4	43.6
Trade	3	5.5	5.5	49.1
Service	28	50.9	50.9	100.0
Total	55	100.0	100.0	

**Picture 2** *Distribution of respondents by core activities*

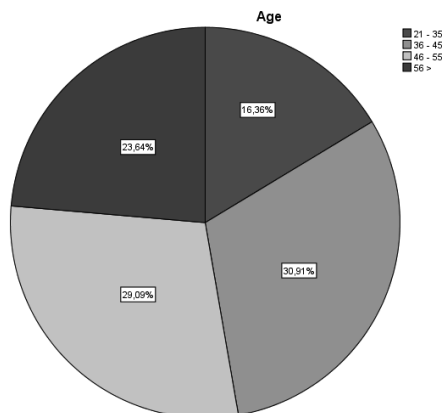


Processing of questions related to the age of the respondents is as follows: 9 (16.4) respondents age between 21 and 35 years, 17 (30.9%) respondents age between 36 and 45 years, 16 (29.1%) respondents age between 46 and 55 years, 13 (23.6%) respondents were age greater than 56 years. Distribution of responses can be seen in the following table and chart.

**Table 3** *Age*

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 21 - 35	9	16.4	16.4	16.4
36 - 45	17	30.9	30.9	47.3
46 - 55	16	29.1	29.1	76.4
56 >	13	23.6	23.6	100.0
Total	55	100.0	100.0	

**Picture 3** *Distribution of respondents by age*



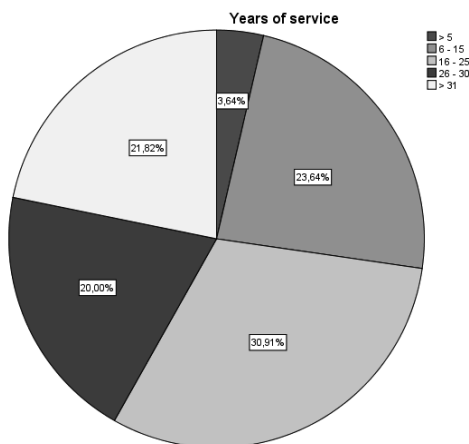


Distribution of answers to the question related to years of service is as follows: 2 (3.6%) respondents with less than 5 years of service, 13 (23.6%) respondents who have between 6 and 15 years of service, 17 (30.9%) respondents who have between 16 and 25 years of service, 11 (20%) respondents who have between 26 and 30 years of service and finally 12 (21.8%) respondents who have over 31 years of service. These frequencies can be seen in the following table and chart.

**Table 4** *Years of service*

	Frequency	Percent	Valid Percent	Cumulative Percent
> 5	2	3.6	3.6	3.6
6 - 15	13	23.6	23.6	27.3
16 - 25	17	30.9	30.9	58.2
26 - 30	11	20.0	20.0	78.2
> 31	12	21.8	21.8	100.0
Total	55	100.0	100.0	

**Picture 4** *Distribution of respondents by years of service*

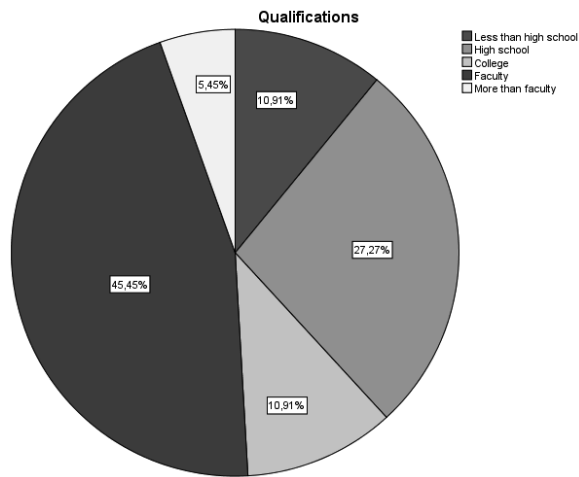


Processing questions related to the qualification structure we can determine the following: 6 (10.9%) respondents who have less than high school, 15 (27.3%) respondents who have high school, 6 (10.9%) respondents who have college, 25 (45.5%) respondents who have faculty, 3 (5.5%) respondents who have more than faculty. Frequency of respondents to the qualification structure we can see in the following chart.

**Table 5** *Qualifications*

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than high school	6	10.9	10.9
	High school	15	27.3	38.2
	College	6	10.9	49.1
	Faculty	25	45.5	94.5
	More than faculty	3	5.5	100.0
	Total	55	100.0	100.0

**Picture 5** *Distribution of respondents by qualification*



The next table, we can see the basic descriptive statistical analysis of our four statements, that respondents been asked to. Respondents have to rate statements by their degree of agreement. The minimum score is 1 and it is indicating complete disagreement with the statement we asked, score 2 is indicating disagreement with the statement but with lower intensity than in previous score, score 3 is indicating indecisive attitude, score 4 agreement with a lower intensity while the score 5 indicating complete agreement with the statement.

**Table 5 Descriptives**

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	
					Lower Bound	Upper Bound			
I have difficulties with the new way of working.	Male	30	1,80	1,031	,188	1,42	2,18	1	5
	Female	25	1,52	,586	,117	1,28	1,76	1	3
	Total	55	1,67	,862	,116	1,44	1,91	1	5
I believe that in an organization where I work should be more training.	Male	30	3,97	,999	,182	3,59	4,34	2	5
	Female	25	4,16	,850	,170	3,81	4,51	3	5
	Total	55	4,05	,931	,126	3,80	4,31	2	5
The training I have been through helped me very much to overcome new way of working.	Male	30	3,43	,971	,177	3,07	3,80	2	5
	Female	25	4,12	,726	,145	3,82	4,42	3	5
	Total	55	3,75	,927	,125	3,49	4,00	2	5
In an organization where I work we often have trainings.	Male	30	2,97	1,129	,206	2,55	3,39	1	5
	Female	25	3,36	1,319	,264	2,82	3,90	1	5
	Total	55	3,15	1,224	,165	2,81	3,48	1	5

Analysis of variance we did in relation to gender, additional analyzes, we found that this independent variable has the highest difference among the groups. The reason for selection of this analysis lies in the robustness of the analysis itself and the fact that we have a relatively good sample of respondents.

**Table 6 Test of Homogeneity of Variances**

	Levene Statistic	df1	df2	Sig.
I have difficulties with the new way of working.	,972	1	53	,329
I believe that in organization where I work should be more training.	,674	1	53	,415
The training I have been through helped me very much to overcome new way of working.	5,211	1	53	,026
In an organization where I work we often have trainings.	1,372	1	53	,247

**Table 7 ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
I have difficulties with the new way of working.	Between Groups	1,069	1	1,069	1,451	,234
	Within Groups	39,040	53	,737		
	Total	40,109	54			
I believe that in an organization where I work should be more training.	Between Groups	,510	1	,510	,583	,448
	Within Groups	46,327	53	,874		
	Total	46,836	54			
The training I have been through helped me very much to overcome new way of working.	Between Groups	6,430	1	6,430	8,518	,005
	Within Groups	40,007	53	,755		
	Total	46,436	54			
In an organization where I work we often have trainings.	Between Groups	2,110	1	2,110	1,420	,239
	Within Groups	78,727	53	1,485		
	Total	80,836	54			

A statistically significant differences were found among the gender and statements about overcoming new way of working through training (“The training I have been through helped me very much to overcome new way of working.”),  $F(1, 53) = 0.005$ . Given that this is two-stage independent variables (gender), post-hoc analysis was not done. Comparing means we can see that female respondents have 4.12 mean, while male respondents have 3.43 mean.

The analysis of descriptive statistical analysis of statement „The training I have been through helped me very much to overcome new way of working” we can determine that the 11 (20%) respondents gave an answer that they completely agree with the statement, 26 (47.3%) gave the answer that they agree, 11 (20%) respondents were undecided while 7 (12.7%) respondents gave the answer that they do not agree with the statement. It should be noted that none of the participants gave a rating of 1.

**Table 8 Crosstab of gender and stamen “The training I have been through helped me very much to overcome new way of working”**

		Gender	
		Male	Female
		Count	Count
The training I have been through helped me very much to overcome new way of working.	I completely disagree	0	0
	I do not agree	7	0
	I agree and disagree	6	5
	I agree	14	12
	I completely agree	3	8

From table 8. we can see the distribution of responses to the statement “The training I have been through helped me very much to overcome new way of working”. Here we can see that the most positive responses related to statement, are of the female population, 8 of female respondents fully agree with the statement, 12 of female respondents agree with the statement. Practically, this means that we have 20 female respondents who had success after training with the new process. It should also be emphasized that at the female population we have not seen any negative response.

### **Discussion and conclusion**

From the research now we can answer the research questions. It should be noted that we have used gender as an independent variable used gender.

The first research question was: Are there any statistical significant differences between statement „In an organization where I work we often have trainings“ and gender of the respondents? Statistical analysis show us that there is no statistically significant differences.

The second research question was: Are there any statistical significant differences between statement „The training I have been through helped me very much to overcome new way of working“ and gender of the respondents? In these statements, we have identified a statistically significant difference between statement and gender. Our research has shown us that female respondents had more success with his new operations after training.

The third research question was: Are there any statistical significant differences between statement „I believe that in an organization where I work should be more training“ and gender of the respondents? In this statement we have not identified a statistically significant difference between groups.

The forth research question was: Is there statistical significant differences between statement „I have difficulties with the new way of working“ and gender of the respondents? We have not identified significant differences.

According to research, female respondents have had more success with the new operating mode after the training. This can be explained by the fact that a large number of tasks related to administration is carried out by females. In other words, the female population will have more success after internal training and education than the male population in organizations that are subject to reorganization. This is important scientific information

that can help us in the further development of internal training model in order to reduce the negative effects of reorganization.

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# GLOBAL EDUCATION IN THE ERA OF GLOBALIZATION

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## Abstract

*The authors start from the comparative examination of the different roles of globalization, the global economic crisis, its impact on the changing picture of the world and the emergence of new forms of education - a global education that should eliminate the negative impacts of global change on education, intercultural and international cooperation. That implies deeper internationalization of education, increasing student mobility which can be achieved through various programs and strategies. EU, for example, formed the Association for Global Education called The South-North Centre (SNC) in order to improve dialogue and connectivity between different cultures in the field of education, especially between the South and the North. Serbia, as a member of the SNC, is making effort to implement intercultural, civic and human rights education in various fields of society.*

*Authors have also analyzed weaknesses in the education system of Serbia, which are most obvious in the media education sphere. Based on that, the conclusion arises that the educational system in Serbia should develop mechanisms for acquiring media literacy among pupils, students and citizens, which is very important for developing public critical awareness, active audience and creating fertile ground for the development of high culture and raising the quality of education.*

**Key words:** *globalization, global education, international cooperation, media literacy*

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## **Introduction**

The main purpose of education in general, is to produce and to develop human potential, in purpose of lifelong expertise, developing intellectual, ethical, investigative-scientific, creative, financial, economic and social skills. At the same time it is the path for improvement of various spheres in society, from health care, school system, culture, science, politics, mass media technologies, local and national economy and many other areas which assumes continuously changing, adaptation and adoption with new standards of modern time (for example with standards of education of EU for its members and candidates for membership), through the internationalization of education.

Therefore in the contemporary world education, comparing it to the traditional approach requires new form of skills (for example interculturality in the era of immigration), knowledge and new form of literacy (informative, media, foreign language) because of new view of the world produced by globalization of society processes.

Contemporary learning requires teaching in the manner to teach the whole child for the whole world and learning should be inspired by the goal of developing global consciousness (Suárez-Orozco, 2007), which include learning world history and cultures. Such approach is necessary because globalization brings some problems due of emphasis on profit in a global networking world, such as the problem of minorities, problem of small nations, language and cultures, inadequate understanding of human rights etc. From the reason of need for better understanding of different cultures, nations, countries, increasing the level of knowledge and awaking the people about opportunities for more justice, equality and human right, we at the moment can see the emergence of global education that works towards resolving these problematic issues.

## **The Aim of the Paper**

The aim of the paper is to explore the concept of global education, with regard and critical review of some aspects of globalization and its influence on education, and to show importance of new form of literacy in the era of globalization i.e. media education.

This paper investigates the relation between globalization and education, i.e. that new change in global world society (society of global village)



brings the need for new forms of educations which enables to resolve some consequences of negative side of the globalization process.

### **Globalization and global education**

The main purpose of globalization is creating a world society, which is reflected in the economic, technological and even cultural, political connection between people. The economic aspect according to Jez (2009) refers to the „interdependence of modern production and exchange, the creation of transnational corporations which with their production capacities overcome the traditional boundaries and whose subcontractors are located in a number of countries” (p. 254). Economic factor is shown as the first and most influential factor in global processes, which further influenced the emergence of political and cultural changes in the world, but, on the other hand, it influenced at the same time a change in the geopolitical structure of the world, causing negative consequences. The emergence of the economic supremacy has caused the emergence of the weakening economy and in the case of developed countries, especially with the emergence of developing countries such as China, which in 2011 joined the World Trade Organization (WTO).

Liberalism concept collapsed over time, and Neo-liberalism emerged and took its place. Neo-liberalism is reducing individual man to the mere consumer through economic, technological and military networking of people, cultures and countries. The main reason for this situation is big importance of economic interests, greed of multinational corporations and quasi-political elite. In this way, the neo-liberal trends have led the world to the center of the global crisis. According to Nikolic and Petrovic (2011) „the financial crisis in the US, which began in mid-2007, had the extraordinary importance, which culminated a year later into a global economic crisis” (p. 213).

These reasons change and the geopolitical picture of the world. The main economic indicators are showing that economic importance of so-called “West” in the first decade of the 21st century become weaker compared to the “East”, which is experiencing economic prosperity. The global economic centre is moving strongly towards Asia for the first time since the 18th century. But despite the financial crisis, globalization has left a number of issues unresolved and has caused a number of problems, which is itself produced, and that is according to Balj (2013) „global environmental problems obviously present in the spread of ozone holes during warm

atmosphere and intense pollution; the global problem of poverty (...), global production of modern technological and biotechnological weapons, global terrorism and the ongoing wars waged after the Second World War, under the doctrine of limited wars, and that result an inadequate understanding of human rights and freedoms” (p. 42).

But whether discussion is about the economic, political or cultural globalization of society, changes caused a strong impact on education and its further consequences. Economic globalization, which refers to the increase production and trade, the emergence of transnational enterprises, competition for seats companies in the states and similar, as Milutinovic states (2011), continue to cause „changes in employment and thereby touches on one of the traditional goals of education - preparation for work. Since the globalization of the economy means more pronounced division of labour, increased competition, changes in the employment structure, and changes of necessary knowledge and skills, educational institutions need to consider their own mission in the light of changes in the sphere of jobs requirements and circumstances. They should to enable the adoption of new skills and gaining flexibility in order that man could actively participate in the knowledge society and economy and achieve success in the global competition” (p. 454).

From that reason in modern times, education not have any more at first level tendency for theoretical approach and philosophical grounding of knowledge, because the science has the highest value if is practical, and that means that its creative function refers to some form of additional production to meet certain needs, including the global civilization needs. Starting from this conclusion, in the era of globalization the main knowledge purpose can be interpreted as encouraging consumer-produce civilization and spirit, and in this direction knowledge management function is viewed (Cizmar et al., 2016, p. 85). But theoretical purpose of education in ancient paradigm and pragmatic function of education in the contemporary paradigm have one common tendency - improvement of human life, which lead us to the sphere of society nets and netting various field of knowledge, between different nation, countries, cultures with emphasis on respecting the human rights.

Therefore, we can claim that new way of education require the knowledge useful for society, which prepare students and citizens for global change in the world. It became very important for undeveloped countries which need such a form of education to be prepared for taking advantage of the

economics, cultural and information globalization in order to increase international cooperation.<sup>3</sup>

Internationalization of education has been started with realization through Bologna Process and Lisbon Strategy in Europe. Those are the clearest examples of international engagement at this level, with the first drawing more than 40 countries into a voluntary process of enabling a European Higher Education Area. This has become a reference for similar efforts elsewhere in the world as ENLACES in Latin America, development of a harmonization strategy in the African Union, Communiqué initiative launched by twenty-seven countries in the Asia-Pacific region and others. Internationalization of education causes a veritable explosion in numbers of programs and institutions that are operating internationally. We can notice that Qatar, Singapore and the United Arab Emirates stand out as examples of countries that have boldly promoted internationalization as a matter of national policies (Altbach et al., 2009, p. v).

Internationalization of education increased mobility of students which involves two main trends:

1. Mobility students from Asia to North America, Western Europe and Australia
2. Mobility student inside Europe and within EU

International student mobility largely reflects a South-North phenomenon.

UNESCO estimates that in 2007 there were more than 2.8 million internationally mobile students, an increase of some 53 percent over the estimated figure of 1.8 million in 2000. By 2025, research undertaken for IDP Pty Ltd in Australia suggests that roughly 7.2 million students may be pursuing some higher education internationally, an increase of 188 percent over the 2006 UNESCO estimate (Böhm, et al., 2002).

Internationalization can be seen as a strategy for societies and institutions to respond to the many demands placed upon them by globalization and as a way for higher education to prepare individuals for engagement in a globalized world. Internationalization is process of integrating an international, intercultural, or global dimension in the purpose, functions,

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<sup>3</sup>The concept of Global education refers to the various spheres of education as: Human Right Education, Education for Sustainability, Education for Peace and Conflict Prevention and Intercultural Education, Development Education, Education for Citizenship (Global Education Guidelines, 2012, p. 10).

or delivery of postsecondary education and consists of two main spheres of action, commonly characterized as „internationalization at home” and „internationalization abroad” (Knight, 2004).

Internationalization at home typically consists of strategies and approaches designed to inject an international dimension into the home campus experience, for example, by including global and comparative perspectives in the curriculum or recruiting international students, scholars, and faculty and leveraging their presence on campus. Internationalization abroad, on the other hand, calls for an institution to project itself and its stakeholders out in the world. Key examples include sending students to study abroad, setting up a branch campus overseas, or engaging in an interinstitutional partnership (Altbach et al., 2009, p. 23).

Aspects of internationalization of education we can notice and through the project of global education, which aims to promote the values that are set and started by the process of globalization, but which are eventually ignored because of the economic spheres of interest. In promoting some democratic values we have civic/citizenship education as part of global education which, according to Shuayb (2012), „could be tool that can promote trust, cooperation, participation and cohesion. Although the concept differs in different countries, the emphasis is on knowledge of right and responsibilities, value and active citizenship skills” (p. 30).

This kind of education is especially important for the societies where the problem of deep social division exists, big inequality, discrimination in various field of society, but at the same time civic education in not only directed to the local society or society of one country, but it has and international perspectives. Promoting humanitarian principles and seeking to bring improvement is involved in international education, which have to, according to Ker (2012) „concern about promoting human rights and the principles of equality, equity and justice” (p.18). These principles become the part of global education because the need for increasing the consensus, within and across countries and regions, promoting democratic values of society and for protecting against the rise of xenophobia, racism and injustice.

**Figure 1** *Impact of globalization on the emergence of the new forms of education*

<b>GLOBALIZATION AND EDUCATION (consequence and requires)</b>		
<p><b>1.Economics globalization</b> with project of Neoliberalism. <b>Consequence:</b> creating the society of consumers and pursuit of profit <b>Requirements:</b> new forms of works, employment, new form of education and preparation for work</p>	<p><b>2.Political globalization</b>  <b>Consequence:</b> annulment of human rights and freedoms, minority rights  <b>Requirements:</b> education for human right, civic education</p>	<p><b>3.Cultural globalization:</b>  <b>Consequence:</b> homogenization of different cultures  <b>Requirement:</b> Intercultural education</p>
<p><b>Globalization in general</b> <b>Consequence:</b> new view on the world <b>Requirement - new forms of education – global education:</b></p> <ol style="list-style-type: none"> <li>1) Human Right Education</li> <li>2) Education for Sustainability</li> <li>3) Education for Peace and Conflict Prevention</li> <li>4) Intercultural Education</li> <li>5) Development Education</li> <li>6) Education for Citizenship et cetera.</li> </ol>		

**Source:** *Original table projected by Valentina Cizmar*

We can notice that EU system of education, as South-North Centre (SNC), too, sets and necessary education for human rights. According to Klemenovic (2007) intentions to this type of education in Serbia are encouraged, first from the non-formal education – „through the activity of non-governmental organizations, humanitarian and peace organizations” (p. 166). In this way, the company is directed towards adopting the values of knowledge that ensure a harmonious life in a civil society, which is based on respect for human rights and freedom, protecting the laws of minority. Such knowledge is managed in the direction of the civic awareness development. Application of the standards of the European Convention on Human Rights, in particular the requirement in domestic law and practice, should be implemented through training for solicitors, judges, prosecutors, lawyers as the most concerned with standards application. This project was started in Serbia in 2002 as well, but it is noticeable that the strategy for

the development of human rights education and education for democratic citizenship is already established in the school education through the introduction of the teaching of Civic Education, which aims to prepare the implementation of democratic life in community. But human rights education has wider meaning, because, according to Klemenovic (2006) represents general indication „for wide range of programs in the area of civic education, education for democracy“ (p.166), education for peace, intercultural education, education for development etc. Intentions towards this type of education in Serbia were encouraged in informal education, through non-governmental, humanitarian and peace organizations, at first. Postulation for civic democratic education is defined in the Charter on Education for Democratic Citizenship of the Council of Europe which was recommended by the Board of Directors CM/Rec(2010)7. Main purposes are education, training, awareness, information, practical appliance and supporting activities which aims to train and educate students, supply them with skills and awareness to enjoy and advocate their own democratic rights and social responsibilities. These possibilities are most developed, according to Klemenovic and Lazic (2008) when students take part in school, high-school and university parliament, additional school activities, organization of school manifestations, peer education, various types of school activities where students are encouraged to actively include themselves „by actively participate in things that matter to them“ (p. 43).

Implementation of such aspects of education in Serbia is important, because from that point Serbia is enabled to participate in international and European cooperation in the field of global education, which promotes North-South Centre - European Centre for global Interdependence and Solidarity. These centre until now include 23 countries, including Serbia, and since January 2017, and Bosnia and Herzegovina. This center was created within the framework of the Council of Europe in order to raise European public awareness of global interdependence and solidarity. In other words, according to Nick (1998) „main objective is to contribute to raising public (...) of the many and complex relations that exist between Europe and the southern continents (Africa, Asia and South America)” (p.14). These center works in close co-operation with several Council of Europe bodies: the Directorate of Political Affairs, to which it is attached, the Parliamentary Assembly, the Congress of Local and Regional Authorities of Europe and the NGO Liaison Committee. The South-North Centre also takes part in discussion with OECD, the European Commission and the United Nations Development Programme (UNDP) on the role of information in North-South co-operation and aid for development. Its activities is manifested

and through publishing various publication as it is for example monthly publication „Interdependent” which is available in French and English (and „Terra Viva” which until now has been published for United Nations’ conferences). In that way Centre enable exchange information between North and South. But among many programs promoted by these Centres, we can find “Global Education Program” which aim is to identify the resource and diverse experience and expertise of different countries in the field of global education - education in development, the environment and human rights and to create synergy. Centre, also includes „Youth” program which aims to promote and enhance the role of young people in shifting awareness and co-operation through many organization (educational, governmental, intergovernmental and non-governmental) in the youth field in North-South context.

The North-South Centre’s activities involve two lines of actions as we read in Global Education Guidelines (2012): 1) „raising European awareness of issues of global interdependence and solidarity through education and youth programmes; 2) promoting North-South solidarity policies in conformity with the goals and principles of the Council of Europe through dialogue between Europe, the Southern Mediterranean countries and Africa” (p. 6). Purpose of center is to promote gender empowerment, youth participation and democratic consolidation through intercultural dialogue in cooperation with civil society, local authorities, governments and parliaments<sup>4</sup>.

Global education is a holistic „education that opens people’s eyes and minds to the realities of the world, and awakens them to bring about a world of greater justice, equity and Human rights for all”.<sup>5</sup> From that reason it focused on the development of the human personality and respect for human rights and fundamental freedoms, and promotion of the United Nations’ activities. Thus, in the concept of global education, we see axiological level which is based on values such as peace, freedom, the principle of equality, equal rights regardless of race, religion or nationality, and his frame is extended beyond Europe, too.

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<sup>4</sup>The idea of a global education Charter for Council of Europe member states emerged at the international workshop on *Partnership on Global Education - Global Education in Secondary Schools* organised by the North South Centre jointly with the Ministry of national education and religious affairs of the hellenic republic in Athens on March 1996. The global education Charter was delivered in 1997 as the first north-south Centre reference document on global education. (Global Education Guidelines, 2012, p.7)

<sup>5</sup>Maastricht Global Education Declaration, 15th-17th november 2002. The definition was originally formulated during the yearly “Meeting of the global education Week network” in Cyprus, 28th-31st March 2002.

One of the important segments of the global European education is to connect professors and teachers, as well as connecting students and educational institutions, where is in the framework of the implementation of global education accent to learning of foreign languages.

In Serbia, promotion activities of global education are under auspices the Ministry of Youth and Sports. On the flip side, we can see that some aspects of the internationalization of education (inclusion in the new programmes as Erasmus Mundus, TEMPUS, Jean Monnet) exist in the sphere of the some state and private Universities as it is University of Business Academy in Novi Sad, FIM - Faculty of international management in Belgrade and others. In that aspect Serbia shows courage for new challenges in the time of new requirements in the modern education, but there are some standards which toward the EU i.e. Strategy of Europe 2020 Serbia must achieve. In general, Bologna reforms can be considered as one aspect of global change of educational system.

### **Multicultural education in Serbia**

The main aim of global education is to enable access to knowledge and products of science and technology between different counties, spreading the multiculturalism and intercultural views thought education, an increase in opportunities, personal and social development, addressing common problem.

It is shown as important, because cultural globalization, in relation to all other aspects of globalization have most influence on processes in education and education institution (Milutinovic, 2011, p. 455), because the cultural globalization is directed towards the homogenization that is the source of conflict and confrontation. Intercultural or multicultural education is as an idea, an educational reform movement and the process whose major goals according to Banks (2010) „is to change the structure of educational institutions so that male and female students, exceptional students and students who are members of diverse racial, ethnic, language and cultural group will have an equal chance to achieve academically in school” (p.1). Educational system need to conceptualize the school in order to implement multicultural education successful, so that way of education is one road of the solutions for overcoming the negative side of cultural globalization.

Former Yugoslavia, including Serbia as one of six Republics, was according to Losonc (2003) „the one to most widely open the door to multiculturalism



as an ideological project as a supra national goal of history” (p. 194). Josip Broz Tito was aware of the fact that stability in multicultural country such as Yugoslavia with variety of different nationalities can be guaranteed only by respecting of diversity. The 1974 Yugoslav Constitution (Ustav SFRJ iz 1974, 1974) brings progress on many issues over 1963 Yugoslav Constitution because it demolishes the old class divisions based on exploitation, political prosecutions and national inequality. Some of the relevant clauses of that constitution are national equality, national freedom and independence, brotherhood and unity of nationals, right to self-determination, even secession. In the context of respecting the peoples’ rights and national minorities in Yugoslavia, citizens had rights for cultural autonomy and political participation. Also, this type of socialism enabled multicultural education in regard of respecting diversity. Former Yugoslavia was an obvious example of how multicultural country can obtain education in languages of national minorities, teaching foreign languages, etc. After the period of national separation and destroying the multicultural project with tragic consequences for Yugoslavia, today in Serbian Autonomous Province of Vojvodina there is idea of interculturality is still alive and is obtained in the educational system. In Vojvodina, there are preschool, primary and high-schools in which teaching is ongoing in some of the national minority languages. Also, there is this possibility even on a university level, on departments of slavic, rutherian, hungarian and other studies. Multicultural education is taking place, according to Herrera and Mandic (1989) and through extracurricular and cultural activities, cultural manifestations, festivals, exhibitions and competitions. This allows „cooperation on cultural level and creates terms for mutual understanding, acceptance and respect, which represents very important defense from isolation and closing“ (p. 115).

Today, a country is considered to be successful in the process of education if it obtain the possibility of multicultural education, education for minorities and this is worldly approach which asserts EU motto “Unity and differences” on educational level.

On a level of EU, issue of education for national minorities, which affirms multicultural education is mentioned brought by European Council in 1998 „Framework Convention of National Minorities” which is the result of long-term effort to define standards, frame and terms for desirable conducting in such a sensitive issue for the European continent. Spevak (2007) states that „convention is a result of the decision brought in 1993 on Vienna Summit and is based on a final document of the Conference in

Copenhagen – Copenhagen Document on the Human Dimension in 1990, the Final Act of the Conference for Security and Cooperation in Europe (CSCE, 1995 – the OSCE) and the UN Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities of 1992” (p. 56). Autonomous Province of Vojvodina, for example, has shown very good implementation of the Convention, so in 2012 year it got the European award for the implementation of the highest standards in the field of multicultural education.

Education for national minorities is officiating as an aspect of multicultural education and multiculturalism, in general. This issue emerges as very important for every country that aims to merge in political, economical and cultural area of the EU, because this principle of multiculturalism took very important part in constituting EU.

According to analysis of Will Kymlicka multiculturalism won the important battle in Europe, but, recently, we can hear terms such as crisis of multiculturalism and death of multiculturalism and officiating multiculturalism becomes an issue. Some of the research claims that multiculturalism have

- a) weak, almost non-existing effects relating to socio-economical integration
- b) limited and partial positive effects relating to socio-cultural integration (Koopmans, 2013).

Kymlicka, though, is not so much suspicious about this issue and he doesn't think that there is withdrawal of multiculturalism, because without it, one cannot imagine unity of different in Europe, which is actually projected as supranational partnership. But, one should consider that there are various perceptions of multiculturalism in different countries. These are based on different terms – economical, historical, immigrational and national and fear is also present as a consequence of extreme cultural differences. According to Bleich (1998) France and England reacted to multiculturalism in particularly different manners, so „England education policy took on board many of common changes advocated by supporter of multiculturalism, and multiculturalism is now generally accepted in many English educational institutions. In contrast, France has only grudgingly accepted very small pieces of multicultural agenda, preferring to maintain education as a sphere for assimilating immigrants” (p. 81). On the flip side, in contemporary education relation between education and immigrant become one of necessarily question of global education and new view of the world.

## Media literacy as necessary subject

Education is one of the spheres of society through which society is trying to implement a set of expectations as it is, according to Gone (1989), values and customs of a society, „to what the contents will be given the advantage in the transfer of knowledge and resources that will be used to accomplish these goals” (p. 20). In democratic and above all European societies we can see the tendency to implement media literacy in education for children, students, citizens in order to protect them from uncontrolled media influence and to create rational consumer of media, mainly because media (including TV, radio, photography, cinema, internet, advertising, newspapers, computer games) do not offer as claims Buckingham (2003) „transparent windows on the world” (p. 3), but provide us with selective version of the world.

Weaknesses of education in Serbia is most noticeable in the field of media education i.e. media literacy, as stated in the *Serbian Media Strategy*, because not only pupils, students but and citizens have poor media literacy, which results in a lack of critical distance towards media content, ignorance the nature and functions of the media, especial its educational function.

Media literacy as education implies several aspects:

- Media literacy based on understanding of the nature of media, awareness of ownership structures, ability for analysis of content, understanding of media messages and practical utilization and critical reflection
- Education through media consists of emphasizing educational function of media, specially in the area which is considered to be public service
- Media literacy is related to education of specific, professional, technical, expert, and pedagogical resources.

Concept of media literacy became interesting with emergence of media of mass communication in international circles which researched education related to UNESCO. Issues that were launched were: power of new technologies for literacy, television as proper approach to knowledge, critical view of dangers of media manipulation (Gone, 1989, p. 23).

Media literacy is one of the aspects of communicology which according to Markovic (2010) „explores the concept of media and their role in the system of mass communication” (p. 32). Mass communication can be defined as a term which includes such institutions i.e. mass media (radio, TV, film, Internet) where information is organized and transfers

to large, heterogeneous and widespread – mass audience. In this type of communication, it is always a source from whom the information is transferred and which do not operate independently, but always in the context of a complex organization (media companies, publishing houses, radio stations etc.). That's why a sent message which was intended to audience, mass, represents the efforts of many individuals. But we should bear in mind that the message is always selected and when sending information by any means of mass media, there is a „gate keeper“ and that's a person whom by choice, change or rejection message can influence the course of the flow of information (Taps, 2013, p. 645). So that is why it is important for mass media to be objective, to be a forum of public expression and to be protected from the danger of being under the political supervision. And since it has a strong social role it is expected to be allowed to have freedom of expression, which is one of the conditions of democratic societies.

UNESCO adopted in 1964 a Declaration on compulsory media education from preschool to university level. Some countries affirm this form of education. But Serbia, apart from Greece, Russia, Spain, Switzerland falls into the third category of countries where media education is not part neither formal nor informal education, while, for example, in Ireland, the UK, Hungary, Slovenia the media education is part of compulsory education (Todorovic, 2008, p. 47).

However, the consequences of media literacy are not the same in all countries. In Serbia, which is lagging behind other European countries in the field of education, and because of the tabloid, a commercial and profit-access of media (as a general world trend which appear in Serbia in its most naked form), citizens have become victims of popular media culture dominated by reality shows, entertainment, quiz, which is not the case in other countries where similar media contents exist.

The reason for this impact is that there is no critical distance in relation to the media, as well as lack of active audience that will be a critical public. In order to reduce the negative influence of the media (through effects of violence, promoting materialism, consumerism, false believe), there is necessary, according to Vuksanovic (2006), to introduce the subject of media literacy as a separate subject in school or „a whole set of related items and scientific disciplines in educational processes“ (p. 37). In Serbia, there are other indicators of deficiencies in media education, even within the curriculum of journalism studies, as for example non-existence of Mediology as a subject of lecture.

## Conclusion

Today, especially for College and university students it is important to realize that the educational system is “fundamentally fertile, rotating garden” and very important for their future role and position in society which suffering from the consequences of globalization. It supposes development of new forms of education as civic education, intercultural education, education for human rights, media education and others.

Student mobility is one of the most visible aspect of education in era of the globalization whose one of the important aim is creating “global citizens” with “global competencies.”

Serbia is the one of the 23 country which is part of European project of global education i.e. part of South-North Centre, and that is one of the indicator its tendency to make steps with the other countries in the field of education. But on the other side, one of initial weakness is a lack of media education, which is one of segments where is reform and change necessary in Serbia and other countries, in order to create active, critical and rational consumer of media and prepare society for quality development of further steps in education in general.

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CIP - Каталогизација у публикацији  
Библиотека Матице српске, Нови Сад

37:004.738.5(082)

**CONFERENCE Innovation, ICT and education for the next generation (1 ; 2017 ; Novi Sad)**

Thematic proceedings / [Conference] Innovation, ICT and education for the next generation, [Novi Sad, May 26-27th, 2017] ; [editors Dragan Soleša, Vladimir Šimović, Bojan Rosi]. - Novi Sad : Faculty of Economics and Engineering Management, 2017 (Novi Sad : Alfa graf). - 721 str. : ilustr. ; 24 cm

Тираж 100. - Библиографија уз сваки рад.

ISBN 978-86-87619-84-5

а) образовање - Нове технологије - Интернет - Зборници  
COBISS.SR-ID 314463239