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TESTING THE ATTITUDE TOWARD THE USE OF E-COMMERCE BASED ON THE CUSTOMER'S EDUCATIONAL LEVEL: THE CASE OF THE REPUBLIC OF SERBIA

Abstract

The subject of this paper is to examine to what extent and in which way educational level influences the use of e-commerce in the Republic of Serbia, as well as, in part, to examine customer satisfaction with e-commerce. The main objective of this paper is to determine the level of customer use of e-commerce depending on their educational level, as well as to spot the areas which need to be improved in order to increase the degree of use of e-commerce in the Republic of Serbia. For the purposes of sorting and grouping the data in this study the statistical method has been used. All collected data were processed in the statistical software SPSS (descriptive and parametric analyses were used, as well as comparison of mean values, correlation and regression). Based on the results of the tests conducted it is to conclude that the respondents generally use e-commerce in Serbia on a small scale and that other technological advances are accepted to a greater extent than e-commerce. The respondents have very low confidence while using e-commerce. One of the reasons for such a situation is the fear of possible abuses or the fear that e-commerce is insecure. Therefore, in order to increase e-commerce in Serbia, one of the priorities should be work on increasing the security of participants in e-commerce to reduce the possible abuses. From the research a conclusion can be drawn that the level of education significantly affects the use of e-commerce in Serbia and that it should be constantly worked on raising the educational level of the citizens in order for them to be able to properly use the advantages that e-commerce offers.

Keywords: E-commerce, educational level, customer satisfaction, e-commerce security

1. Introduction

In modern business conditions, the needs of the companies for information technology and commerce based on it (electronic commerce) are becoming more pronounced. Electronic commerce (e-commerce) involves all activities of buying and selling products and services which are carried out via the Internet or through other electronic communication channels. First of all, e-commerce consists of distributing, buying, selling, marketing and maintaining the products and services over electronic systems such as the Internet.

The level of use of information technology and computers depends on the level of education of the users. Educated people need sophisticated information about products and strive to use multiple sources of information when making purchase decisions.

The paper points out the significance of education as an element of culture in fostering the spread of e-commerce among the citizens of the Republic of Serbia.

This paper's subject is to examine to which extent and in which way the educational level affects the customer's use of e-commerce in the Republic of Serbia. This issue is very important considering the significance of e-commerce in the contemporary business environment. In accordance with the defined subject of research, *the main objective of this paper is to determine the level of customer use of e-commerce depending on the level of education in the Republic of Serbia. Also, the objective of this study is to spot the areas that need to be improved in order to increase the level of e-commerce usage in the Republic of Serbia.*

In the period of constant growth of market and competition, understanding and meeting the needs of e-commerce customers has become an imperative. Dedication and attention to the customer as an individual lead to getting to know the customer and to creating deeper business relations which are important for further cooperation, as well as for mutual satisfaction in business.

In acccordance to the subject of research and the goals set, the paper starts from the following hypotheses:

Hypothesis 1:

There is a statistically significant difference between groups with different level of education in using e-commerce.

Hypothesis 2:

E-commerce security has a direct impact on customer satisfaction and use of e-commerce.

Hypothesis 3:

There is a statistically significant difference between groups with different levels of education regarding safety and satisfaction with the use of e-commerce.

2. Review of Theoretical Literature

Electronic commerce is a very broad term. It can be most simply defined as buying and selling of goods and services that is based on the use of information and communication technologies (Bjelić, 2012: 84). E-commerce includes all activities of buying and selling products and services which are carried out via the Internet or other electronic communication channels. First of all, e-commerce consits of distributing, buying, selling, marketing and maintaining products and services over electronic systems such as the Internet (Todorović, Lečić-Cvetković, 2006: 17).

The development of the Internet and e-commerce changes to focused marketing, the customers are active participants of advertising campaigns and are approached individually, all with an aim to increase the satisfaction level, to reduce product delivery time and the number of complaints, to improve customer support and to achieve savings in distribution costs.

Depending on the telecommunication base on which the electronic commerce is being realised, it can be identified as follows (Simović, 2013: 19):

- Internet electronic commerce,
- Non-Internet electronic commerce (use of private networks, such as the VAN network, furthermore through the LAN network or the use of the Intranet, respectively through creating the extranet with partner companies).

E-commerce is the only branch of industry which has marked a constant growth in the EU in the last ten years. The total e-commerce in Europe has increased by 18% in 2013 in comparison to 2012 and it amounted to 155 billion euro. In 2014 a growth of 18% was also achieved and thus the profit of 181 billion euro by 2015. E-commerce is particularly present in Great Britain (67%) and France (52%), where 67%, respectively 52% of the total population on the network has made an online purchase.

In the study "Global Retail E-commerce Index 2015", conducted by the consulting firm A. T. Kearny from Chicago, it is stated that Serbia occupies the last position since it does not have a prepared plan on country level for further development of e-commerce.[1]

For ranking the countries this study used as criteria: market size, customer behavior, potential for growth and market infrastructure.

E-commerce is the only branch of industry in Serbia that has marked a growth in all previous years. One of the main characteristics of e-commerce in Ser-

bia, but also in the region, is that the citizens mainly make decisions to purchase on foreign websites. The share of purchases on foreign sites in relation to domestic ones is 90 versus 10 percent.[2]

Despite the growth, there are significant obstacles for further expansion of online commerce in Serbia. One of the greatest obstacles is the fact that Serbia as a country still does not have a prepared plan for further development of e-commerce.

Even though there is the Strategy on Development of Electronic Communications in the Republic of Serbia for the period 2010-2020 and the Information Society Development Strategy for the period 2010-2020, as well as the laws in this field (Electronic Signature Law, Law on E-documents, Telecommunications Law, Law on Electronic Commerce, Law on Personal Data Protection) (Tomić-Petrović, Petrović, 2011: 70), implementation of various aspects of the use of information and communication technologies is still insufficiently present, in particular the sociocultural perspective which can often have a decisive influence on the pace of expansion of ICT usage. When it comes to development of e-commerce in Serbia, it seems to be especially important to understand cultural peculiarities of the country and to consider them as reasons for the outgoing failure of the development of this concept of commerce.

Social factors that negatively affect the development of e-commerce in Serbia could be divided into (Petrović, Kovačević, 2012: 72):

- indirect – factors which generally have impact on the use of the Internet as a necessary tool for the development of e-commerce, and
- direct – cultural and psychological patterns of behavior which influence the acceptance of e-commerce among the existing Internet users.

When speaking about indirect factors, the first and foremost factor of low penetration of Internet users is the extremely bad economic situation in Serbia (almost 88% of households with income of over 600 euro in Serbia have an Internet connection compared to less than 48% of households with income lower than 300 euro).

However, despite the bad economic situation, we should nevertheless pay attention to socio-demographic factors which are not a good basis for e-commerce development. When it comes to the structure of Internet users in Serbia as a factor for the development of e-commerce, we can draw a conclusion that it is unfavorable from the viewpoint of the age structure, given that the dominant users are the young people, many of whom still do not possess their own or significant financial resources. As a reason for insufficient use of electronic commerce, cultural patterns of behavior and socio-psychological characteristics of Serbian citizens have been identified. One of the direct factors is the lack of any kind of motivation for using the Internet since there is no awareness of the way in which the usage of the Internet could improve life and make it easier.

Evidence suggests that, the principal reasons why people do not purchase via the Internet are related to online security and policy, reliabilities of companies and website technology (Chen, Barnes, 2007). The role of trust could be even more important in an E-commerce setting, since e-customers do not deal directly with the company, or its staff. A high degree of trust not only stimulates and meets consumers' high expectations of satisfying transactions but also eliminate uncertainty, perceived risks and interdependences in most online transactions (McKnight, Chervany, 2001). In addition, according to Gefen and Straube (2004), with increasing the level of consumers' trust, we will have an increase in the degree of purchase intentions of consumers and it will be easier for companies to retain customers. Moreover, Pavlou, Gefen and Straub (2004) believe that online trust plays a key role in creating satisfied and expected outcomes in online transactions. Also, the quality elements of the e-service are expected to affect e-trust directly, because they represent that trust cues convey the trustworthiness of the site and system with customers.

The success or failure of an e-commerce business depends on security and privacy (Tripathy, Mishra, 2013). Users' trust is essential to business development (Rane, Meshram, 2012). With the popularization of electronic payment, security issues have become a key problem. Theft of personal data (privacy) and unauthorized access (security) are serious issues in e-commerce for customers and service providers alike. Privacy is the ability of an individual to control the terms under which their personal information is acquired and used (Culnan, 2000).

Thus, to improve their business situation, providers should be specific about their security strategies. Security is also a major issue for e-commerce sites and consumers alike (Srikanth, 2012).

In the last few years, many researchers have offered solutions to the security and privacy issues that are loopholes in e-commerce transactions. E-commerce includes the transmission and exchange of information, products, and services, online transactions and payment, and also resource sharing between enterprises. In the effort to make electronic transactions secure, there are many problems to be solved beyond privacy and security. However, organizational policies and electronic signature technology may play as important a role in security and privacy as any other solution (Sadha et al., 2016).

The loss of trust is being fuelled by continued stories of hacker attacks on e-commerce sites and consumer data privacy abuse (Marchany, Tront, 2015). Because of that the security of e-commerce has become a hindrance to the improvement in the environment for the development of e-commerce. The common various e-commerce security tools are as follows (Partikana et al., 2015):

1. Firewalls - Software and Hardware
2. Public Key infrastructure
3. Encryption software
4. Digital certificates
5. Digital signatures
6. Biometrics
7. Passwords
8. Locks and bars - network operations centres.

In the services industry and particularly in services which are based on electronic devices a new paradigm seems to be emerging: the conscious management of identity in a secure service context (Jotwani, Dutta, 2016). The security needs a kind of trust security. Such a security allows the user to define a secure domain; to deal with the user's individual background so that the management of the user's device base is both secure and easy; to define which of his devices can be publicly or restrictedly accessed and how interactions occur. A secure client in combination with a trusted component in a mobile device can serve as a security anchor in the overall Security of Service concept.

Some authors believe that the conflict between convenience and ease-of-use vs. security has always been resolved in favor of convenience (Marchany, Tront, 2002). Other authors (Amtul, 2015) believe that there are tools such as biometrics which can summarize both:

1. Greater security - biometrics link a person to an action,
2. Convenience - clients have no identification number or password to remember.

Thus, to improve their business situation, providers should be specific about their security strategies. Security is also a major issue for e-commerce sites and consumers alike.

As new security solutions are developed, it is important that e-commerce vendors do not forget to also inform their customers about how these new solutions work. For example, it may not be obvious for customers that today sensitive information is encrypted when sent over the Internet, to ensure reliability and privacy.

Customer satisfaction is a collective outcome of perception, evaluation and psychological reactions to the consumption experience with a product or service.

According to Kottler and Keller (2006: 144) - satisfaction is a person's feelings of pleasure or disappointment which resulted from comparing a product's perceived performance or outcome against his or her expectations. Perception is defined as the consumer's belief, concerning the service received or experienced (Rai, 2008). Yang Fang (2004) believes that online customers still demand many services available through traditional channels even if they choose pure Internet-based suppliers with basic customer services. Although expectations seem to be of lesser importance as a comparison standard in e-commerce (Zeithaml et al., 2000), customers appear to use experience-based norms (Cadotte et al., 1987) and traditional services as comparison standards for e-services. This paper only partially analyzed customer satisfaction with e-commerce in Serbia and mainly focused on the use of e-commerce.

The reasons for the low level of e-commerce in Serbia can be traced to cultural factors, first of all in the widespread sense of distrust that arises as a consequence of fear from possible fraud in this type of commerce. This fear is the result of various factors, whereby the following stand out (Petrović, Kovačević, 2012: 74):

1. Lack of trust in state institutions which should be a guarantor of reliability and fairness;

2. Low level of trust is also deeply rooted in the patterns of social behavior of the citizens of Serbia;
3. Distrust is being developed as a natural defence mechanism against risks to which people are exposed in their everyday life.

While the latter reason could be categorized as universal, the first two reasons represent the peculiarity of Serbian society.

As evidence of the universality of trust, different studies have shown trust to be a universal factor. One international research (2011) examines consumers concerns about online shopping safety and shows that: almost 20% of consumers still do not shop online because of security concerns; almost 30% of consumers shop online but worry, and 22% of consumers shop only on well-known sites[3]. On the other hand, one Serbian research examines why consumers have not tried Internet shopping. The research results show that 43% of consumers want to see the product before buying, 26% do not trust the guarantee that the product delivers, 20% do not believe in the system of payment, 19% prefer the traditional method, and 17% are afraid that the delivery will be unreliable[4].

Level of education has a great impact on customer behavior. Educated people need more sophisticated information on the products and they strive to use multiple sources of information when making purchase decisions. According to the level of education (data of the Statistical Office of the Republic of Serbia for 2014) regarding the use of computers, persons with higher education are dominant. The share of computer users (within the last 3 months) according to the level of education is as follows:[5]

- 88.8% of persons with higher education;
- 72.4% of persons with secondary education;
- 31.7% of persons with education lower than secondary education.

Empirical evidence suggests that customer education enhances perceived control, perception of trust with the service provider and satisfaction with the firm. Customer education also contributes to the management of expectation and trust. Trust has been acknowledged as an important factor in customer loyalty. It will bring positive outcomes which are generated from customer knowledge about product/services performance. Therefore, customer education will positively impact customer trust, loyalty and outcomes (Suh et al., 2015).

The aim of this study is to examine, on a random sample, the effect of direct factors (education, trust) on the level of use and only partially on satisfaction with e-commerce in the Republic of Serbia.

3. Research Methodology

For the purposes of classification and grouping of data during the research, all collected data have been processed in the statistical software "SPSS" (Statistical Package for the Social Sciences). During data processing, descriptive and parametric analyses were used, as well as comparison of mean values, correlation and regression.

Survey and online survey method were used in the research. Therefore, in addition to personal survey by means of a questionnaire, an online survey was conducted through a "Google" questionnaire.

4. Research Results

The survey for the purposes of this paper was conducted in the period 4–7 August 2015. The technique for sampling was a simple random sample. The number of respondents who took part in the survey is 105.

The questionnaire itself consists of 36 statements for which the respondents were supposed to express the degree of their agreement (or disagreement) on a seven-point Likert scale, where grade 1 meant "entirely disagree" while grade 7 meant "entirely agree". In addition to the mentioned 36 statements, the questionnaire also includes 6 demographic questions, namely: gender, age, employment status, education, income on a monthly basis, and the type of settlement in which the respondent lives.

The gender structure of the respondents is as follows: 46% male and 54% female respondents. When speaking about age structure, most of the respondents are aged 26 to 33 years (41%), followed by the respondents who are 18 to 25 years old (27%) and respondents aged 34 to 41 years (22%).

Regarding the employment status of the respondents, employed persons are dominant since half of the respondents belong to this group, i.e. 50%, followed by 30% who identify themselves as "pupils/students", 18% who are unemployed and the retired people who only have a share of 2%.

Most of the respondents in the sample have a bachelor's / master's / doctoral degree (45%), when it comes to segmentation on the basis of educational level or the last completed school.

Then a group of respondents follows who have completed secondary school (31%), while 18% have not completed post-secondary school education. The lowest number of the respondents has only primary school education (6%).

A higher percentage of the respondents live in towns (70%), while 30% of the total number of respondents live in rural areas.

Through descriptive analysis, average values were calculated of the scores that respondents gave at the seven-point Likert scale und thus expressed the degree of their agreement or disagreement. Standard deviation is also presented for each statement in particular (Table 1).

Table 1 Descriptive analysis of the results – arithmetic mean and standard deviation

Statements	Number of respondents	Arithmetic mean	Standard deviation
1. I actively use a computer.	105	4.48	1.99
2. I believe that my computer usage is at the advanced level.	105	3.99	1.68
3. I use a computer mainly for business purposes.	105	3.29	1.96
4. I use computer mainly for private purposes.	105	4.06	2.01
5. My home computer has an Internet connection.	105	4.85	2.06
6. I often use the Internet.	105	4.81	1.92
7. I believe that my Internet skills are at the advanced level.	105	4.34	1.99
8. I use the Internet mainly for private purposes.	105	4.21	1.89
9. I use the Internet mainly for business purposes.	105	3.41	2.08
10. I often use social networks.	105	4.30	1.86
11. I believe that the use of social networks contributes to communication between people.	105	4.53	**2.20**
12. I believe that nowadays it is desirable to have an account on social networks.	105	4.27	1.89
13. I believe that the use of social networks is safe.	105	**3.20**	2.06
14. I prefer reading online newspapers to printed editions.	105	4.04	1.89
15. I consider online newspapers more current than the printed ones and therefore also better.	105	3.84	1.96
16. I use a "smart" phone (new generation mobile phone).	105	4.77	1.68
17. „Smart" phones are far better than ordinary mobile phones.	105	4.80	**1.61**
18. „Smart" phone applications make the use of mobile phones a lot easier.	105	**4.86**	1.93
19. I often use mobile phone applications such as Viber and WhatsApp.	105	4.68	1.84
20. I prefer using debit cards to cash.	105	2.72	1.94
21. I believe that the use of debit cards is safe.	105	**3.46**	1.68
22. I often use e-commerce.	105	**2.81**	1.90
23. I use e-commerce mainly for business purposes.	105	**2.45**	1.85
24. I use e-commerce mainly for private purposes.	105	**3.02**	1.79

Statements	Number of respondents	Arithmetic mean	Standard deviation
25. I use e-commerce mainly for banking operations.	105	**2.58**	1.90
26. When choosing a bank it is important for me to have online (via computer) access to my account.	105	3.09	1.76
27. I often do online shopping on the Internet.	105	2.93	1.99
28. It is not a problem for me to leave, when required, the number of my account and my debit card in order to make a purchase on the Internet.	105	2.60	1.65
29. I trust foreign websites for commerce more than domestic ones.	105	3.02	1.88
30. An obstacle to the use of e-commerce is the fear that I am not entirely familiar with the whole procedure of e-commerce.	105	3.01	1.84
31. I believe that e-commerce is safe.	105	**3.41**	1.91
32. Electronic commerce makes business easier.	105	4.18	1.91
33. I am satisfied with the functioning of e-commerce in Serbia.	105	3.08	1.99
34. I believe that an insufficient number of people in Serbia take advantage of e-commerce.	105	4.09	1.84
35. I believe that a small number of enterprises in Serbia take advantage of e-commerce.	105	4.00	1.91
36. I recommend to my friends to take advantage of e-commerce.	105	3.90	2.06

Source: Authors' research

In addition to the statements which examine to what extent the respondents use e-commerce and their attitudes towards e-commerce, they were also requested to estimate the level of their agreement with statements which referred to other contemporary technological advances, such as the Internet and computers (which are necessary for the performance of electronic commerce), "smart" phones, reading of online portals, debit cards. These statements have been added in order to compare whether there is a difference in the use of these technological advances in relation to the use of e-commerce.

The statement with the highest average score is the statement "Smart phone applications make the use of mobile phones a lot easier" (4.86), while the lowest rating belongs to the statement "I use e-commerce mainly for business purposes" (2.45).

The respondents expressed a higher level of agreement, in comparison to other statements, when they were asked whether they use a computer, the Internet and "smart" phones. On the other hand, the statements on e-commerce and use of debit cards resulted in lower ratings.

A higher level of agreement was also expressed in the statements which referred to the use of computers and the Internet mainly for private purposes, rather than for business. The same appears also in the case of the use of e-commerce, given that the statement "I use e-commerce mainly for private purposes" received a higher grade (3.02) than the statement "I use e-commerce mainly for business purposes" (2.45).

Apart from the fact that the statements referring to the safety of the use of social networks, debit cards and e-commerce received similar grades (3.20, 3.46 and 3.41 respectively), the respondents still use social networks more often than debit cards and e-commerce.

The requirements for application of the parametric test (sample of more than 30 respondents, following a normal schedule) were met. The "ANOVA" test and "t" parametric test have been applied.

The following tables show segments and statements which were subject of this paper's research.

Table 2 Parametric analysis of the results – differences between various groups segmented according to their education

Statements	Educational level	Arithmetic mean	Difference in arithmetic means	Significance
2. I believe that my computer usage is at the advanced level.	Primary school	2.17	-2.41	**0.02***
	Post-secondary school	**4.58**		
2. I believe that my computer usage is at the advanced level.	Primary school	2.17	-2.47	**0.01***
	Bachelor's degree and higher	**4.64**		
7. I believe that my Internet skills are at the advanced level.	Primary school	1.83	-3.29	**0.00***
	Bachelor's degree and higher	**5.13**		
7. I believe that my Internet skills are at the advanced level.	Secondary school	3.33	-1.80	**0.00***
	Bachelor's degree and higher	**5.13**		
22. I often use e-commerce.	Primary school	1.33	-2.46	**0.01***
	Post-secondary school	**3.79**		
22. I often use e-commerce.	Secondary school	2.21	-1.58	**0.01***
	Post-secondary school	**3.79**		
23. I use e-commerce mainly for business purposes.	Secondary school	1.79	-1.06	**0.03***
	Bachelor's degree and higher	**2.85**		
26. When choosing a bank it is important for me to have online (via computer) access to my account.	Primary school	1.15	-2.60	**0.01***
	Bachelor's degree and higher	**3.60**		
26. When choosing a bank it is important for me to have online (via computer) access to my account.	Secondary school	2.45	-1.14	**0.04***
	Bachelor's degree and higher	**3.60**		
34. I believe that an insufficient number of people in Serbia take advantage of e-commerce.	Primary school	2.50	-2.55	**0.01***
	Post-secondary school	**5.05**		
34. I believe that an insufficient number of people in Serbia take advantage of e-commerce.	Secondary school	3.45	-1.60	**0.05***
	Post-secondary school	**5.05**		
35. I believe that a small number of enterprises in Serbia take advantage of e-commerce.	Primary school	2.33	-1.90	**0.03***
	Bachelor's degree and higher	**4.23**		
35. I believe that a small number of enterprises in Serbia take advantage of e-commerce.	Secondary school	3.42	-1.52	**0.01***
	Post-secondary school	**4.95**		

Source: Authors' research
Remark: Level of significance at p<0.05

Based on the results of the conducted "ANOVA" test (Table 2), it is to conclude that there is a statistically significant difference among the answers of particular segments of the respondents when segmentation is applied based on the level of their education, regarding the statements which refer to the use of e-commerce.

Those respondents who belong to the segments with higher levels of education have awarded all the given statements with higher scores. The respondents who have completed post-secondary school use e-commerce more often than the respondents who have completed primary or secondary school. Related to that, persons who have obtained a bachelor's / master's / doctoral degree use e-commerce for business purposes more often than those who have completed secondary school.

When choosing a bank, persons with a bachelor's / master's / doctoral degree appreciate more the ability to access their account electronically, via personal computer (3.60), compared to the persons with primary school education (1.15), as well as to those with completed secondary school (2.45).

On the basis of the statements given in the table, it can be noticed that there is a statistically significant difference in the statements which refer to safety and satisfaction with the use of e-commerce.

Also, based on "ANOVA" parametric analysis of the results, the differences between various groups segmented according to their employment status have been noticed in case of 7 statements.

The results of the applied "t-test", for the segmentation according to the type of settlement in which the respondents live (town; rural area) show that a statistically significant difference exists in the case of 14 statements. Respondents living in towns have expressed a greater level of agreement with all statements for which there is a difference, except for one statement. People living in villages show a higher level of agreement with the statement that nowadays it is favorable to have an account on social networks. In terms of segmentation according to gender, there is a statistically significant difference between only 4 statements, whereby it is noteworthy that women gave higher assessment to the safety of the use of e-commerce.

4.1 Correlation analysis

For the purposes of correlation analysis the following statements have been selected:

- I often use e-commerce;
- I often do online shopping on the Internet;
- I believe that e-commerce is safe;
- I am satisfied with functioning of e-commerce in Serbia.

Table 3 Correlation analysis for specified statements

Statements	1	2	3	4
I often use e-commerce	1	**0.70****	0.48**	**0.49****
I often do online shopping on the Internet	**0.70****	1	0.45**	**0.55****
I believe that e-commerce is safe	0.49**	0.45**	1	**0.57***
I am satisfied with the functioning of e-commerce in Serbia	0.49**	0.55**	0.57**	**1**

Source: Authors' calculation
Remark: Level of significance at p<0.01

The results of the correlation analysis for the specified statements are presented in Table 3. A statistically significant correlation was determined among all surveyed statements (all correlation coefficients are significant at the level 0.01).

The strongest correlation was noticed between the statements "I often use e-commerce" and "I often do online shopping on the Internet". The correlation coefficient between these two statements is 0.70, so it can be considered that there is a strong positive relationship between these two variables.

Among other observed statements there is a moderate positive correlation among frequency, safety and satisfaction with the use of e-commerce, which proves a moderate connection between trust, customer satisfaction and use of e-commerce.

4.2 Regression analysis

As part of this research a simple regression analysis was used in order to determine whether independent variables "I actively use computer", "My home computer has an Internet connection", "I use a smart phone (new generation mobile phone)", "I prefer using debit cards to cash", "I often do online shopping on the Internet" and "I believe that e-commerce is safe" have an influence on the dependent variable "respondents' satisfaction with e-commerce" which arose as the unweighted arithmetic mean of two statements, namely: "I am satisfied with the functioning of e-commerce in Serbia" and "I recommend to my friends to take advantage of e-commerce".

Table 4 Regression analysis – impact of the selected independent variables on respondents' satisfaction with e-commerce in Serbia

Variables	R^2	F	B	T
I actively use a computer	**0.18**	23.01	0.43	4.80*
My home computer has an Internet connection	**0.12**	14.16	0.35	3.76*
I use a "smart" phone	**0.16**	19.64	0.40	4.43*
I prefer using debit cards to cash	**0.24**	33.20	0.49	5.76*
I often do online shopping on the Internet	**0.32**	49.21	0.57	7.01*
I believe that e-commerce is safe	**0.43**	78.63	0.66	8.87*

Source: Authors' calculation
Remark: Level of significance at p<0.01

Satisfaction of the respondents with e-commerce in Serbia was described with 18.3% through the statement "I actively use a computer", with 12.1% it was expressed through the statement "I use a smart phone", with 24.4% through the statement "I prefer using debit cards to cash", with 32.3% it was described through the statement "I often do online shopping on the Internet" and with 43.4% it was expressed with the statement "I believe that e-commerce is safe". Since it comes to the separate influence of each statement, it can be concluded that each of them has an impact on satisfaction with e-commerce. However, the strongest influence belongs to the statement referring to the opinion of the respondents on the safety of e-commerce. Based on Beta values we can see that all independent variables have a moderately strong influence on the dependent variable. The results of the parametric analysis show no existence of statistically significant differences among groups with different levels of education in terms of the statements about safety and satisfaction with the use of e-commerce.

5. Discussion

The significance of the conducted research and its results are reflected in recommendations for increased use of e-commerce which do not refer to Serbia exclusively, but may also be useful for other countries of similar socioeconomic and demographic environment.

After all conducted tests and on the basis of the results of those tests, we can draw a conclusion that the respondents generally use e-commerce in Serbia on a very small scale. According to the data and the results of the descriptive analysis, it is to notice that all other technological achievements of modern age have been accepted by the respondents to a greater extent than e-commerce.

The respondents have very low confidence in e-commerce when they are supposed to leave the data such as the number of their account and debit card, in order to purchase on the Internet. When we consider that, in addition to this, the correlation analysis revealed a correlation and the regression analysis discovered a very strong influence on satisfaction of the statement "I believe that e-commerce is safe", it can be concluded that the potential problem for such a situation is fear of possible abuses or fear of unsafety of e-commerce.

Based on these conclusions, and with an aim of increasing e-commerce in Serbia, efforts should be made to increase the safety of the participants in e-

commerce and to reduce possible abuses. Of course, simultaneously, an effort should be put into education of people, in order to enable them to properly take advantage of what e-commerce has to offer, which is also indicated by the results of the parametric analysis.

The educational system in Serbia should be adapted in such a way that people who have completed primary school would also be capable of using computers and taking advantage of everything that this has to offer. Moreover, the educational system, but also government and society in general, should enable the rural population to educate themselves in this field since they are using modern technologies far less than the urban population. Furthermore, attention should also be given to the education of older generations with an aim of faster and easier adoption of new technologies.

6. Conclusion

Regarding the hypotheses that have been set, the following conclusions can be drawn:

The first hypothesis is proven correct. Educational level influences the use of e-commerce. Based on the results of the conducted "ANOVA" test, it can be concluded that there is a statistically significant difference between the answers of different segments of respondents when the segmentation is done by the criterion of educational level. The respondents with higher level of education use e-commerce more often than people with lower educational level, particularly for business purposes.

Based on regression analysis it is found that safety has a statistically significant influence on customer satisfaction and use of e-commerce in Serbia. Thus, **the second hypothesis is proven correct**. The analysis showed that the statements "I actively use a computer", "My home computer has an Internet connection", "I use a smart phone", "I prefer using debit cards to cash", "I often do online shopping on the Internet" have an impact on satisfaction with e-commerce, but the strongest impact belongs to the statement associated with the opinion of the respondents on whether e-commerce is safe.

The parametric analysis did not state any statistically significant difference between groups of different levels of education, regarding the statements about safety and satisfaction with the use of e-commerce, which **does not prove the third hypothesis**.

The scientific contribution of this paper is in enrichment of the existing literature and studies in the field of the use of electronic commerce. Although e-commerce is in expansion worldwide, in Serbia there are still not enough research papers which deal with the reasons for its insufficient use and with the level of satisfaction with e-commerce.

The social objective of this paper is to foster the development of e-commerce on the market in Serbia, providing adequate information and new knowledge to the users of e-commerce services, as well as raising awareness of the necessity of using these services in contemporary commerce and business.

The limitations of this study include the relatively small sample and the fact that the majority of the respondents are from Kragujevac and Raška, which does not provide a representative sample for the whole country.

This paper can serve as the basis for further research in this field, especially in the direction of studying the role of the state and educational system in increasing the safety of e-commerce and in raising awareness about the advantages of e-commerce, to increase its use. Furthermore, in addition to the direct factors, one of the directions of future research could be examining the impact of indirect factors on the use of e-commerce.

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TESTIRANJE STAVOVA PREMA KORIŠTENJU ELEKTRONIČKE TRGOVINE OVISNO O RAZINI OBRAZOVANJA KORISNIKA: PRIMJER REPUBLIKE SRBIJE

Sažetak

Predmet je ovoga rada ispitivanje u kojoj mjeri i na koji način razina obrazovanja utječe na korištenje elektroničke trgovine u Republici Srbiji i djelomično na zadovoljstvo korisnika elektroničke trgovine. Osnovni je cilj ovoga rada utvrditi stupanj korištenja elektroničke trgovine ovisno o razini obrazovanja, kao i uočavanje područja koja je neophodno unaprijediti i poboljšati radi povećanja zadovoljstva korisnika elektroničke trgovine u Republici Srbiji. U radu je za potrebe ususatvljivanja i grupiranja podataka korištena i statistička metoda. Svi su prikupljeni podatci obrađeni u statističkom softveru "SPSS-u" (korištene su deskriptivna i parametarska analiza, kao i usporedba srednjih vrijednosti, korelacija i regresija). Na temelju rezultata provedenih testova zaključak je da ispitanici elektroničku trgovinu u Srbiji koriste u vrlo malim razmjerima, kao i da su druga tehnološka dostignuća prihvatili u značajnijoj mjeri u odnosu na elektroničku trgovinu. Ispitanici imaju vrlo malo povjerenja prilikom elektroničke trgovine. Jedan od uzroka za ovakvu situaciju je strah od mogućih zloupotreba, odnosno strah ispitanika da je elektronička trgovina nesigurna. Zbog toga, u cilju povećanja elektroničke trgovine u Srbiji, kao jedan od prioriteta treba biti povećanje sigurnosti sudionika u elektroničkoj trgovini kako bi se smanjile moguće zlouporabe. Iz istraživanja se može izvesti zaključak da razina obrazovanja u velikoj mjeri utječe na uporabu elektroničke trgovine u Srbiji i da bi trebalo kontinuirano raditi na podizanju razine obrazovanja i edukacije građana kako bi znali na pravi način koristiti prednosti koje elektronička trgovina pruža.

Ključne riječi: elektronička trgovina, obrazovanje, zadovoljstvo korisnika, sigurnost e-trgovine

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THE OPTIMIZATION OF TIME AND COST PROCESS TECHNIQUE

Abstract

The critical path method (CPM) and linear programming are two closely related operations research techniques. Some of their concepts are presented in this paper in order to review some recent modelling structures that have been particularly valuable in the analysis of project time-cost crashes problems.

The activities underwent crashing of both the time and cost using linear programming. A simplified representation of a small project and a linear programming model were formulated to represent this system. In addition to being simple, the advantage of this method is that it is applicable to large networks. It allows for a shorter computational time at a lower cost, whereas robustness is increased.

Keywords: Critical path method, linear programming, time crashing, maintenance

1. Introduction

Any maintenance project represented by networks consists of a number of activities. These activities are represented in a network by arrows. They are a clearly definable task to which a known quantity of resources will be applied and hence always take time. The interdependence of activities indicates the relationship between different activities. For any project, the first event represents the starting point and the last event represents the completion point (Elmabrouk, 2012: 24). The best way to guarantee success of any type of maintenance project is to have a strong, experienced project manager and a strong, experienced business analyst. To be on time, it is required to complete the maintenance project within the predetermined deadline to keep cost at the lowest possible level by a reliable technique. For the deadline to be achieved, some projects require to minimize their completion time by crashing their critical activities.

This paper mainly provides a framework for crashing total maintenance project time at the least total cost by using PERT/CPM cost analysis and the Linear Programming technique. A prototype example of vehicle repair is used to show how this technique is used for strategic decision making and assisting managers dealing with crashing maintenance projects activities.

Modern technical systems are composed of a large number of parts, sub-assemblies and assemblies. Any such system has a specific purpose, which is mainly to perform a determined function within the set limits of quality. For the technical system to work, its parts must be in a mutual functional relationship, either static or dynamic. Due to such relations, there is an interaction among parts that leads to overloads, wearing out (especially in the case of dynamic relations) and damages. Such deterioration of parts and their interconnections leads to a decline in the function performance quality of the system as a whole.

When the quality level drops below the determined lower limit, the technical system is in the fault condition. One should add to this that there are two important factors that have an important impact on the functioning of the system – the human and environment factor. The way of handling the system, conducting operation methods, the temperature, humidity, corrosion, and soil conditions do reflect on the performance of the technical system. This implies the necessity to take certain measures in order to keep the system functioning.

Maintenance of a technical system represents a business function which implies maintenance of machines, devices, appliances, plants, buildings, pathways and other means related to work, intended to fulfil the overall business task of the production system. The process of maintaining the system in good working order should act in the first place, to prevent the occurrence of faults, but if failures occur they should be removed as best possible and in the shortest time possible. Thus, the meaning of maintenance functions is reflected in the possibility of reducing system down time to a minimum. If one manages to achieve the usable capacity of the system, equal or close to the capacity prior to the down time, the maintenance function has served its purpose.

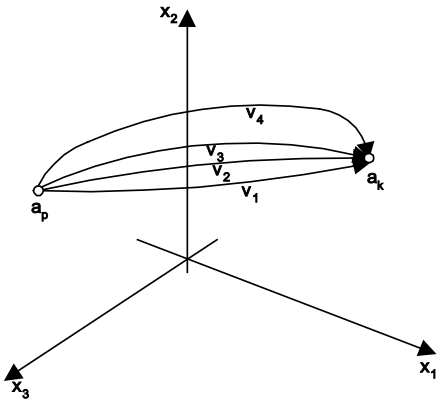
Even tough new maintenance strategies have been applied to enable reliability and extended lifespan of equipment, remounts have remained for numerous technical systems a significant opportunity to restore technical systems and enable them to work in accordance to the designed operational parameters as well as to extend their lifetime.

2. Optimization tasks

The optimal managing implies the selection of controlled actions that have to provide the greatest effect according to constrains and selected criteria, finding an alternative with the most cost effective or highest achievable performance under the given constraints, by maximizing desired factors and minimizing undesired ones. In comparison, maximization means trying to attain the highest or maximum result or outcome without regard to cost or expense. Practice of optimization is restricted by the lack of full information, and the lack of time to evaluate what information is available. In computer simulation (modelling) of business problems, optimization is achieved usually by using linear programming techniques of operations research.

The task shown in Figure 1. is the necessity to move through the system from the initial state a_p to the desired state a_k.

Figure 1 Set of possible trajectories for transition from a_p to a_k



Source: Authors

Several variants (v_1, v_2 . . . v_n) can be chosen to achieve the goal. Each variant has different value of the fitness function that becomes a criterion for the selection of optimal variant.

Today, theory of optimal managing has reached a high level of development.

Management tasks that appear in the organization of production systems are very various. The tasks can be divided into two groups: operational and functional.

When considering the production management system, operation tasks are:

- inventory management
- maintenance management
- choice of development strategy
- production management
- the choice of marketing strategy
- human resource education management
- asset management.

Functional tasks have to ensure the required flow of technological operations, to harmonize the work of organizational units, etc.

Quantitative methods or operational research methods are developed as tools for solving the problem of managing of production systems.

The methods can be grouped as follows:

- Linear programming (inclusive transportation and assignment methods, integer programming and 0-1 programming),

- Non-linear programming,
- Optimal reservation,
- Heuristic programming,
- Game Theory,
- Waiting line, and
- CPM/PERT.

The critical path method (CPM) and project evaluation and review technique (PERT) are two commonly used techniques for developing and monitoring projects. Although each technique was developed independently and for expressly different purposes, time and practice have erased most of the original differences, so that now there is little distinction between the two. Both provide the manager with a rational approach to project planning and graphical display of project activities. Also, both depict the sequential relationships that exist among activities and reveal to managers which ones must be completed on time to achieve timely project completion. Managers can use that information to direct their attention toward the most critical activities. The task of developing and quickly updating project networks quickly becomes complex for projects of even moderate size, so computer software is important (Stevenson, 1989: 640).

Linear Programming (LP) Problem

The general linear programming problem is one in which we are to find the maximum or minimum value of a linear expression (Dilworth, 1992: 676):

$z = c_1 x_1 + c_2 x_2 + \ldots\ldots c_n x_n$

(called the objective function), subject to a number of linear constraints of the form

$$a_{11}x_1 + a_{12}x_2 + \cdots + a_{1n}x_n \leq b_1$$

$$a_{21}x_1 + a_{22}x_2 + \cdots + a_{2n}x_n \leq b_2$$

$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

$$a_{m1}x_1 + a_{m2}x_2 + \cdots + a_{mn}x_n \leq b_m$$

$$x_1 \geq 0 \quad x_2 \geq 0 \qquad x_n \geq 0$$

Where

a_{ij}, b_i, c_j = given constants

x_j = variable selected by the process (that is, decision variable)

n = number of decision variable

m= number of constraints

The largest or smallest value of the objective function is called the optimal value. Depending on the problem, the constraints may also be stated with equal signs (=) or greater- than – or equal- to signs (≥).

The complex practice managing tasks usually have to meet not just one criterion but a specific set of criteria.

Making a proper decision can be very difficult because the nature of the present goals is diametrically opposed. Such kind of problem cannot be solved through optimization of individual goals because in the general case the given solution can be useless. The achieved solutions are able to fulfil just some of the set goals but most of them will remain more or less unfulfilled.

The general postulate of the mathematical model for the mentioned tasks, in the case that a linear relationship exists between the variables, has the form (Jukić, 2000: 104):

$$\max \sum_{j=1}^{n} c_{kj} x_j , \qquad k = \overline{1,p}$$

$$\sum_{j=1}^{n} a_{ij} x_j \begin{Bmatrix} \leq \\ = \\ \geq \end{Bmatrix} b_i , \quad i = \overline{1,m}$$

$$x_j \geq 0, \qquad j = \overline{1,n}$$

where p = number of criteria, m = number of constraints, n = number of variables, c_{kj} = coefficients k-th criteria function by j-th variable, a_{ij} – elements of constraints matrix and b_i - elements in vector free members of constraints.

This problem tackles the issue of multi-objective optimization which considers optimization problems involving more than one objective function to be optimized simultaneously. Furthermore, multi-objective optimization problems arise in many fields, such as engineering, economics, and logistics, when optimal decisions need to be taken in the presence of trade-offs between two or more conflicting objectives. For example, developing a new component might involve minimizing weight while maximizing strength or choosing a portfolio might involve maximizing the expected return while minimizing the risk.

Typically, there does not exist a single solution that simultaneously optimizes each objective. Instead, there exists a (possibly infinite) set of Pareto optimal solutions. A solution is called *non-dominated* or *Pareto optimal* if none of the objective functions can be improved in value without degrading one or more of

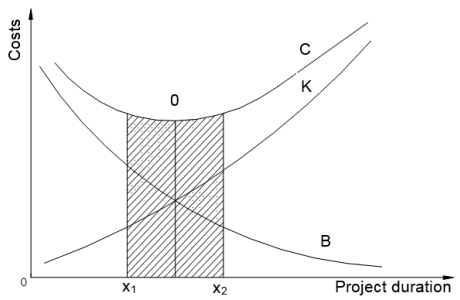
the other objective values. Without additional subjective preference information, all Pareto optimal solutions are considered equally good. Mathematically, the multi-objective optimization problem can be regarded as solved when the Pareto optimal set has been determined. In practical applications, however, the designer wants only one optimal solution and it is required to introduce some preferences in order to find the best solution among Pareto optima.

Traditionally, problems with several competing criteria were reformulated by using one criterion or scalar objective function and the multi-objective nature of the original problem was more or less hidden. One popular approach is to combine all the criteria into one scalar objective function. Another well-known approach is to choose one of the criteria as the objective function and transform the others into constraints. These techniques may look reasonable, but they have proven to have several shortcomings (Grosan et al., 2007).

3. Optimization of the duration of maintenance in relation to the cost method, "PERT COST"

This is because the idea of economy is closely tied to the success of the company that is dependent on the costs (Holjevac, 1993). It can be concluded that all economic decisions are based on cost, so special attention should be given to cost management. To provide maintenance of a technical system with maximum reliability it is equally important how to minimize maintenance costs. If it tends to produce more products, it is possible that maintenance costs can significantly reduce the earnings (Figure 2).

Figure 2 The time-cost trade-off



K - Indirect costs, B - Direct costs, C - Total project costs, O - Optimal costs, x_1 - minimal boarder of optimal cost region, x_2 - maximal boarder of optimal cost region
Source: Tomić, M., Adamović, Ž. (1986). Pouzdanost u funkciji održavanja tehničkih sistema. Beograd: Tehnička knjiga.

Experience shows that one cannot talk exactly about the optimum point of maintenance and down time. When the minimum is considered, it is the interval between x1 and x2.

In our discussion of project crashing, we demonstrate how the project critical path time could be reduced by increasing expenditures for labour and direct resources. The implicit objective of crashing is to reduce the scheduled completion time for its own sake- that is, to reap the results of the project sooner. However, there may be other important reasons for reducing project time. As projects continue over time, they consume various direct and indirect costs.

Cost assignment is the process of assigning costs to cost pools or from cost pools to cost objects. A direct cost can be conveniently and economically traced directly to a cost pool or a cost object. For example, the cost of materials required for a particular product is direct cost because it can be traced directly to the product. Direct costs are, for example, direct construction payment, spare parts and construction parts. In contrast, there is no convenient or economical way to trace an indirect cost from the cost to the cost pool or from the cost pool to the cost object. The cost of supervising manufacturing employees and the cost of handling materials are good examples of costs that generally cannot be traced to individual products and therefore are indirect costs for the products.

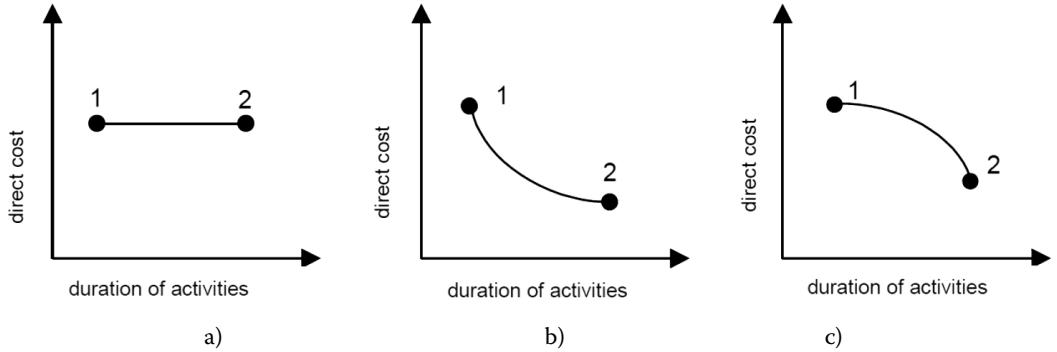
In general, project crash costs and indirect costs have an inverse relationship; crash costs are highest when the project is shortened, whereas indirect costs increase as the project duration increases. This time-cost relationship is illustrated in Figure 2. The best, or optimal, project time is at the minimum point of the total cost curve.

Each activity can be performed with lower or higher costs. This will certainly affect the duration of the activity. According to this, the normal costs will have a normal duration.

To speed up the duration of activities will increase the costs such as multiple machines, the number of employees, work on non-working days, extended work, etc.

The various dependencies between the cost and duration of the activity are shown in Figure 3 where the X-axis or abscissa is time and the ordinate or Y-axis is direct costs.

Figure 3 Relationship between direct costs and project duration



Source: Vila, A., Leicher, Z. (1983). Planiranje proizvodnje i kontrola rokova. Zagreb: Informator.

In Figure 3 a), b) and c) point 1 is the minimum duration of the activities with additional cost (using overtime, using other services etc.). Point 2 represents the duration of the activity with minimal costs. Different calculations can be made between these two points. Some principles can be seen:

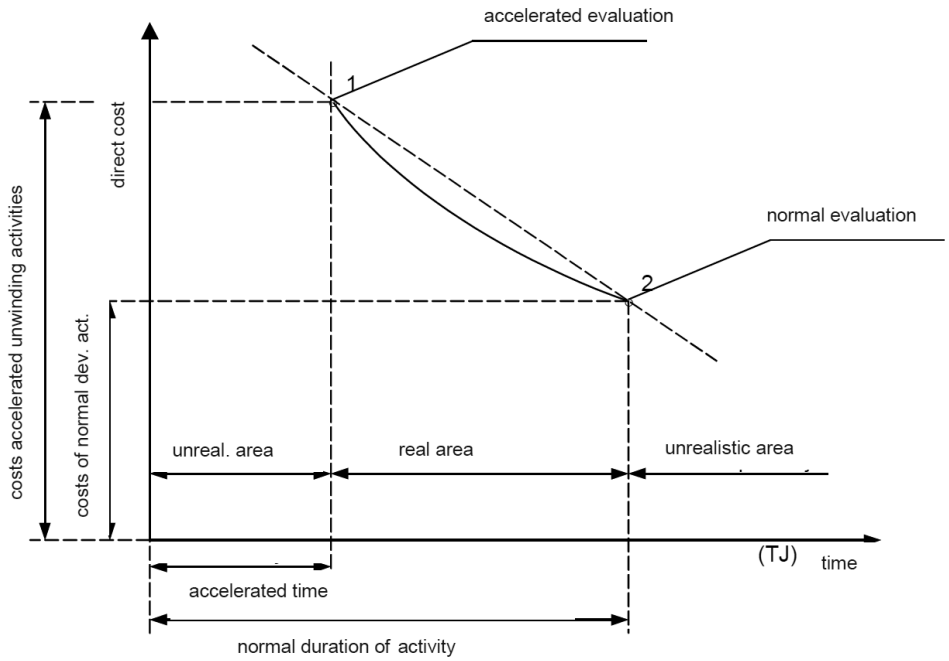
a) Shortening or extending an activity's duration, the costs are constant,

b) Extending an activity's duration, the costs fall on a concave curve,

c) Extending an activity's duration, the costs fall on a convex curve.

For further processing of costs optimization, the linear approximation (for auxiliary calculations (estimates)) between point 1 and 2 (Figure 4) will be taken.

Figure 4 Time-costs relationship for crashing activity



Source: Čala, I. (1983). Održavanje i remont. Zagreb: Fakultet strojarstva i brodogradnje.

The points 1 and 2 represent two extremes of time and cost estimation, so point 1 will be called accelerated estimated time, and point 2 will be called normal estimated time and costs.

Accelerated estimation means that some activity will be performed in a minimum of time and with the necessary costs. That means that the emphasis is on time.

Normal estimation means that some activity will be performed with minimum cost. That means that the price is relevant and will be taken into consideration.

Auxiliary estimations are all points between 1 and 2.

The cost "C" and time "t" are involved in figure 4. Characteristic values are:

t_n - normal time, the time associated with each normal cost

t_u - crash time, the shortest possible activity time

C_n - normal cost, the lowest expected activity cost

C_u - crash cost, the cost associated with each crash time.

By applying the PERT/COST network, better project managing will be achieved and the project costs will be decreased. Planning is done through network planning. On the same network model, besides the analysis of time, the analysis of costs will be done (Islam et al., 2004).

Activities on the critical path are potential candidates for crashing because shortening non-critical activities would not have an impact on total project duration. From an economic standpoint, activities should be crashed according to crash costs: Crash those with the lowest costs first. Moreover, crashing should continue as long as the cost to crash is less than the benefits received from crashing. These benefits might take the form of incentive payments for early completion of the project as part of a government contract, or they might reflect savings in indirect costs, direct, and total project costs due to crashing.

The general procedure for crashing is (Stevenson, 1989: 641):

1. Obtain estimates of regular and crash times and crash times and costs for each activity.
2. Determine the lengths of all paths and path slack times.
3. Determine which activities are on the critical path.
4. Crash critical activities, in order of increasing costs, as long as crashing costs do not exceed benefits (Note that two or more paths may become critical as the original critical path becomes shorter, so that subsequent improvements will require simultaneous shortening of two or more paths). In some cases it will be most economical to shorten an activity that is on two, or more, of the critical paths. This is true whenever the crashing cost for a joint activity is less than the sum of crashing one activity on each separate path.

4. Two closely related operations research techniques for optimization times and costs

For the optimal calculation of the project duration, the example of vehicle repair has been chosen Out of many, there have been 6 (six) main activities chosen in order to encompass the complete repair of one vehicle.

The team assigned to the General Maintenance project has estimated the duration of each of the six major activities.

Table 1 Activity list for the General Maintenance project

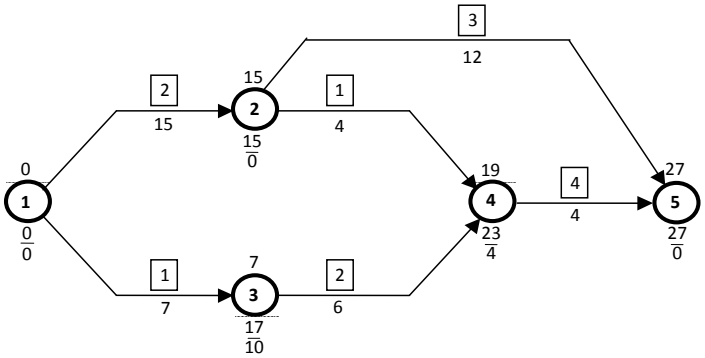
Activity	Start node	End node	Activity time
A – Acceptance of technical system and determining of technical system	1	2	15
B – Dismantling (disassembly of technical system)	1	3	7
C – Motor overhaul	2	4	4
D – Overhaul of other installation	3	4	6
E – Installation (assembly) of technical system	2	5	12
F – End control and testing	4	5	4

Source: Authors

We drew a network diagram for this project, i.e. activity on arrow network. The calculation was made based on the forward pass-backward pass, i.e. the duration of the project was calculated to be 27 weeks and the critical path are activities (1-2) and (2-5).

The activities have been put into the POM program (Weiss, 2006) with their duration time in order to make a calculation of the early start and late finish of activities for each event, after which the critical path was determined.

Figure 5 Network diagram for the General Maintenance project



Source: Authors

Table 2 The earliest start, earliest finish, latest start, latest finish times of General Maintenance project

Activity	Start node	End node	Activity time	Early Start	Early Finish	Late Start	Late Finish	Slack
Project			**27**					
A	1	2	15	**0**	**15**	**0**	**15**	**0**
B	1	3	7	**0**	**7**	**10**	**17**	**10**
C	2	4	4	**15**	**19**	**19**	**23**	**4**
D	3	4	6	**7**	**13**	**17**	**23**	**10**
E	2	5	12	**15**	**27**	**15**	**27**	**0**
F	4	5	4	**19**	**23**	**23**	**27**	**4**

Source: Authors

Result: the critical path represents those activities in which the slack variable is 0. These are A (1-2) and E (2-5) in total duration of 27 weeks. This duration is not satisfactory because the normal business flows are jeopardized. This is due to the following reasons:

- The duration of project has been limited by the beginning of the vehicle use. Planned reassembly deadlock of the vehicle use is 13 to 20 weeks and this is the time in which all the activities of the repair should be completed. Each prolongation over the 20 weeks significantly increases the cost (of another vehicle rent).

The application of PERT/COST in our example, at the same network diagram, should:

- provide more reliable and real estimation of the project duration, i.e. crashing of particular activities;
- bring the project back to the determined time framework;
- provide more reliable and real estimation of project costs (repair) and choice of optimal solution;
- provide an explicit improvement in the control and more efficient use of planned means.

The company cannot meet the deadline unless it is able to shorten some of the activity times. This process of shortening a project, called crashing, is usually achieved by adding extra resources (such as equipment or people) to an activity. Naturally, crashing costs more money, and managers are usually interested in speeding up a project at the least additional cost.

4.1 Project Crashing with QM for Windows

QM for Windows has the capability to crash a network *completely.* In other words, it crashes the network by the maximum amount possible. The QM for Windows solution for our example is shown in Table 3 (costs in 000 $).

Table 3 Project Management (PERT/CPM) Results

Activity	Start node	End node	Normal time	Crash time	Normal Cost	Crash Cost	Crash cost/pd	Crash by	Crashing cost
Project			**27**	**13**					
A	1	2	15	7	2	6	.5	**8**	**4**
B	1	3	7	3	1	5	1	**2**	**2**
C	2	4	4	1	1	8.5	2.5	**0**	**0**
D	3	4	6	2	2	10	2	**0**	**0**
E	2	5	12	6	3	15	2	**6**	**12**
F	4	5	4	2	4	7	1.5	**2**	**3**
Totals					13				**21**

Source: Authors

The results are as follows. The software finds the normal time 27 weeks and the minimum time 13 weeks, at the total crashing costs $21,000. For each activity the computer finds the cost of crashing per period (crash cost – normal cost)/ (normal time – crash time), which activities should be crashed and by how much, and the prorated cost of crashing.

A week-by-week crash schedule is available as follows. For example, to reduce the project to 13 weeks, read across the line with a project time of 13 weeks. The cost for reducing the project from 14 to 13 weeks is $3,500. The total cost of reducing the project from 27 weeks to 13 weeks is $21,000. The activities to crash to achieve 13 weeks are A by 8 days, B by 2, E by 6, F by 2 (Table 4).

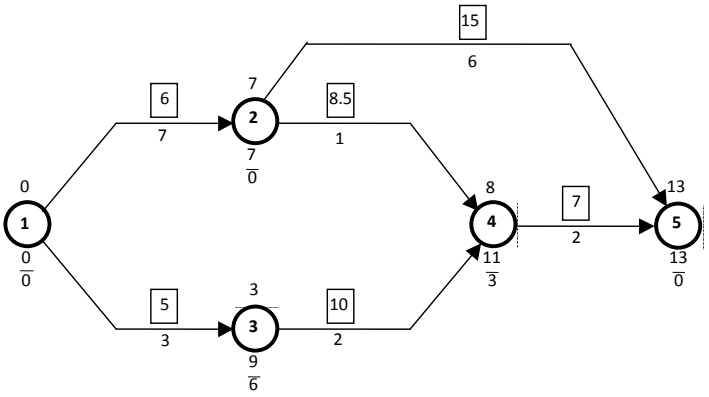
Table 4 Crash schedule

Project time	Period cost	Cumulative cost	A	B	C	D	E	F
27	0	**0**	1					
26	.5	**.5**	2					
25	.5	**1**	3					
24	.5	**1.5**	4					
23	.5	**2**	5					
22	.5	**2.5**	6					
21	.5	**3**	7					
20	.5	**3.5**	8					
19	.5	**4**	8					
18	2	**6**	8				1	
17	2	**8**	8				2	
16	3	**11**	8	1			3	
15	3	**14**	8	2			4	
14	3.5	**17.5**	8	2			5	1
13	3.5	**21**	8	2			6	2

Source: Authors

From Table 3 (column 5 and column 7) one gets crash times of activities. The earliest times are determined using the forward pass through the network and the latest times are computed using the backward pass. So, we computed many critical paths: 1-2-5, 1-3-4-5.1-2-4-5.

Figure 6 Network diagram



Source: *Authors*

4.2 Linear programming method

Linear programming is a tool for decision making under certain circumstances. The basic assumption of this approach is that we have to know some relevant data with certainty. The basic data requirements are as follows (Elmabrouk, 2012):

a) We have to know the project network with activity time, which can be achieved from PERT and CPM.

b) To what extent an activity can be crashed.

c) The crash cost associated with per unit of time for all activities.

To reduce the time to complete the activity, more resources are applied in the form of additional personnel and overtime. As more resources are applied, the duration is shortened, but the cost rises. Maximum effort is applied so that the activity can be completed in the shortest possible time. The equation for the cost slope is

$$U_i = \frac{C_c - C_n}{T_n - T_c} \qquad (1)$$

Where:

U_i, C_c and C_n are the cost slope, the crash cost and normal costs, respectively. T_c and T_n are the crash and normal times, respectively. The cost slope shows by how much the cost of the job would change if the activities were speeded up or slowed down. Before formulating the model, some relevant terms will be defined. It is very well known that a project is the combination of some activities, which are interrelated in a logical sequence in the sense that the starting of some activities is dependent upon the completion of some other activities. These activities are jobs which require time and resources to be completed. The relationship between the activities is specified by using an event. As an event represents a point in time that implies the completion of some activities and the beginning of new ones, the beginning and end point of an activity are thus expressed by two events.

Now let's define the variable of the problem (Taylor, 2010: 388-389).

X_i = earliest event time of node i when an event i will occur, measured since the beginning of the project, where i = (1, 2, 3,..., n).

X_j = earliest event time of node j.

Y_{ij} = amount of times (measured in terms of days, weeks, months or some other units) that each activity i will be crashed, where i = (1, 2, 3...n).

The objective is to minimize the cost of crashing the total project via minimizing the durations of crashing activities that are multiplied by their associated cost slope, then the resultant cost is added to the

normal cost of project completion. The LP objective function will be:

$$\min z = \sum_{i=1}^{n} U_i Y_i$$

This objective function is subject to some constraints. These constraints can be classified into three categories (Elmabrouk, 2012).

Crash time constraints: We can reduce the time to complete an activity by simply increasing the resources or by improving the productivity, which also requires the commitment of additional resources. But, it is not possible to reduce the required time to complete an activity after a certain threshold limit. Striving for such a goal will result in superfluous resources employment which will be an inefficient approach. That is why the allowable time to crash an activity has a limit. Constraints unfolding the network: These set of constraints describe the structure of the network. As we mentioned earlier, the activities of a project are interrelated, the starting of some activities is dependent upon the completion of some other activities; we have to establish the research sequence of the activities through constraints.

Nonnegative constraints: All decision variables must be ≥ 0. So, the constraints are:

Crash time constraints: Y_{ij} ≤ Allowable crashing time for activity *i* measured in terms of days, weeks, months or other units.

Constraints unfolding the network: there will be one or more constraints for each event depending on the predecessor activities of that event. As the event 1 will start at the beginning of the project, we begin by setting the occurrence time for event 1 equals to zero. Thus $X_1 = 0$. The other events will be expressed as follows:

The start time of this activity (X_1) = (start time + normal duration – crash duration) for this immediate predecessor.

Project completion constraints: $X_m \leq$ project deadline after being stretched, there m indicates the last event of that project. This constraint will recognize that the last event (completion of the last activities) must take place before the project deadline data.

Min $.5Y_{12} + Y_{13} + 2.5Y_{24} + 2Y_{34} + 2Y_{25} + 1.5\,Y_{45}$

$X_5 \leq 13$

$X_2 + Y_{12} \geq 15$

$X_3 + Y_{13} \geq 7$

$- X_2 + X_4 + Y_{24} \geq 4$

$- X_3 + X_4 + Y_{34} \geq 6$

$- X_2 + X_5 + Y_{25} \geq 12$

$- X_4 + X_5 + Y_{45} \geq 4$

$Y_{12} \leq 8$

$Y_{13} \leq 4$

$Y_{24} \leq 3$

$Y_{34} \leq 4$

$Y_{25} \leq 6$

$Y_{45} \leq 2$

$X_i, Y_{ij} \geq 0$

Table 5 Linear programming formulation - POM–QM FOR WINDOWS

	X1	X2	X3	X4	X5	Y12	Y13	Y24	Y34	Y25	Y45		RHS	Equation form
Minimize	0	0	0	0	0	.5	1	2.5	2	2	1.5			Min .5Y12+Y13+2 .5Y24+2Y34+2Y25 +1.5Y45
Constraint 1	0	0	0	0	1	0	0	0	0	0	0	<=	13	X5<=13
Constraint 2	0	1	0	0	0	1	0	0	0	0	0	>=	15	X2+Y12>=15
Constraint 3	0	0	1	0	0	0	1	0	0	0	0	>=	7	X3+Y13>=7
Constraint 4	0	-1	0	1	0	0	0	1	0	0	0	>=	4	-X2+X4+Y24>=4
Constraint 5	0	0	-1	1	0	0	0	0	1	0	0	>=	6	-X3+X4+Y34>=6
Constraint 6	0	-1	0	0	1	0	0	0	0	1	0	>=	12	-X2+X5+Y25>=12

	X1	X2	X3	X4	X5	Y12	Y13	Y24	Y34	Y25	Y45		RHS	Equation form
Constraint 7	0	0	0	-1	1	0	0	0	0	0	1	>=	4	-X4+X5+Y45>=4
Constraint 8	0	0	0	0	0	1	0	0	0	0	0	<=	8	Y12<=8
Constraint 9	0	0	0	0	0	0	1	0	0	0	0	<=	4	Y13<=4
Constraint 10	0	0	0	0	0	0	0	1	0	0	0	<=	3	Y24<=3
Constraint 11	0	0	0	0	0	0	0	0	1	0	0	<=	4	Y34<=4
Constraint 12	0	0	0	0	0	0	0	0	0	1	0	<=	6	Y25<=6
Constraint 13	0	0	0	0	0	0	0	0	0	0	1	<=	2	Y45<=2

Source: Authors

Table 6 Project Crashing with Linear programming – Results

	X1	X2	X3	X4	X5	Y12	Y13	Y24	Y34	Y25	Y45		RHS	Dual
Minimize	0	0	0	0	0	.5	1	2.5	2	2	1.5			
Constraint 1	0	0	0	0	1	0	0	0	0	0	0	<=	13	**3-5**
Constraint 2	0	1	0	0	0	1	0	0	0	0	0	>=	15	**-2-5**
Constraint 3	0	0	1	0	0	0	1	0	0	0	0	>=	7	**-1**
Constraint 4	0	-1	0	1	0	0	0	1	0	0	0	>=	4	**--5**
Constraint 5	0	0	-1	1	0	0	0	0	1	0	0	>=	6	**-1**
Constraint 6	0	-1	0	0	1	0	0	0	0	1	0	>=	12	**-2**
Constraint 7	0	0	0	-1	1	0	0	0	0	0	1	>=	4	**-1.5**
Constraint 8	0	0	0	0	0	1	0	0	0	0	0	<=	8	**2**
Constraint 9	0	0	0	0	0	0	1	0	0	0	0	<=	4	**0**
Constraint 10	0	0	0	0	0	0	0	1	0	0	0	<=	3	**0**
Constraint 11	0	0	0	0	0	0	0	0	1	0	0	<=	4	**0**
Constraint 12	0	0	0	0	0	0	0	0	0	1	0	<=	6	**0**
Constraint 13	0	0	0	0	0	0	0	0	0	0	1	<=	2	**0**
Solution	**0**	**7**	**5**	**11**	**13**	**8**	**2**	**0**	**0**	**6**	**2**		**21**	

Source: Authors

Table 7 Solution summary by using the POM program

Variable	Value	Reduced Cost	Original Val	Lower Bound	Upper Bound
X1	0	0	0	0	Infinity
X2	7	0	0	-2	Infinity
X3	5	0	0	-.5	1
X4	11	0	0	-.5	2
X5	13	0	0	Infinity	3.5
Y12	8	0	.5	-Infinity	2.5
Y13	2	0	1	0	1.5

Variable	Value	Reduced Cost	Original Val	Lower Bound	Upper Bound
Y24	0	2	2.5	.5	Infinity
Y34	0	1	2	1	Infinity
Y25	6	0	2	0	Infinity
Y45	2	0	1.5	1	3.5
Constraint 1	3.5	0	13	13	15
Constraint 2	-2.5	0	15	13	15
Constraint 3	-1	0	7	5	9
Constraint 4	-.5	0	4	2	4
Constraint 5	-1	0	6	4	8
Constraint 6	-2	0	12	6	12
Constraint 7	-1.5	0	4	2	4
Constraint 8	2	0	8	8	10
Constraint 9	0	2	4	2	Infinity
Constraint 10	0	3	3	0	Infinity
Constraint 11	0	4	4	0	Infinity
Constraint 12	0	0	6	6	Infinity
Constraint 13	0	0	2	2	Infinity

Source: Authors

The solution of the model is presented in Table 7, which shows the solution to the problem. It includes the decision variable value, contribution of the objective and reduced costs of each decision variable. This also indicates the status of whether the decision variable is in the final basis. When the optimal solution is achieved, the result are the values listed in the table.

The reduced costs: The reduced cost of the non-basic variables (the variables whose value is zero in the optimum solution) provide us information about how much the objective coefficient of these variables should be increased to have a positive value of those variables in the optimum solution.

In the example, reduced cost of a current non-basic variable Y_{24} is 2. It means the current coefficient of this variable which is now 2.5 must decreased by -2. That means the coefficient would be 0.5 or higher to get a basic value of this variable in the optimum solution (Table 7, column 5).

Sensitivity analysis for OBJ: This analysis shows the ranges of objective function coefficients such that the current basis holds. For each decision variable, this includes the lower limit and the upper limit allowed for its objective function coefficient so that the variable stays as the basic variable. This is also called the range of optimality. The analysis is available when the optimal solution is achieved.

In our example, the final value of variable X_2 in the objective function is 7. The current coefficient of the variable is 0, allowable max c(j) (Table 7, column 6) is M(infinity) and allowable Min c(j) (Table 7, column 5) is –2 It indicates our current solution would remain optimum if normal duration for activity A varies from –2 to M(infinity). While, the current coefficient of the variable Y_{24} is 2.5, allowable Min c(j) is 0.5 and allowable Max c(j) is M(infinity). It indicated our current solution would remain optimum if normal duration for activity varies from 0.5 to M(infinity).

Solution summary in Table 8 specially column 3 (Solution value) or column 2 (Basis Status) indicates that activities A, C, E are critical activities. This table contains some important columns.

Table 8 Solution list

Variable	Status	Value
X1	**NONBasic**	**0**
X2	**Basic**	**7**
X3	**Basic**	**5**
X4	**Basic**	**11**
X5	**Basic**	**13**
Y12	**Basic**	**8**
Y13	**Basic**	**2**
Y24	**NONBasic**	**0**
Y34	**NONBasic**	**0**
Y25	**Basic**	**6**
Y45	**Basic**	**2**
slack 1	**NONBasic**	**0**
surplus 2	**NONBasic**	**0**
surplus 3	**NONBasic**	**0**
surplus 4	**NONBasic**	**0**
surplus 5	**NONBasic**	**0**
surplus 6	**NONBasic**	**0**
surplus 7	**NONBasic**	**0**
slack 8	**NONBasic**	**0**
slack 9	**Basic**	**2**
slack 10	**Basic**	**3**
slack 11	**Basic**	**4**
slack 12	**Basic**	**0**
slack 13	**Basic**	**0**
Optimal Value (Z)		**21**

Source: Authors

Total cost for crashing will be $21,000. The manual approach of crashing time is a time-consuming process. It requires the trial and error method to get the optimal result. The Linear Programming solution gives us some flexibility by providing a sensitivity analysis of the mathematical model.

5. Conclusion

This paper addressed the problem of the application of project scheduling in a General Maintenance project. These models provide us systematic and logical approaches for decision making and ultimately increase the effectiveness of the decision. The solution of these models by software package (POM-QM) provides the duration of project completion in normal and crash conditions, and gives us some flexibility by providing a combined report of the problem, which includes the solution value, contribution to the objective, reduced cost and range of optimality for each decision variable and right-hand side, surplus or slack, shadow price.

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OPTIMIZACIJA VREMENA I TROŠKA PROCESNOM TEHNIKOM

Sažetak

U ovome se radu raspravlja o nekim konceptima dviju usko povezanih tehnika operacijskih istraživanja, metode kritičnoga puta i linearnoga programiranja, kako bi se opisale suvremene modelske strukture koje su od velike vrijednosti u analizi produženoga planiranja horizonta projekta loma vremena i troškova. Aktivnosti su podvrgnute lomu vremena i troškova koristeći linearno programiranje. Pojednostavljeno predstavljanje maloga projekta i model linearnoga programiranja formulirani su kako bi se predstavio sustav. Ta je metoda jednostavna, primjenjiva na veliku mrežu, generira kraće vrijeme računanja i niži trošak uz povećanje robusnosti.

Ključne riječi: metoda kritičnoga puta, linearno programiranje, lom vremena, održavanje

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MISSION DRIFT IN A HYBRID ORGANIZATION: HOW CAN SOCIAL BUSINESS COMBINE ITS DUAL GOALS?

Abstract

The Europe 2020 strategy emphasizes that social enterprises are very useful to the society as an important element of the social economy. As "hybrid" organizations, social enterprises seek to manage the potential tension between social and business aims. The purpose of this article is to disclose how social enterprises may harmonize social and for-profit purposes. The present research promotes sharing of best practices in the field of social business. The methods of the research are analysis of scientific literature and expert interview. The research revealed that investment into human resources of the company, strong focus on the mission hybridity and organization strategy, sufficient communication with the stakeholders, and relevant monitoring of the organization's financial and statistical indicators can help social entrepreneurs to find a balance between social and profit ambitions. The research confirmed that the phenomenon of mission drift does not depend on how much the country is mature in terms of experience with hybrid organizations and social enterprises in particular. The study can help to better understand the nature of mission drift and to plan problem mitigating solutions.

Keywords: Social enterprise, hybrid organizations, mission drift, Baltic States

1. Introduction

Social business is becoming increasingly relevant to the society nowadays. The institutions of the public sector are no longer capable of effectively resolving some of the major social problems in areas such as education, health, sanitation, environmental protection, human rights protection, etc. (Dees, 2011). Thus, establishing social business organizations may facilitate solving the aforementioned issues as social businesses are becoming increasingly well equipped to offer remedies for the occurring challenges of the social policy.

The Social Business Initiative[1] (October, 2011) has established the role of social enterprises in the "Europe 2020" strategy. The European Economic and Social Committee has approved the European Commission's social policy and action plan to promote social enterprises in Europe and stressed the importance of its full implementation at both the EU and Member State level and the importance to foster social business. The latter approach is new in that it encourages the development of various forms and models of organizations not accommodated in the traditional social policy and economic framework.

In terms of the sector of social enterprises in the Baltic States it may be noted that the sector is relatively small[2]. For example, in 2014, 133 social enterprises were functioning in Lithuania (Lithuanian Labour Exchange[3]), whereas only in 2013 there were 70 thousand social enterprises registered in Great Britain, which added 30 billion euros to the state budget. Because of the nature, purpose and specifics of their activities, social enterprises are deemed as a classic example of hybrid organizations in the most recent scientific research. Due to the fact that social enterprises must coordinate different organizational forms, they face a number of management challenges.

Scholars are seeking to understand and theorize about this new organizational form. Schmitz and Glänzel (2016) analyzed a concept of hybrid organizations. Social enterprises as hybrid organizations were mostly examined by Doherty et al. (2014), Battilana and Lee (2014), Santos (2013). Marchant (2017) explored whether hybrid organizations could be sustainable. The governance challenges of social enterprises were researched by Gonin et al. (2013), Spear et al. (2009). However, there is no comprehensive research on the state of the sector of social enterprises in the Baltic States.

To maintain both social missions and business ventures is central to the success of these organizations (Battilana et al., 2012). The aim of the research is to disclose how social enterprises may harmonize social and for-profit purposes. In order to achieve the aim the authors have set the following steps of the research: 1) to examine preconditions of the hybrid organizations; 2) to analyze the peculiarities of the mission drift phenomenon which occurs in social business; 3) to carry out an expert opinion survey in order to disclose the probability of the mission drift phenomenon occurring in the social enterprises of the Baltic States; 4) to ascertain the opinion of the managers of social enterprises in the Baltic States on the possibility to harmonize social and for-profit purposes of social enterprises.

The following research methods were applied in the research: scientific literature analysis and research based on expert interview.

2. Social enterprise as a hybrid organization

Over the last three decades, the boundaries between private-sector, non-profit-sector, and public sector organizations have become increasingly blurred. This blurring is epitomized by the rise of "hybrid organizations" which combine elements of various organizational forms (Battilana, Lee, 2014). Hybrid organizations engage in activities requiring them to incorporate different institutional logics (Battilana, Dorado, 2010), that are both external and internal demands based on the nature and behaviour of the organization, and individuals acting within (Pache, Santos, 2013). Accordingly, hybrid organizations may be described as organizations that can simultaneously display characteristics of public, private and/or third sector/non-profit organizations (Billis, 2010). In the light of the above, hybrid organizations are organizations that combine several (often contradictory) organizational identities. It is noteworthy, that hybrid organizations are relatively common (e.g. universities, hospitals). Although scholars disagree on whether hybridity is an exceptional or regular phenomenon or whether it is a result of the blurring of distinct sectors, they all assume that the market, civil society, and public sector influence organizations and their members (Schröer, Jäger, 2015).

Social business organizations have also been referred to as hybrid organizations by a number of scholars (e.g. Florin, Schmidt, 2011; Battilana et al., 2012; Wilson, Post, 2013; Lepoutre et al., 2013). In the context of the research, the reason of the hybridity of social enterprises must be explained (Battilana, Lee, 2014). Due to increasing public pressure to help address far-reaching societal problems, a lot of corporations were forced to adopt behavioural patterns meant to fulfil the perceived social responsibility. Whereas not-for-profit organizations faced pressure to increase their overall efficiency and accountability, and to find new sources of funding. This subsequently led the non-profit organizations to adopting tools such as strategic planning and quantitative program evaluations, and engaging in commercial activities to complement revenues from donations and subsidies. The charity and business organizational forms, which historically evolved on separate tracks, have thus increasingly been mixed, causing the emergence and development of hybrid organizations which combine aspects of both of the aforementioned organizational forms. Social enterprises pursue the dual mission of achieving both financial sustainability and social purpose; therefore, the regarded enterprises do not fit into the conventional categories of private, public or non-profit organizations.

There are several aspects regarding how social business organizations can be compared to and differentiated from for-profit organizations and non-profit organizations:

- The first category is market failure. While for-profit organizations see an opportunity in an existing market, non-profit organizations and social business organizations see opportunity where there is a market failure to address a social need, and the opportunity for social change.
- The second category is the organization's mission. While the goal of non-profit organizations is to create social value and for-profit organizations focus on financial value creation, social enterprises balance both social and financial objectives to create blended value (Doherty et al., 2014).
- The third category of resource mobilisation is different for social business entities compared to both for-profit and non-profit organizations and they therefore manage them with different approaches. Specifically, social business and non-profit organizations often face resource constraints (e.g. experienced staff, funding), while for-profit organizations less so.
- The fourth category, performance measurement, is typically linked to mission, such that for-profit organizations have well established financial indicators, while non-profit organizations and social enterprises tend to focus on social performance, for which there are less well-developed measures.

Not all social enterprises are hybrid organizations (Gibson, 2013). Some of them operate more like traditional forprofit or not-for-profit organizations. Haigh and Hoffman (2012) emphasize these peculiarities of hybrid organizations: firstly, the business model is configured to address explicit social/environmental issues; secondly, relationships with suppliers, employees, and customers are based on mutual benefit and sustainability outcomes, costs are considered only after social and environmental outcomes are met; thirdly, industry activity is premised on creating markets for hybrid goods and services, competing successfully with traditional companies, and altering industry standards to serve both the company and the condition of the social and environmental contexts in which they operate.

As "hybrid" organizations, social enterprises seek to manage the potential tension between social and business aims. There is a constant danger that some social enterprises become too focused on commercial aims at the expense of social aims or conversely too focused on social aims at the expense of building a strong business.

3. The mission drift phenomenon in social enterprises

The nature and operating field of social enterprises implies significant challenges for social enterprises and their governing bodies, as sustained commitment to the competing logic may show to be difficult. In order to attain the needed resources, social enterprises may respond to institutional demands stemming from a commercial logic while failing to attend to those associated with social welfare logic (Battilana et al., 2014). As hybrid organizations generate revenues to sustain their operation, several researchers have pointed out the risk of mission drift (Battilana, Dorado, 2010). Mission drift relates to a condition when the company's mission becomes too focused on financial profits and the social mission is no longer a priority. For example, a number of organizations initially operating as social enterprises shifted to prioritize their business venture over their social mission. Ebrahim et al. (2014) notes that the risk of mission drift is not specific solely to social enterprises. It can be seen that in the field of micro-finance, several prominent organizations have drifted away from their initial social mission in search of increased revenues. In this context, it is noteworthy that according to a report conducted by Battilana et al. (2012), which assessed mission drifts in micro-finance institutions, it is evident that the latter institutions shifted their focus from social mission to more conventional business priorities while trying to develop. According to Liudmila Chambers (2014), social enterprise ventures are susceptible to mission drift when making decisions about growth. She noted that resource providers (e.g. venture capital firms) and market conditions (e.g. increasing competition) often push social enterprise ventures to pursue rapid growth through organizational growth strategies, which may distract them from their social and (or) environmental goals, thus leading to mission drift. In

his research Cornforth (2014) found that dependence on a resource provider and the demands of "competing" institutional environments can lead to mission drift. One challenge for social enterprises, therefore, is to sustain commitments to both social welfare and commercial logics amidst institutional pressure to prioritize the latter (Smith et al., 2013). A mission drift is understood by compromising the social and/or environmental mission in search for profit. Similarly, Ebrahim (2014) also mentions the opposite situation, the revenue drift, where the organization is so focused on the social mission that they do not manage to economically sustain their operations. The consequence of a revenue drift may be the bankruptcy of the company, cutting down on the social activities or converting into a non-for-profit to attract new capital from grants or donations (Ebrahim et al., 2014).

According to Chambers (2014), mission drift can cause a number of issues. Firstly, mission drift can cause problems to the reputation of a venture. As a result, mission drift can jeopardize future funding, since financial backers (commercial and grant-giving foundations) might not understand the venture purpose anymore. Such mission drift can also threaten the organizational culture by lowering the morale of employees and even lead to internal conflicts.

Mission drift has a negative impact on employees' motivation and commitment by either changing or reducing it. Doherty et al. (2014) states that mission drift might lead to reorientation in the shared corporate cultural values. Employees may feel betrayed and their loyalty will soon lay elsewhere. In order to successfully achieve both of the dual mission goals, the governing bodies of social enterprises must create a balanced staff force with both social and commercial knowledge (Doherty et al., 2014). According to Battilana (2012), in order to prevent mission drift, hybrid ventures should pay particular attention to, firstly, developing a widely shared organizational culture and, secondly, selecting employees who are capable of simultaneously pursuing social and economic values. If the hiring approach of a hybrid venture is based on employing people with excellent commercial skills but no experience in the social sector, this reduces the likelihood of organizational conflict but increases the chances of mission drift as "employees are likely to slip into the habits and skills they learned in their previous work" (Battilana et al., 2012). On the other hand, hiring people from different sectors might reduce the risk of mission drift but increase the chances of organizational conflict. A radically different hiring and socialization approach is to hire graduates with essentially no work experience and then train them into professionals who are committed to both social and commercial goals. According to Battilana (2012), this approach is optimal in developing a widely shared organizational culture and prevents mission drift in SE ventures.

It is important to mention that in Europe most social enterprises are small, and many are fragile (Leadbeater, 2007[4]). Social business organizations in the Baltic States are basically small enterprises and operate at a local level (Moskvina, 2013; Dobele, 2014). It is difficult for them to make decisions about growth. The biggest challenge for these organizations is how to economically sustain their operations and remain on the market. The analysis of relevant scientific research shows that mission drift is related to huge revenue and organizational growth. It can be said that the risk of mission drift in Baltic States organizations is low. However, it raises the question about the possibility of "revenue drift", where the organization is so focused on the social mission that it does not manage to economically sustain its operations. Social entrepreneurship is a new phenomenon in the Baltic States, in the stage of development. The development trends of the social entrepreneurship sector in the Baltic States are insufficiently examined. Revenue drift should be an important area for future research, which will allow us to get a better knowledge about social business entities and their sustainability.

4. Research methodology

Due to the lack of relevant knowledge on hybridity in the post-communist countries (Vaceková et al., 2015), our research aims to fill the gap with an up-to-date analysis on how social entrepreneurs in the Baltic States manage social and for-profit purposes in their represented enterprises. The goal of the research was twofold: 1) to explore the opinions of experts on whether the mission drift phenomenon is likely to occur in social enterprises in the Baltic States; 2) to ascertain the means to harmonize social and business aims in social enterprises.

The research was carried out by use of expert interviews. Managers of six social enterprises (from Lithuania, Latvia and Estonia, two from each coun-

try) were interviewed. The main criterion for the respondents' selection was the length of the period of being a manager at the company. The selected managers led the companies for at least three years. The experts represented different organizations so that more alternatives on the topic might be presented and more multifaceted analysis of the phenomenon at hand might be done.

The research data was collected from March to April 2016. In the first stage of the research, core questions for the prospective interview were distributed via e-mail. Afterwards, interaction with the experts was conducted via IT means for further discussion. Analysis of research data was based on the method of inductive transfer of knowledge. All of the informants were familiarized with the aim of the research and the further usage of it and questions of confidentiality were discussed as well. The experts were encoded as follows: Lithuanian experts – A1, A2; Latvian – B1, B2; Estonian – C1, C2.

The research was carried out using a semi-structured interview questionnaire. The two main questions of the research were formulated as follows:

1. It may be stated that the mission drift phenomenon in social enterprises occurs due to the dual goals of the organization forcing it to find a balance between achieving both its social and profit ambitions. Please present your opinion on why social enterprises tend to shift their focus to a single objective: either on the gain of profit or achieving social objectives. In your opinion, why does the phenomenon of mission drift occur?
2. How do you suggest dealing with social and for-profit aims of an organization?

The most common answers which helped to ground the assumptions on the mission drift phenomenon are cited below.

5. Research results

Social enterprises in the Baltic States are basically small enterprises and operate at the local level. The biggest challenge for these organizations is how to economically sustain their operations and remain on the market. Nevertheless, the interview made it possible to ascertain how the managers of those organizations construe the mission drift phenomenon.

With regard to the nature of the mission drift phenomenon, participants of the research noted, that social enterprises usually don't combine a social mission and an aspiration to generate revenue:

"Social entrepreneurship is primarily oriented at achieving social goals however it must also be capable of maintaining itself, i.e. to invest its profit in coping with social issues. If traditional means of business (e.g. focusing solely at gaining profit) are applied in operating a social enterprise, the social mission 'dwindles'". (A1)

The latter statement was followed by an example of the interviewee's food catering business. Due to its social aim, which is to integrate persons who are in social exclusion, it refuses the possibility to sell alcoholic beverage even though it could be highly profitable, thus the social enterprise loses its possible income.

The approach of the executives plays a significant role in the vector of organization politics, processes and activities. If the decision-making bodies give priority to maximizing the dividends and paying out bigger salaries, the organization becomes a profit-oriented company:

"I think that it largely depends on the views and set goals of the managing bodies and employees of the organization, and also it highly relies on the foreseen action plan of the company. If the decision-making bodies of the enterprise give priority to paying out dividends and higher salaries for themselves, it is only natural that the enterprise gradually becomes a for-profit entity". (A2)

On the other hand, for social enterprises, it is important to obtain financial resources from various sources in order to get more financial security and, eventually, to avoid the mission drift. Profit growth in the organization facilitates achieving the organization's social goals:

"In our experience, the main reason is that the profit seeking part tends to 'feel' more justified to grow, as the social side uses the money we earn, but doesn't bring financing by itself (mostly at least). So, every time our organization decides to grow our social side, we use the money earned by the profit side and lose the opportunity to grow our profit side, whereas the opposite usually benefits both sides (only the social side grows slower then)". (C1)

As can be seen, the interviewee repeated the observation of Huybrecht (2011), who stated that diver-

sification of recourses is a key factor of hybridity in the field of social enterprises. The problem of complicated balancing between profit and social goals was designated as a challenge:

"As an entrepreneur and not a theorist/analyst I have never used the term 'mission drift' to refer to our company or understood that this is what is happening to us. However, ever since we ran out of initial funding, the question of balancing out the business and social parts has been the biggest challenge for us (how to create a competitive product, but simultaneously provide an appropriate employment environment for senior people, who need adjustment in terms of their physical capabilities, for example)". (B1)

In order to balance social and business driven aims it is crucial to track and assess the financial and statistical data of the company:

"We maintain the balance by prioritizing and re-evaluating our operations. Monthly indicators show the first warning signs. And the bigger annual picture (statistical and financial data) shows if growth is seen in both the business side of the operations as well as the funding and in-kind donations that are going towards a social purpose. We can compare if the growth is at a similar pace or not." (B2)

The successful enterprise's transformation also cannot be fulfilled properly when lacking the managerial skills and competences, investing in human resource management as well as a favourable organizational structure:

"The problem [of mission drift] initially lies in the mind set and background of social entrepreneurs: it is very unlikely to find a 'hybrid' person, who is both NGO and business based. Usually, the manager of a social enterprise comes either from the NGO sector, trying to be more hip, up-to-date or less dependent on external financial sources, or, on the other hand, from business people who want to go beyond just CSR add-on projects. Honestly, I simply think you cannot have the ideal middle ground, i.e. the perfect balance between social and business. As in our case, too much focus on social in a way becomes the main obstacle in successfully sustaining the company as such." (B1)

"An enterprise willing to achieve the proscribed profitability ratios must perpetually invest in its staff by training and raising professional capacity. It is effective to share financial success with the employees, i.e. to motivate them financially for good work results. The manager must strive to maximally involve the employees in to the activities of the organization since employees who are provided with adequate conditions act more efficiently." (A2)

"Lack of managerial skills or structure are definitely factors that could cause a drift in the balance." (B2)

Another point of the focus in social organizations is a well-established business model:

"We have a stable and good business model so we can afford to focus on the social impact and set it as a priority as our income is consistent. For social enterprises that don't have a good business model (or for example, have only one or two products which are highly dependent on export) they might have a harder time focusing on the social impact, since it is harder to find avenues for selling their product or their product is too expensive." (B2)

Lastly, interviewees emphasized issues of core attitude to the nature, purpose and mission of the hybrid organization and, especially, of the social enterprise:

"*I believe in the balance way not the profit way. I invest my profit back into my activities. I have 10-15 people with mental disabilities - people in my services and work-supported work. I can work harder, better and with more quality than 15 of the mentioned persons but my mission is to balance their weaknesses. I get back energy by new thinking and creativity aspects."* (C2)

"People must think by themselves why they choose social work. If you want to do well, you cannot think only about money. But if you like your work and put your heart into this, the money also comes... In the city, I am the only one giving supported work and sheltered work services for people with psychiatric disabilities. Yes, we have day centres for them, but my workshop is different. I do not train learned helplessness, I provide for my clients a new purpose in their lives and opportunities to work." (C2)

"You have to be honest to yourself and your stakeholders, and be very clear about the social impact you want to achieve. Then the balance should come easier, keeping in mind that perfection is probably out of reach." (B1)

"[The success of the social enterprise is related] with a strong focus on the mission that is shared throughout the organization, and with a strategy. If everybody knows the aimed speed of the growth of the both

parts of our social enterprise, problems should not tend to emerge." (C1)

"If it seems to be difficult to work with persons who are socially excluded, you should not engage in the social business." (A1)

It could be observed that general insights of interviewees are significant practically for a wide spectrum of different organizations and resonate with conclusions of the contemporary researchers in the field. Moreover, as Alberti and Varon Garrido (2017: 3) noticed, "Learning from hybrids about how to align profits and societal impact may be a driver of long-term competitive advantage".

6. Conclusions

Social entrepreneurship is a new phenomenon in the Baltic States, thus, it survives in a quite early stage of development. Nevertheless, our research reveals that the problem of mission drift is inherent in the region in the same way as in countries which are mature in the aspect of performance of hybrid organizations. Mission drift is related to a situation when the company's politics, strategy and processes become too focused on financial profit and the social mission is no longer a priority. This was confirmed by our interviewees, too.

The interviewed experts indicated that in order to reconcile both social and business goals of the organization, it is most necessary to invest into development of managerial competences and human resources of the company, to maintain a strong focus on the purpose and strategy of the social enterprise that must be shared throughout the organization, and to ensure efficient communication with the stakeholders. The necessity of keeping track of the organization's financial and statistical indicators was also highlighted by the interviewees. It should be noted that this is a double-edged problem, because a reverse mission drift may occur as the revenue drifts. It could happen when the organization is so focused on the social mission that it does not manage to economically sustain its operations. This particular problem is observed in Western countries; hence, it may be purposeful to explore it also in the Baltic region in the further researches.

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SKRETANJE MISIJE U HIBRIDNOJ ORGANIZACIJI: KAKO SOCIJALNO PODUZEĆE MOŽE USKLADITI SVOJE DVOSTRUKE CILJEVE?

Sažetak

U strategiji Europa 2020. naglašava se da su socijalna poduzeća vrlo korisna društvu i važan element socijalnoga gospodarstva. Kao „hibridne" organizacije, socijalna poduzeća nastoje ublažiti potencijalnu napetost između socijalnih i poslovnih ciljeva. Cilj je ovoga rada utvrditi kako socijalna poduzeća mogu uskladiti svoju socijalnu i dohodovnu svrhu. Istraživanjem se potiče dijeljenje najbolje prakse u socijalnom poduzetništvu. Metode istraživanja su analiza znanstvene literature i intervjuiranje stručnjaka. Istraživanje je pokazalo da ulaganje u ljudske potencijale poduzeća, snažan fokus na hibridnu misiju i organizacijsku strategiju, odgovarajuća komunikacija s dionicima te prikladno praćenje financijskih i statističkih pokazatelja organizacije mogu pomoći socijalnim poduzetnicima u ostvarivanju ravnoteže između socijalnih i profitnih ciljeva. Istraživanje je potvrdilo da fenomen skretanja misije ne ovisi o tome koliko je neka zemlja zrela u smislu iskustva s hibridnim organizacijama, a osobito sa socijalnim poduzećima. Rezultati mogu pomoći u boljem razumijevanju fenomena skretanja misije i planiranju rješenja koja mogu ublažiti taj problem.

Ključne riječi: socijalno poduzetništvo, hibridne organizacije, skretanje misije, baltičke zemlje

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COLLABORATION BETWEEN SMALL RETAIL STORES AND SUPPLIERS OF FOOD PRODUCTS

Abstract

Small grocery stores are forced to look for ways to retain customers. One possibility is through collaboration with suppliers. Therefore, the aim of this research was to determine the forms of collaboration between small Czech grocery stores and suppliers and to specify the differences in this collaboration depending on store location and the possible affiliation of the store with a retail chain. To achieve this goal, quantitative research was carried out among 65 Czech retail stores using face-to-face interviews with predetermined questions. Collaboration was assessed on the basis of four criteria defined by the authors. It was found that the most frequently occurring element of collaboration was the provision of trade credit to retailers – less often, long-term contracts and synchronization of replenishment. The least used was information sharing. The research results show that the form of collaboration is significantly affected by customer value. Therefore, the level of collaboration can be improved by building horizontally interconnected retail chains. The paper enriches theoretical knowledge by specifying possible elements of collaboration between small retail stores and suppliers and mapping the frequency of their implementation.

Keywords: Customer value, replenishment, retail management, retail store, supply chain collaboration

1. Introduction

The retail sector has undergone major changes in the last 30 years. Large markets have changed the retail business landscape through larger store formats, more shelf space, an increased variety of goods and services, and extensive marketing strategies (Borraz et al., 2014). Strong retail groups have arisen that have built their success on the streamlining of activities in relation to both customers and suppliers, which they control due to their high bargaining power. The dominance or power of buyers over suppliers has a positive influence on the development of the supplier; in such conditions, supply chain management works best (Cox, 2004) and provides wide-ranging opportunities for all the members of the structure to increase their profits (Klimov, Merkuryev, 2008). Speed of delivery, a guaranteed supply and the possibility to purchase products, and convenience for customers, among other things, may improve the relationships between customers and suppliers and enhance consumer satisfaction (Banyte et al., 2011).

To prosper, a retailer must properly apply the concepts of customer value and relationship management (Berman, Evans, 2013). Naturally, this first requires both an appropriate location for the store to ensure its easy availability to customers as well as an appropriate range of goods to sell to those customers. However, as far as the sale of food is concerned, the quality of the goods supplied is equally important to customers (Maleki et al., 2013). According to research (Hes, 2010), the demand for food on the Czech market is mainly influenced by the price, the quality of the goods, the habitual behaviour of shoppers, and in-store promotional events. Customers of retail stores put a particular emphasis on special offers, because there are many low-income consumers whose behaviour is strongly influenced by price (Dawson, 1995; Cameron-Waller, 1995). The need to offer keenly priced goods forces retailers to follow a tough policy towards suppliers, which often destroys hopes for a balanced long-term relationship with them; nevertheless, it immediately becomes the basis for cost saving. This allows such retailers to acquire a price-oriented competitive advantage.

All the above-mentioned factors have had an impact on changes in the structure of Czech retail stores. In 2000, there were almost 19,000 small shops (i.e. shops with a sales area of 400 m^2 or less) operating in the Czech Republic; in 2015, this number had decreased by almost a third. By contrast, the sector of hypermarkets with sales areas greater than 2,500 m^2 has seen a dramatic growth, with numbers increasing annually by an average of 10.7 percent between 2000 and 2015 (Nielsen, 2016).

Although the number of small stores is declining, they have their own circle of customers who prefer them when making certain purchases. The most frequently mentioned reasons include narrow specialization with respect to the range of goods in the store, the offer of high-quality products from local producers, non-anonymous seller-customer contact, willing and qualified staff, fast service, and easy orientation in the store. However, small shops are unable to provide some of these benefits to consumers on their own. In particular, they cannot ensure the offer of high quality food or its availability without close collaboration with suppliers. Therefore, the development of collaboration between small grocery stores and their suppliers is absolutely crucial to maintaining market position. However, the form of such collaboration in the Czech Republic has not yet been a subject of research. The aim of this study was to identify the form of collaboration between small Czech grocery stores (i.e. stores with a sales area smaller than 400 m^2) and their suppliers, and to specify differences in this collaboration with respect to the affiliation of the retail store with a chain and the location of the store.

2. Review of previous research

The retailer-manufacturer interaction problem is one of the classic research areas in supply chain literature (Alaei et al., 2013). Research in this area deals with the forms of logistic operations carried out by retailers, since logistic operations play a strategic role in the success of the store (Ltifi, Gharbi, 2013). Topics examined include changes taking place in the retail sector (see Fernie et al., 2000; Fernie et al., 2010; Kuhn, Sternbeck, 2013), the reconstruction of distribution and logistics chains, and the impact of these changes on the business efficiency of individual members of the chain. In connection with research into the redesign of food supply chains, researchers primarily focus on the reasons for, and preferred types of collaboration between retailers and manufacturers, as well as the possibilities and ways of implementing new technologies to manage logistics and supply chains (Fredriksson, Liljestrand, 2014), since the extent of collaboration can create opportunities to remove supply chain inefficiencies (Too, 2011), such as excessive inventory, the duplication of activities, or a lack of coordination in inter-firm processes (Hingley et al., 2011). To achieve collaboration, it is necessary for traditional relationships, in which the links in the chain act as independent operators, to transform into relationships of collaboration. Partners then jointly create value and their performances are therefore increasingly interconnected (Cheung et al., 2011). Collaborative exchanges are associated with very close information, social and process linkages and mutual commitments made in the expectation of long-term benefits (Day, 2000). Collaboration usually involves the sharing of information, the creation of similar objectives, the synchronization of decisions, the sharing of resources, and the harmonization of independent partners. It can be an effective tool for maintaining markets, even for retail stores.

In addition to the classic approach (Grant et al., 2006) of classifying partnership according to the degree of integration of the supply chain (information sharing, activities coordination, and collaboration),

other, yet similar, approaches can also be found in the literature. Holweg et al. (2005) defined three basic supply chain configurations for collaboration depending on the level of information sharing and cooperation in the area of replenishment:

- In the first type of partnership, they simply exchange information concerning demand as well as action plans in order to align their forecasts with respect to capacity and long term planning.
- In the second type of partnership, the task of generating the replenishment order is given to the supplier, who then takes responsibility for maintaining the retailer's inventory, and subsequently, the retailer's levels of service (Vendor Managed Replenishment).
- In the third type of partnership, called synchronized supply chain, the supplier takes charge of the customer's inventory replenishment on the operational level, and includes this process in planning his own supply operations.

Therefore, building functional collaboration between two or more links of the supply chain, e.g. a retail store and its suppliers, requires a change in the management of relationships between the cooperating links as well as a change in processes, often in both businesses or, indeed, in all cooperating partners. The retail store must succeed in making its suppliers its partners, who will help it to improve its performance in relation to customers. Often, however, there are many obstacles to creating a highly functional cooperating chain, since retailers and their suppliers have different priorities with regard to areas of control over the distribution channel, profit allocation, the number of competing retailers handling suppliers´ products, product displays, promotion support, payment terms, and operating flexibility (Berman, Evans, 2013). Therefore, literature also presents the results of research aimed at removing barriers to functional collaboration (see Lostakova et al., 2009).

The retail store and its suppliers can collaborate in multiple functional areas. Gros and Grosova (2006) emphasize that the area of purchase is of strategic importance because it is in close contact with the supplier. The specific form of activities which the retail store synchronizes with its suppliers may be highly variable, but it is usually tied to efforts to optimize material flows. Material flows enabling customer needs to be satisfied are accompanied by information flows necessary for effectuating not only material flows, but also cash flows (Pernica, 2005). In general, the materials, component parts, and finished goods flow downstream. Money flows upstream, whereas information flows in both directions (Gupta, Dutta, 2011). The managements of all flows must be in harmony. Material flows must be managed so as to create optimal financial flows and vice versa; the optimization of cash flows throughout the chain must not reduce material flows. For effective chain management, the upstream flow of money is as important as the management of the downstream flow of goods (Gupta, Dutta, 2011). While firms often collaboratively manage flows of goods and information with their partners, they commonly do not do so when it comes to cash flows (Wuttke et al., 2013).

At the same time as exploring logistics activities and the possibility of streamlining them on the intercompany level, the possibility is explored of improving activities taking place inside stores. In-store logistics is treated as one of the factors with the potential to directly and significantly influence retail store performance. Raman et al. (2001) and Fisher et al. (2000) have demonstrated that poor operations lead to low on-shelf availability, which is a severe problem for the majority of retailers, as they tend to operate with very low margins, particularly in the field of grocery retailing (Corsten, Gruen, 2003). Reiner et al. (2013) examined in detail in-store logistics processes in the field of dairy products. In addition, impacts of the efficiency of logistics in retail stores on consumer happiness and satisfaction were also explored (Ltifi, Gharbi, 2013).

An analysis of literary sources from 1980 to 2012 in the area of food logistics made by Fredriksson and Liljestrand (2014) shows that the papers dealing with relationships between retailers (regardless of their size) and their suppliers (e.g. manufacturers, wholesalers or other middlemen) are also focused on the specifics of the distribution of certain products (perishable products, chilled and ambient products, seasonal products), the causes of promotional on-shelf-availability shortfalls, and possibilities for improving transportation. However, research is primarily focused on large retail stores. As for small businesses, researchers are focused more on consumer shopping behaviour. The social practices of small grocery stores in Germany owned by immigrants were analysed by Everts (2010).

In analysing methods of collaboration between small grocery stores and their suppliers, we can expect that the form of collaboration will be influenced by the size of the retail store and its value to its suppliers. This means that there will be differences in the forms of collaboration between suppliers and large and small stores. Large stores are usually of high value to their suppliers, which is the foundation of large stores wielding greater bargaining power. Therefore, suppliers seek to deepen their relationships with large retailers and in most cases adapt themselves to the retailers' demands, albeit with varying degrees of willingness. This allows retailers to streamline their purchasing processes. Therefore, researchers focus on studying the logistical aspects of chains involving large stores and on the possibility of improving the performance of these chains – for example, by implementing logistic technologies such as Quick Response and CPFR. Research of this type is of interest to both directly involved links, i.e. both retail businesses and their suppliers.

Conversely, small retail stores managing low to negligible sales of individual product items are often regarded as insignificant customers by large suppliers. Their potential loss as clients does not jeopardize the economic results of large suppliers. This may be why small retailers are not an area of particular interest in primary research. Given the role of small stores on the market, it seems desirable to examine whether small retail stores collaborate with their suppliers and what form such collaboration takes.

3. Methodology

The main objective of primary research in this area (i.e. the identification of forms of collaboration between small Czech grocery stores and their suppliers and the specification of differences depending on the type of store and its location) can be broken down into the following four sub-goals:

- define the areas in which small stores can collaborate with their suppliers beyond the traditional trade relationships (i.e. specify the elements of collaboration),
- identify the degree of implementation of collaboration elements between small grocery stores and their suppliers on the Czech market,
- segment small grocery stores on the Czech market, based on the level of collaboration with their suppliers, and
- specify differences in the degree of implementation of collaboration elements depending on the affiliation of the store with the retail chain and the location of the store.

A literature review shows that the relationship between small retail stores and their suppliers has been analysed only marginally. Since it was not possible to rely on previous research carried out in this area, it was necessary to specify how collaboration between small retail stores and their suppliers of food products should be explored. The starting point thereof was in the basic function of retail stores, i.e. the sale of goods to final consumers. For a store to be able to successfully execute sales (of food) to its customers, it is crucial to ensure continuous replenishment of the right items in the right quantities at the right time and to pay for them using appropriate payment terms. The areas of replenishment and payment are thus the main areas of collaboration, and research needs to focus on them.

This basic consideration is then used to define four elements that can be used for assessing the collaboration between small grocery stores and their suppliers:

- the existence of long-term contracts stabilizing the supplier-purchaser relationship and regulating the basic form of the relationship (*long-term contracts*),
- the sharing of information, especially retrospectively throughout the chain as a basis for common demand forecasting and the common planning of material flows (*information sharing*),
- the establishment of synchronization mechanisms to replenish items sold by the retail store (*synchronization of replenishment*), and
- the application of trade credit as a tool of collaboration in the area of financial flows, i.e. in financing the goods stored in the shop which have not yet been sold to the end consumer (*trade credit*).

The extent of the application of these defined elements of collaboration was the subject of quantitative research among 65 Czech retail stores with a sales area smaller than 400 m^2, whose range of

goods consisted primarily of groceries. Data collection took place in the period of March-April 2015 using face-to-face interviews with predetermined questions. Forty percent of the sample of retail stores comprised independent businesses, while sixty percent comprised stores that were part of retail chains. According to the location of the stores, there were also two groups of respondents identified in the sample, namely stores in small villages with up to 5,000 inhabitants (45 percent) and retail stores in larger towns with a population of more than 5,000 (55 percent).

The questionnaire consisted of 10 questions seeking both qualitative and quantitative answers with respect to the management of material and financial flows between the store and its suppliers. The obtained data were processed in order to identify the various elements of collaboration in each retail store. Information sharing beyond the normal trade relations was confirmed only in those situations where the retail store actively used information from its suppliers to predict demand and, subsequently, replenish stock in the store. Synchronization of replenishment was seen in inventory systems based on P, Q-models or their analogous equivalent and in automatic replenishment systems, which removed the need for the retailer to repeatedly generate orders.

Data were processed by descriptive and inferential statistics using the statistical software package IBM SPSS Statistics (v. 24). First, we identified the extent of elements of collaboration between retailers and their suppliers by analyzing multiple responses. In the following step, the retailers were segmented according to the level of collaboration with their suppliers. As the elements were found to be statistically independent, the sample of retailers was segmented according to the number of elements of collaboration applied. Profiles of segments were compiled using the modal category in the observed characteristics of the retailers (i.e. the affiliation of the store with the retail chain and the location of the store) and using the elements of collaboration, or combinations thereof, most commonly applied in the given segment. In the final part of the analysis, differences were examined in the extent of application of the elements of collaboration among different types of retailers. For the purpose of the statistical validation of these differences, we used Pearson $\chi 2$-test at the 0.05 level of significance.

4. Results and discussion

The first part of the results describes the form of collaboration between small retailers and their suppliers by identifying the elements of collaboration that are applied most frequently and, on the contrary, rarely. Table 1 includes a frequency-based presentation of the monitored elements of collaboration (Percent of responses) and the frequency of stores in which the element of collaboration was identified (Percent of cases).

Table 1 Frequencies of elements of collaboration

Element of collaboration	Responses		Percent of cases
	N	Percent of responses	
Trade credit	56	32%	86%
Long-term contracts	50	28%	77%
Synchronization of replenishment	44	25%	68%
Information sharing	27	15%	42%
Total	177	100%	-

Source: Authors

The most frequently occurring element of collaboration was the provision of trade credits. This element was identified in the majority of cases (86 percent of cases). The high degree of application of this type of collaboration can be attributed to the fact that trade credit is the predominant method of payment for deliveries to retail stores in the Czech Republic (Pecinova et al., 2015). The research also shows that most often it is a trade credit provided for a maximum period of 30 days. The relatively short duration of the trade credit (compared to, for example, the length of trade credit usually provided

by raw material suppliers to their customers) may indicate a worse bargaining position on the part of the retailer in relation to their suppliers of food (Lostakova et al., 2009).

Other elements of collaboration which are very often applied between small retailers and their suppliers include long-term contracts (77 percent of cases) and the synchronization of replenishment systems in retail stores (68 percent of cases). The high incidence of long-term contracts may indicate the desire of both the supplier and the customer to bind the partner to repetitive purchases. Given the fact that these are small stores of rather low value to suppliers (given the smaller turnovers and sales), it can be assumed that by entering into long-term contracts the retailer seeks to stabilize grocery deliveries (it secures seamless replenishment from a time-proven supplier). The high incidence of synchronized replenishment systems may then point to the interests of both partners in this area - both have an interest in seeking to satisfy end customers and an interest in reducing costs associated with replenishment. An interesting finding was that retailers who benefit from synchronized replenishment with their suppliers prefer replenishment P-systems (95 percent of cases). Our knowledge of replenishment systems in the supply chain allows us to assume that the reason for this is the easier planning of transport and in-store logistics processes. Besides P-systems, Q-systems are also applied on a smaller scale (19 percent of cases), but only in three cases (7 percent of cases) did we identify automatic replenishment systems. This fact is probably the result of some unwillingness on the part of both partners to invest in this kind of replenishment system.

Using information from suppliers in demand forecasting is an element of collaboration that occurs less frequently between small retailers and their suppliers (42 percent of cases). This can be attributed to the reluctance to share information along the supply chain, which still represents one of the biggest barriers to the implementation of collaborative strategies (Lostakova et al., 2009). Another reason is probably the fact that the form of the demand forecasting process in Czech retail stores is still at a primitive level. There is the prevalent use of qualitative methods, relying on the intuition of retailers and their experience with certain products (Patak et al., 2015).

In the following part of the analysis, retail stores were segmented according to the level of collaboration with suppliers. The number of elements of collaboration applied was chosen as a segmentation variable since the greater the number of elements of collaboration between the retail store and its suppliers, the more intense the collaboration can be considered. The profile of segments is shown in Table 2.

Table 2 The profile of segments

Segment		A	B	C	D
The number of identified elements of collaboration		1	2	3	4
Representation of the segment in the sample		12%	24%	42%	22%
Affiliation of the retail store to a chain (modus)		Independent (75%)	Independent (69%)	Independent (52%)	Independent (57%)
Location of the retail store – inhabitants (modus)		5,000+ (63%)	< 5,000 (63%)	5,000+ (52%)	5,000+ (79%)
Representation of the element of collaboration (% of cases)	Trade credit	38%	63%	85%	100%
	Long-term contracts	0%	19%	37%	100%
	Synchronization of replenishment	13%	44%	81%	100%
	Information sharing	50%	75%	96%	100%

Source: Authors

The segment with the lowest level of collaboration (Segment A) also had the lowest representation in the sample of respondents (12 percent). In relation to their suppliers, the retail stores from this segment apply only one element of collaboration, but it is variable (they do not cooperate with their suppliers in the same way). The most commonly used is trade credit (50 percent), as is the case in the whole sample of respondents. In addition to that, long-term contracts and synchronization of replenishment are applied. None of the retailers in the segment, however, uses information from their suppliers in demand forecasting.

The stores in Segment B, which covers about one quarter of the sample, most often apply a combination of the elements "long-term contracts" and "trade credits" (38 percent), and a combination of the elements "long-term contracts" and "synchronization of replenishment" (25 percent). We can therefore identify two partial interests among retailers - one group focuses on the management of logistical aspects (while developing collaboration in the field of synchronization of replenishment), the other one focuses on the financial aspects (while developing collaboration in the field of trade credits).

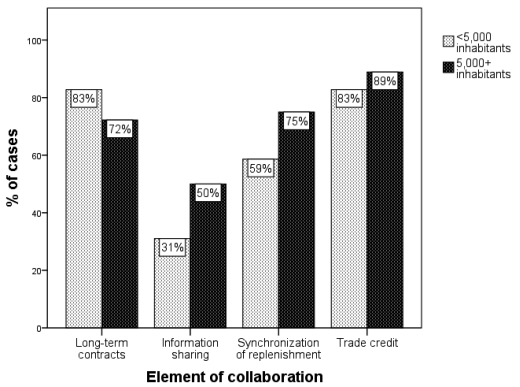
The largest segment of retail stores (Segment C) is profiled by the existence of three elements of collaboration. In most cases (63 percent), this involves a combination of the elements "long-term contracts", "synchronization of replenishment" and "trade credits". It can be stated that the retailers in this segment operate with their suppliers in a common way – binding the partner to long-term collaboration by means of a business contract, synchronizing replenishment, and obtaining trade credits. Probably, they have a good relationship with their suppliers; however, with regard to the full synchronization of the supply chain they lack the willingness to share and use information on demand forecasting and replenishment.

Segment D, covering less than a quarter of the respondents, is profiled by the greatest intensity of collaboration. In fact, it is a segment in which all the investigated elements of collaboration are applied. The retail stores in this segment maintain long-term collaboration with their suppliers based on a certain degree of information sharing and the synchronization of material and financial flows, with high prospects for the implementation of sophisticated methods of supply chain management.

The profiles of the segments also show a trend towards greater collaboration in those retailers that are part of a retail chain and whose stores are located in larger cities. These differences are illustrated by the final part of the research results aimed at specifying differences in the application of elements of collaboration depending on the type of retail store.

Comparison of the frequency representations of elements of collaboration as a function of the location of the retail store in Figure 1 shows a greater level of collaboration between suppliers and retailers that are located in larger towns and cities. The differences observed can be considered significant only for information sharing ($\chi2 = 4.758$; df = 1; Sig. = 0.029) and synchronization of replenishment ($\chi2 = 3.941$; df = 1; Sig. = 0.047). Most likely, retailers in larger cities will be more valuable to their suppliers thanks to their ability to generate more revenues for the items delivered.

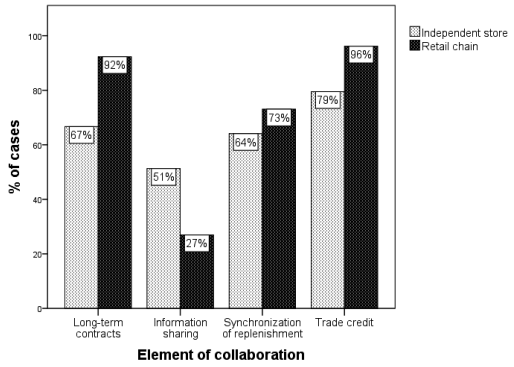
Figure 1 Frequencies of elements of collaboration based on the location of the retail store



Source: Authors

Finally, the comparison of frequencies in Figure 2 confirms greater collaboration between suppliers and retail chains except in the area of information sharing. The differences are significant in long-term contracts ($\chi2 = 11.556$; df = 1; Sig. = 0.001), information sharing ($\chi2 = 7.623$; df = 1; Sig. = 0.006) and trade credits ($\chi2 = 7.265$; df = 1; Sig. = 0.007).

Figure 2 Frequencies of elements of collaboration based on the affiliation of the store with a retail chain



Source: Authors

The differences shown in Figure 2 can be explained by a greater willingness of suppliers to collaborate with small stores that increase their bargaining power by their involvement in a chain. That is, they become more attractive to suppliers because the sales of the store usually grow and, moreover, the supplier gets an opportunity to service the entire retail chain. An interesting conclusion of the analysis is that, in these cases, there is little willingness on the part of retailers to use information from suppliers. Stores that are part of a retail chain have very little tendency to use this information. The reason for this may be the more complex structure of the supply chain (often with the inclusion of distribution centres), a different management policy on the part of the chain in choosing sources of data for demand forecasting, or just the simple fact that the chain plans its needs and the supplier is expected to fully adapt without having to become involved. It follows from this that the horizontal integration of small stores into retail chains (leading to increased bargaining power at the expense of suppliers) can pose a significant barrier on the Czech market to the application of modern collaborative approaches to supply chain management using joint demand forecasting.

5. Conclusion

Small grocery stores have their unique place in the market, but changing market conditions along with competitive pressure from large hypermarkets forces them to look for ways to streamline their business. One of those ways is to deepen collaboration with their suppliers, which could result in a significant competitive advantage.

In the Czech market, four segments of retailers who work with their suppliers with different intensities were identified. Frequently applied elements of collaboration include trade credit to retailers, long-term contracts, and the introduction of synchronization mechanisms in the delivery of goods to the store. Relatively few retailers use information from their suppliers to predict demand or subsequently control their inventories. The reason for restraint in this area is probably the same as that found for other supply chains - a lack of trust between the partners and a fear of the misuse of information.

The research results also confirmed a greater degree of collaboration in retailers in larger cities, but also in retailers that are members of retail chains. At first glance, it may therefore seem extremely beneficial to build horizontally integrated chains of retail stores. However, in these cases, we also observed a significant decrease in the frequency of information sharing, which usually widens the gap between retailers and suppliers and poses a significant obstacle to the implementation of modern collaborative approaches. Therefore, it seems desirable to examine the advantages and disadvantages of the horizontal integration of retail stores in subsequent research in order to identify additional opportunities to improve collaboration between suppliers and retailers.

The limitations of these research results lie in the fact that the form of collaboration between small retailers and their suppliers of food products has only been studied in the Czech Republic, which may exhibit territorial peculiarities. The generalization of conclusions concerning markets for other commodities could also be problematic. However, the proposal of a methodology for studying the forms and levels of collaboration between small grocery stores and their suppliers is an important contribution to theoretical knowledge, especially as little attention has been devoted to this topic in the literature. It is obvious that there are still a number of other issues yet to be resolved in the area of supply chains involving food products, and therefore it appears to be desirable to continue with this type of research.

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SURADNJA MALIH MALOPRODAJNIH TRGOVINA I DOBAVLJAČA PREHRAMBENIH PROIZVODA

Sažetak

Male trgovine moraju tražiti načine kako zadržati kupce. Jedna je mogućnost suradnja s dobavljačima. Cilj je ovog istraživanja analizirati oblike suradnje između malih trgovina u Češkoj i njihovih dobavljača te utvrditi razlike u toj suradnji ovisno o lokaciji trgovine i eventualnoj povezanosti određene trgovine s maloprodajnim lancem. U tu je svrhu provedeno kvantitativno istraživanje na 65 maloprodajnih trgovina u Češkoj, i to putem usmenog intervjua s unaprijed utvrđenim pitanjima. Suradnja se ocjenjivala prema četirima kriterijima koje su definirali autori. Utvrđeno je da je najčešći element suradnje odobravanje trgovačkoga kredita trgovcima na malo, a manje su učestali dugoročni ugovori i sinkronizacija obnove zaliha. Najmanje se upotrebljava dijeljenje informacija. Rezultati istraživanja pokazuju da na oblik suradnje značajno utječe vrijednost za kupca. Stoga se razina suradnje može unaprijediti izgradnjom horizontalno povezanih maloprodajnih lanaca. Rad doprinosi teoretskim znanjima tako što utvrđuje moguće elemente suradnje između malih maloprodajnih trgovina i dobavljača te ususstavljuje učestalost njihove primjene.

Ključne riječi: vrijednost za kupca, obnova zaliha, upravljanje u maloprodaji, maloprodajna trgovina, suradnja u opskrbnom lancu

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DISCRIMINATION OF WOMEN IN MANAGEMENT POSITIONS IN POLITICS IN CROATIA - THE CASE OF POLITICAL PARTICIPATION IN GOVERNMENT MANAGEMENT BETWEEN 1990 AND 2016

Abstract

Democracy in the contemporary and modern world is inconceivable without the active and equal participation of women in all fields of social life, especially at the management level. The aim of this study was to investigate to what extent, and if at all, the transition path to modern democracy was accompanied by adequate political participation of women in management positions and the executive branch. The question is whether the proportion of women in the Croatian Government in the period 1990-2016 recorded an increase in relation to men? Since Croatia had a similar political path to declaring its independence like the neighbouring Republic of Slovenia, a comparison was made regarding the proportion of women in the Croatian Government as opposed to the neighbouring Slovenia. To further argue the data obtained from quantitative research, the share of women in the governments of Croatia and Slovenia was compared with the current average share of women in the governments of 28 EU member states. The first part describes how women in the world got the right to vote and the development of women's rights in Croatia. A total of 13 Croatian Governments were analysed with an emphasis on the proportion of women in the executive branch, as well as areas of political interest to women in government. The proportion of women in the same period in the Government of the Republic of Slovenia was also analysed, and a comparison was made with the share of women in the Croatian Government. Consequently, an attempt was made to compare the proportion of women with the average share of women in the governments of the 28 EU countries.

Keywords: Women in politics, management, management functions, political communication, Croatian Government, Government of the EU

1. Positive regulations in the Republic of Croatia

The position and rights of women in the Republic Croatia, as well as the prohibition of discrimination in all aspects of life, are regulated by numerous laws. The most important one is the Gender Equality Law (Official Gazette No. 82/08)[1] and the Anti-Discrimination Act (OG No. 85/08)[2]. The Gender Equality Law, Article 5, states: "Gender equality means that women and men are equally present in all aspects of public and private life, that they have equal status, equal opportunities to realize their rights, and equally benefit from the achieved results". Concerning the political involvement of women, Article 15 states: "(1) in determining and proposing lists of male and female candidates for the election of representatives to the Croatian Parliament, the election of members of representative bodies of local and regional governments, as well as the election of members of the European Parliament, political parties and other authorized proponents are obliged to respect the principle of gender equality and take account of the balanced representation of men and women on electoral lists in accordance with Article 12 of this Act."

(2) In order to implement paragraph 1 of this Article, political parties and other entities authorized to submit election lists shall introduce specific measures to ensure that the representation of men and women on the lists for the election of representatives to the Croatian Parliament, members of representative bodies of local and regional governments and members of the European Parliament is not significantly unbalanced, in accordance with Article 12, paragraph 3 of this Act. In accordance with Article 12, paragraph 1 of this Act, "a gradual increase of the underrepresented gender shall be achieved not later than after the implementation of the third regular elections after this Act comes into force."

On 13 February 2015 the Croatian Parliament passed the Law on Amendments to the Law on Election of Members of the Croatian Parliament. (OG No. 19/15)[3] According to this Law, political parties are, amongst other things, obliged to respect the equal representation of both genders on the candidate lists. The Law on Election of Members of the Croatian Parliament (OG No. 120/11)[4] was amended by Article 21a: "In determining and proposing party lists and independent lists for the election of Members of Parliament, proponents of the list are obliged to respect the principle of gender equality and take into account the balanced representation of women and men on the lists. It shall be deemed that the list for the election of representatives is in accordance with the principles set out in paragraph 1 of this article, insofar as the specific list contains at least 40% of both genders, while the lists with less than 40% representation of both genders shall be considered illegitimate".

However, the Constitutional Court annulled the last sentence of that article in its decision U-I-1397/2015, dated 24 September 2015. The Decision Summary of the Constitutional Court states that an automatic disqualification of the election list for disregarding the "gender quota" have a disproportional effect on one's freedom to run for parliament.

Furthermore, the Anti-Discrimination Act (OG No. 85/08)[5] states: (1) This Act ensures the protection and promotion of equality as the highest value of the Croatian constitutional system, it creates the prerequisites for achieving equal opportunity and protects against discrimination on grounds of race or ethnicity or skin colour, sex, language, religion, political or other opinion, national or social origin, property, trade union membership, education, social status, marital or family status, age, health, disability, genetic heritage, gender identity, expression or sexual orientation.

(2) Placing of any person, or a person related to that person by kinship or other relationship, in a less favourable position on the grounds referred to in paragraph 1 of this Article shall be, within the meaning of this Act, deemed to be discrimination.

(3) Placing of a person in a less favourable position based on a misconception of the existence of the grounds referred to in paragraph 1 of this Article shall also be, within the meaning of this Act, deemed to be discrimination.

2. Relevant parts of international regulations

The European Parliament in its Resolution on EU Strategy for equality between women and men post 2015 (2014/2152 (INI))[6] pointed out that the gender quotas in political decision-making have proven to be a most effective tool in addressing discrimination and power imbalances between men and women and for the improvement of democratic representation in political decision-making bodies. For example, the largest increase in the percentage of women

on boards of companies is registered in countries that have already enacted laws on compulsory gender quotas, while companies in countries, in which those mandatory measures have not been implemented, are still far from achieving an acceptable gender balance (Art. 40). The European Parliament also stressed the importance of gender-balanced candidate lists, headed alternately by candidates of different gender; highlights the importance of quotas for increasing the presence of women in political decision-making (Art. 41).

In its Resolution on women in political decision making - quality and equality (2011/2295 (INI))[7] the European Parliament has stressed that political parties bear responsibility for selecting, ranking and nominating candidates for leading positions. Furthermore, they play a central role in ensuring equal representation of women and men in politics and should therefore endorse good practices, such as voluntary party quotas for elections. The European Parliament calls on Member States and all political parties to take measures to encourage women's active participation and involvement in political life and in elections, to achieve real parity in their internal decision-making, in their nominations for elected office and in party electoral lists through the introduction of quotas and, when compatible with the electoral system and when the political parties are in charge of the composition of the electoral list, to pay attention to the position of women candidates on these lists (Art. 5).

3. Share of women in politics in Croatia after the parliamentary elections 2015

According to the final official results of the election for representatives to the Croatian Parliament, which were announced by the National Election Commission on 23 November 2015, there were 957 women and 1,354 men candidates (of 2,311), or 41.4% women and 58.6% men. The gender quota of 40% was not fulfilled on 33 from a total of 166 lists of candidates in 11 constituencies (19.9%). Looking at individual promoters lists of candidates, a total of 31 different proponents such as a political party, coalition of parties or independent lists, that participated in the elections, 7 (22.6%) had at least one list of candidates on which the quota was not respected, while the remaining 24 proponents fulfilled the quota on all lists. This, at first glance, is not a large proportion, however looking at individual political parties, out of 61 that took part in the election, as many as 21 parties were among the above mentioned 7. It is important to point out that two of those seven belong to the two biggest coalitions that won the most votes and parliamentary seats. This is a negative factor that has certainly had an impact on the final ratio of the unbalanced gender structure of the new session of the Croatian Parliament[8].

The eighth session of the Croatian Parliament finally selected 23 women and 128 men or 15.2% women and 84.8% men. After a part of the elected put their mandate on hold because of the other duties they perform, their places were occupied by their male or female deputies. The 24 representatives, whose mandate was put on hold (all men), were replaced by deputies, eight of whom were women. This finally gives the initial composition of the 8th sitting of the Croatian Parliament: 31 female MPs and 120 male MPs, or 20.5% women and 79.5% men[9].

4. Research objectives and methodology

The research objective of this paper is to explore and determine the participation of women in the executive branch of the Republic of Croatia from 1990 to 2016, compare the results with the situation in the Republic of Slovenia, as well as with the proportion of women in the 28 EU member states. (Kancelaria Prezesa Rady Ministrów, 2016[10], The Members of the Government of the Czech Republic, 2016[11], Members of the Government/Úrad vlády SR, 2016[12], Members of the Government/Hungarian Government, 2016[13], Bundeskanzleramt Österreich, 2016[14], Belgian Federal Government, 2016[15], Presidency of the Republic of Cyprus, 2016[16], Statsministeriet/Christiansborg, 2016[17], Republic of Estonia Government, 2016[18], Finnish Government – Valtioneuvosto, 2016[19], Composition of the Government - Gouvernement.fr, 2016[20], Cabinet of the Federal Government – Bundesregierung, 2016[21], Prime Minister of Greece Our Government, 2016[22], Government of Ireland/government departments, 2016[23], List of Ministers and Ministers of State - Department of Taoiseach, 2016[24], Ministri e Sottosegretari/Governo Italiano, 2016[25], Laimdota Straujuma pozostaje premierem Łotwy - Ministru kabinets, 2016[26], Government of the Republic of Lithuania, 2016[27], Gouvernement du Grand-Duché de Luxembourg, 2016[28], Government of Malta/Ministries and Entities, 2016[29], The government of the Netherlands, 2016[30], Ministers/República Portuguesa,

2016[31], Ministers of the Romanian Government, 2016[32], The Government of Sweden, 2016[33], Government ministers - Gov.uk, 2016[34], Members of Government/Government of the Republic of Slovenia, 2016[35]). To achieve this, a quantitative method of counting has been used. The official government websites of both countries, the Republic of Croatia and the Republic of Slovenia, listing all appointed male and female representatives in all elected governments in both countries from their independence to date was used as the primary source for the calculations. This was followed by calculating the proportion of women in each government, and then the results from both countries were compared. Finally, the proportion of women in the Government of the Republic of Croatia and the Government of Republic of Slovenia on 7 April 2016 was compared with the proportion of women participating in the governments of all 28 EU members. The analysis unit was the number of women in the Croatian Government, the Slovenian Government and the Governments of all 28 EU members. The source for all the data were the respective official government websites. In conclusion, the sample selected for the method of counting is complete and representative, therefore the data obtained from this research are indicative. Furthermore, a qualitative analysis of the gathered data concerning the political interests of women in the executive branch of the Republic of Croatia has been made in order to give a better context for the need of this research and to underline its objectives. The following hypotheses have been set:

H1 The proportion of women in the Croatian Government does not show the expected increase in comparison to men (1990-2016).

H2 Women only occupy positions in "female" sectors, such as education, culture and family.

H3 The proportion of women in the Croatian government is similar to that in neighbouring Slovenia.

H4 The proportion of women in the Croatian Government is lower than the average share in the other 28 EU members (2016).

A quantitative method of counting data was used to collect data on 13 Croatian Governments, 12 Governments of the Republic of Slovenia and the Governments of the 28 Member States of the European Union. Using the inductive-deductive method, conclusions will be derived about the under-representation and gender discrimination of women in the executive branch of all Croatian governments from the independence to date, as well as conclusions about sectors led by women in the past 26 years.

5. Proportion of women in Croatian politics after the 2015 parliamentary elections

According to the official results of the election for representatives to the Croatian Parliament, which were announced by the National Election Commission on 23 November 2015, there were 957 women candidates and 1,354 men candidates (total of 2,311), or 41.4% women and 58.6% men. The gender quota of 40% was not fulfilled in 33 out of 166 lists of candidates in 11 constituencies (19.9%). Looking at individual promoters of candidates' lists, a total of 31 different promoters representing political parties, coalition of parties or independent lists, which participated in the elections, 7 of them (22.6%) had at least one list of candidates on which the quota was not fulfilled, while the remaining 24 promoters fulfilled the quota on all lists. At first glance the number does not seem to be very high. However, if we look at individual political parties, out of the total of 61 that took part in the election process, as many as 21 parties were among the above mentioned 7. Furthermore, it is important to point out that two of those seven belong to the two biggest coalitions, which won most votes and parliamentary seats. This is a negative factor that has certainly had an impact on the final ratio of the unbalanced gender structure of the new composition of the Croatian Parliament[36].

The composition of the eighth Croatian Parliament finally consisted of 23 women and 128 men or 15.2% women and 84.8% men. Some of the elected representatives in Parliament put their mandate on hold because of other duties they perform. They were replaced by their male or female deputies. Therefore, the 24 representatives who put their mandates on hold (all men) were replaced by their deputies, eight of whom were women. The final composition of the 8th Croatian Parliament consisted of: 31 female representatives and 120 male, or 20.5% women and 79.5% men[37].

6. Analysis of the gender structure of Croatian Governments from 1990 to 2016

The Croatian Parliament ratified the thirteenth Croatian Government on 22 January 2016 (Croatian

Government 1, 2016).[38] The Government consisted of 20 men and 3 women. A subsequent change in the Minister of Veterans didn't change the ratio of men and women. However, in this paper both ministers of Veterans were included, the former and the latter. So, in total the Croatian Government consisted of 21 men and 3 women, taking in account this one change in the Ministry of Veterans.

The first Croatian Government, with Prime Minister Stjepan Mesić (30 May – 24 August 1990) at its head, did not have a single woman. With numerous changes, it had a total of 27 ministers (Croatian Government 2, 2016).[39]

The second Croatian Government (24 August 1990 – 17 July 1991) also did not have a single female member. The Prime Minister was Josip Manolić. The Government had 31 male ministers.[40]

The Prime Minister of the third Government was Franjo Gregurić (17 July 1991 – 12 August 1992), and it had one female member. Vesna Girardi-Jurkić was Minister of Education, Culture and Sports (since 15 April 1992). Taking into account all the changes during its mandate, the Government had a total of 43 members. However, the number of ministries was lower, because there had been two different ministers in the Ministry of Diaspora, Defence, Justice, Education, Culture and Sports, Labour and Social Welfare, Trade, Interior, Foreign Affairs, while in the Ministries of Science and Technology (Croatian Government 4, 2016)[41] we even had three different ministers. The percentage of women in the Government was 2.3%.

The fourth Croatian Government (12 August 1992 – 3 April 1993) with Prime Minister Hrvoje Šarinić also had one woman. Again, it was Vesna Girardi-Jurkić, Minister of Education, Culture and Sports. The Government had 24 members, 23 men and only one woman. (Croatian Government 5, 2016)[42]. The percentage of women in the government was 4.1%.

The fifth Croatian Government (3 April 1993 – 7 November 1995), with Prime Minister Nikica Valentić, had 39 members, and included three women: Marina Matulović-Dropulić, Minister of Urban Planning, Construction and Housing (since 27 January 1995), Vesna Girardi-Jurkić, Minister of Culture and Education (until 18 October 1994) succeeded by Lilja Vokić, (since 18 October 1994) (Croatian Government 6, 2016)[43]. This was the first milestone since Croatia's independence with a more significant, although still relatively small, percentage of women in the executive branch. The participation of women in the Government was at a total of 7.7%.

The number of women showed further growth in the sixth Government, under Prime Minister Zlatko Mateša (7 November 1995 – 27 January 2000). For the first time since Independence in 1991 there was a female vice-president, Ljerka Mintas-Hodak. Out of the 43 members of the Government, including all the changes that had been made, 5 were women. The proportion of women in the Government rose for the first time since 1990, above the 10% threshold. The five female ministers were: Marina Matulović, Minister of Physical Planning, Construction and Housing (until 16 December 1996), Ljerka Mintas-Hodak, Minister for European Integration (since 4 March 1998), Milena Žic-Fuchs, Minister of Science and Technology (since 22 February 1999), Nansi Ivanišević, Minister of Education and Sports (since 5 October 1999) and Lilja Vokić, Minister of Education and Sports (until 4 March 1998). (Croatian Government 7, 2016)[44].

The proportion of women in the executive branch was growing even further in the seventh government, the one led by Prime Minister Ivica Račan (27 January 2000 – 30 July 2002) totalling 13.7%. Račan had a female vice-president, Željka Antunović. Out of the 29 members, four were women: Ingrid Antičević-Marinović Minister of Justice, Administration and Local Self-Government (28 September 2001), Minister of Health, Ana Stavljenić Rukavina (23 October 2001) and Minister of Tourism Pave Župan Rusković (Croatian Government 8, 2016)[45].

The eighth Government (30 July 2002 – On 23 December 2003), with Prime Minister Ivica Račan, had four women: Željka Antunović was Deputy Prime Minister and Minister of Defense; Ingrid Antičević-Marinović, Minister of Justice, Administration and Local Self-Government; Pave Župan Rusković, Minister of Tourism, and Gordana Sobol, Minister in the Government (Croatian Government 9, 2016)[46]. The percentage of women was 16.6%.

The ninth Croatian Government (23 December 2003 – 12 January 2008), that of Prime Minister Ivo Sanader, had 19 members and included five women. For the first time since the Croatian Independence, the percentage of women was more than 20%, to be more precise 26.3%. Jadranka Kosor was Vice President and Minister of Family, Veterans and Intergenerational Solidarity; Kolinda Grabar-Kitarović, was

Minister in the Ministry of European Integration (until 17 February 2005) and stayed at the head of the new formed Ministry of Foreign Affairs and European Integration (since 17 February 2005). Vesna Škare-Ožbolt was Minister of Justice (until 2005), when she was replaced by Ana Lovrin (since 2005). Minister of Environmental Protection, Physical Planning and Construction was Marina Matulović Dropulić (Croatian Government 10, 2016)[47].

During the second term of Prime Minister Ivo Sanader, in the tenth Croatian Government (12 January 2008 – 1 July 2009), the proportion of women dropped down to 20%. The Government had 20 members, 4 of whom were women. Jadranka Kosor was Deputy Prime Minister and Minister of Family, Veterans and Intergenerational Solidarity. Đurđa Adlešić was Deputy Prime Minister for Internal Affairs. Ana Lovrin was Justice Minister (until 10 October 2008) and Marina Matulović Dropulić was Minister of Environmental Protection, Physical Planning and Construction (Croatian Government 11, 2016)[48].

The eleventh Government (from 1 July 2009 until 23 December 2011) was the first Government in national political history which was led by a woman. The Prime Minister was Jadranka Kosor. She had only one female cabinet member, Minister of Finance Martina Dalić. The Government had 18 members. Despite the fact that a woman was the head of the Government, there was a significant decrease in the number of women in the Government. The proportion of women was only 11.1% (Croatian Government 12, 2016)[49].

The twelfth Government, the one with Prime Minister Zoran Milanović in charge (23 December 2011 – 22 January 2016), had 30 members in total, counting all the changes. Out of the total number of members five were women, which accounts for a percentage of 16.6% (Croatian Government 13, 2016)[50]. Vesna Pusić was the first Deputy Prime Minister and Minister of Foreign and European Affairs, Milanka Opačić was Deputy Prime Minister and Minister of Social Policy and Youth, Mirela Holy, Minister of Environmental Protection and Nature (23 January 2011 to 13 June 2012), Anka Mrak Taritaš, Minister of Construction and Urban Planning (16 November 2012 to 22 January 2016) and Andrea Zlatar Violić, Minister of Culture (23 December 2011 to 25 March 2015).

Table 1 Proportion of women in the Governments of the Republic of Croatia from 1990 to 2016

CROATIAN GOVERNMENT	M	F	TOTAL	SHARE F
1990	27	0	27	0%
1990 - 1991	31	0	31	0%
1991 - 1992	42	1	43	2.3%
1992 - 1993	23	1	24	4.1%
1993 - 1995	36	3	39	7.7%
1995 - 2000	38	5	43	10.4%
2000 - 2002	25	4	29	13.7%
2002 - 2003	20	4	24	16.6%
2003 - 2008	14	5	19	26.3%
2008 - 2009	16	4	20	20%
2009 - 2011	16	2	18	11.1%
2011 - 2015	25	5	30	16.6%
2015-	21	3	24	12.5%
TOTAL	**334**	**37**	**371**	**9.9%**

Source: Personal research

The number of all men and women who participated in the Croatian Government was taken into account in our calculations. However, the frequent replacements of Ministers within a term should be taken into consideration, since, for example, there had been alterations of several male and female ministers in one of the Government compositions. The fact is that Croatia has evolved concerning the participation of women in the executive branch of the Government since 1990, when there was not a single woman, to 2009 when the head of the Government was a woman. On the other hand, we have the situation of 2009 when we had the first female Prime Minister in the history of Croatia, but at the same time there was only one other female member of Government. That Government had the lowest proportion of women since 1993.

The Governments in 1995, 2003 and 2011 had the largest number of women. Two of those Governments were Liberal-Social Democratic and the third was a Christian Democratic. A total of five women were at some point part of those Governments. The number of men decreased after 2000, not because of the reduction of the number of ministries, but because of the lowered number of changes in individual Ministries in mid-term, which the Governments

had been particularly prone to at the beginning of the nineties.

7. Areas of political interest to women in the Governments of the Republic of Croatia between 1990 -2016

The assumption was that women, who were part of the executive branch in the Republic of Croatia, were engaged in areas related to women's rights, child care, child allowances, domestic violence and culture, while departments like the Ministry of Interior, Foreign Affairs and Defence were reserved exclusively for male members of the Cabinet. However, in analyzing the situation in Croatia during the above-mentioned period, it is evident that this is not entirely true. A generalization like this is impossible because, apart from the fact that we have already had one female Prime Minister in the Republic of Croatia, we have also had seven female Deputy Prime Ministers, one woman was head of the Ministry of Defence, three were leading the Ministry of Foreign and European Affairs, five different female Ministers were in charge of the Ministry of Justice and Administration and Local Self-Government, and one was in charge of the Ministry for Finances. On seven separate occasions, we have had a female Minister as head of the Ministry of Construction, Environmental Protection and Physical Planning. The same number of women led the Ministry of Culture and Education.

Table 2 Women headed ministries in the Government from 1990 to 2016

DEPARTMENT	No. W.
WELFARE, YOUTH, FAMILY, VETERANS	3
ADMINISTRATION AND JUSTICE	5
HEALTH	1
KULTURE, EDUCATION, EDUCATION AND SPORT	7
DEFENCE	1
HOME AFFAIRS	0
FOREIGN AFFAIRS AND EUROPEAN INTEGRATION	3
ENVIRONMENTAL PROTECTION, BUILDING AND URBAN DEVELOPMENT	7
ECONOMY	0
FINANCES	1
TOURISM	1
AGRICULTURE	0
DEPUTY PRIME MINISTER	7
PRESIDENT OF THE GOVERNMENT	1

Source: Personal research

So far in the history of the Croatian Governments, not a single woman led the Ministry of Interior, Economy and Agriculture. However, the thesis that women were responsible only for areas that are not politically "strong" enough does not apply, because women covered a variety of departments despite gender under-representation in each Government.

8. Participation of women in the Governments of the Republic of Slovenia from 1990 to 2016

Since the Independence of the Republic of Slovenia in 1990, up to date, there have been 12 different Governments. The Governments had eleven male Prime Ministers and only one female Prime Minister, Alenka Bratušek, who was in office from March 2013 to September 2014 (The Government of the Republic of Slovenia, 2016)[51]. Unlike in the Croatian Government, two women were participating in the first and second Slovenian Governments. The largest proportion of women in the executive branch in Slovenia since their Independence to date is in the current government, led by Prime Minister Miro Cerar (The Government of the Republic of Slovenia, 2016)[52].

Table 3 Proportion of women in the Governments of the Republic of Slovenia from 1990 to 2016

GOVERNMENT OF THE REPUBLIC OF SLOVENIA	M	F	TOTAL	SHARE F
1990-1992	29	2	31	6.4%
1992-1993	26	2	28	7.1%
1993-1997	27	3	30	10%
1997-2000	26	1	27	3.7%

GOVERNMENT OF THE REPUBLIC OF SLOVENIA	M	F	TOTAL	SHARE F
2000	17	1	18	5.5%
2000-2002	14	3	17	17.6%
2002-2004	19	4	23	17.4%
2004-2008	20	3	23	13%
2008-2012	21	7	28	25%
2012-2013	13	1	14	7.1%
2013-2014	15	4	19	21%
2014-	9	8	17	47%
TOTAL	**236**	**39**	**275**	**14.1%**

Source: Personal research

Out of the 17 members of the Government, eight are women, which is even for the standard of the EU a very high 47%. The total percentage of women in the Governments of the Republic of Slovenia since their independence to date is 14.1%.

9. Comparison of the gender structure of the Slovenian and Croatian Governments from 1990 to 2016

Comparing the average percentage of women in the executive branch of the Republic of Croatia and the Republic of Slovenia from 1990 to 2016, we see a significant difference. Slovenia has had 14.1% women in the executive branch during the past 26 years, while Croatia had 9.9% women in the same period, with one extra Government. Therefore, in the same time period, Slovenia has had 42% more women in the executive branch of the Government than Croatia.

Table 4 Proportion of women in the Governments of the Republic of Croatia and the Republic of Slovenia from 1990 to 2016

1990-2016	SHARE F
CROATIAN GOVERNMENT	9.9%
GOVERNMENT OF THE REPUBLIC OF SLOVENIA	14.1%

Source: Personal research

10. Proportion of women in the 28 EU Governments in 2016 and a comparison with Slovenia and Croatia

On the day of the study, 7 April 2016, the proportion of women in the Governments of the 28 member states of the European Union, was 26.2%. By far the largest proportion of women was in the Government of Sweden (The Government of Sweden, 2016)[53]. Twelve out of the 24 members of the Government were women, a percentage of 50%. Sweden is followed by France with 47.3%, Slovenia 47%, Bulgaria with 42.1% and Finland with 41.6% of women in the Government.

Table 5 Proportion of women in the Governments EU 28 in 2016

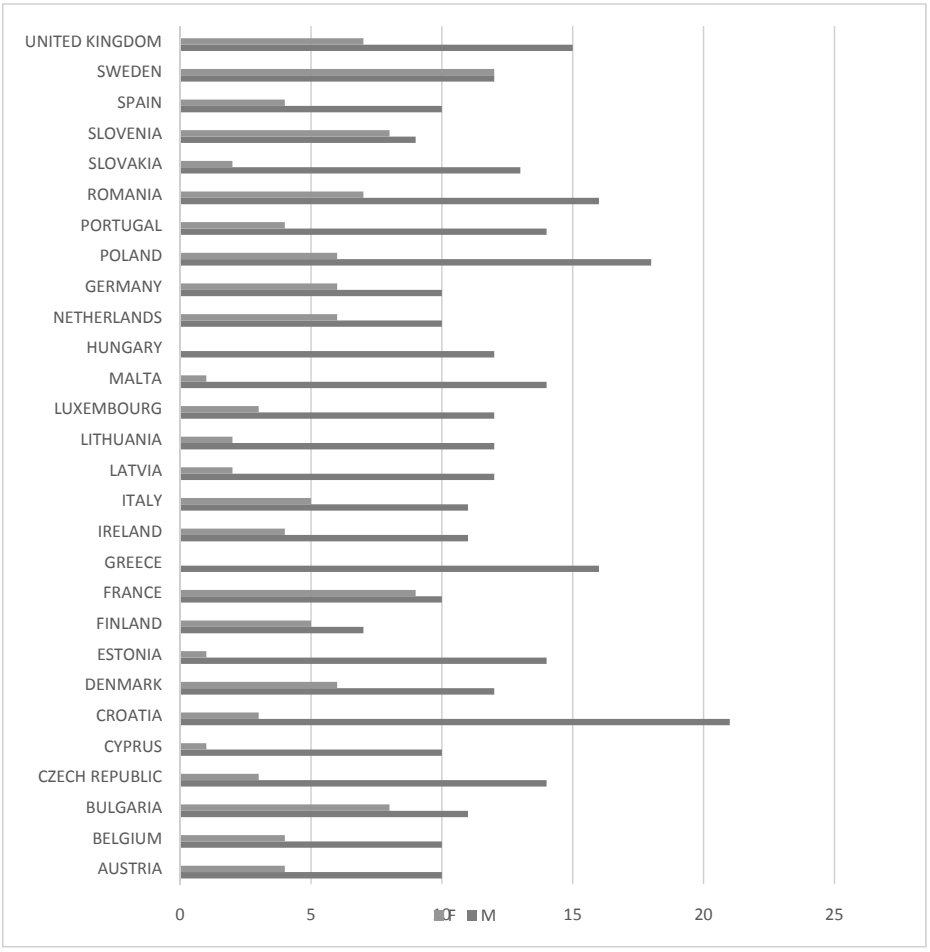
COUNTRY	M	F	SHARE F
SWEDEN	12	12	50%
FRANCE	10	9	47.3%
SLOVENIA	9	8	47%
BULGARIA	11	8	42.1%
FINLAND	7	5	41.6%
NETHERLANDS	10	6	37.5%
GERMANY	10	6	37.5%
DENMARK	12	6	33.3%
UNITED KINGDOM	15	7	31.8%
ITALY	11	5	31.2%
ROMANIA	16	7	30.4%
AUSTRIA	10	4	28.6%
BELGIUM	10	4	28.6%
SPAIN	10	4	28.6%
IRELAND	11	4	26.6%
POLAND	18	6	25%
PORTUGAL	14	4	22.2%
LUXEMBOURG	12	3	20%
CZECH REPUBLIC	14	3	17.6%
LATVIA	12	2	14.2%
LITHUANIA	12	2	14.2%
SLOVAKIA	13	2	13.3%
CROATIA	21	3	12.5%
CYPRUS	10	1	9%

COUNTRY	M	F	SHARE F
ESTONIA	14	1	6.6%
MALTA	14	1	6.6%
GREECE	16	0	0%
HUNGARY	12	0	0%
TOTAL	**346**	**123**	**26.2%**

Source: Personal research

At the very bottom of the scale are Hungary and Greece, where not a single woman currently holds a seat in the Government. The results in Sweden and Finland should not be a surprise since the Scandinavian parties were the first to introduce steps to encourage women to take up politics and they introduced the concept of an egalitarian political culture. Furthermore, the Scandinavian welfare state model and the well-organized women's movement also influenced the high proportion of women participating in politics (Šinko, 2007, according to Dahlerup, 1988 and Philips, 2001). The proportion of women in the Governments of Slovenia and Bulgaria does not support the thesis that countries of the former Eastern Bloc are lagging behind in the political participation of women in the executive branch. However, most of the countries of the former Eastern Bloc, as well as the Baltic states, are far below the European average.

Figure 1 The ratio of men and women in the Governments of EU 28 in 2016



Source: Personal research

It is evident that the average number of female Ministers in the "older" EU member states is constantly rising. Figure 1 reveals yet another fact. Croatia has, in addition to the small proportion of women participating in the Government, the largest number of male members of Government (21 ministers) taking into account all 28 member countries. Next in line is Poland with 18 male ministers.

Table 6 Proportion of women in the Governments of Croatia, Slovenia and the EU 28 in 2016

2016	SHARE OF WOMEN
CROATIAN GOVERNMENT	12.5%
GOVERNMENT OF THE REPUBLIC OF SLOVENIA	47%
EU 28	26.2%

Source: Personal research

After comparing the proportion of women in the executive branch of the Republic of Croatia and the Republic of Slovenia to the 28 EU member states, we can conclude that the Slovenian proportion is almost double to that of the European average for 2016.

11. Conclusion

History shows us that the process of introducing women into politics at the management level was very slow in practice despite all the efforts of positive regulations, which were supposed to promote and protect women against any form of discrimination. Even the legal obligations of the quota system of parliamentary democracy in Scandinavia haven't been a sufficient platform, because the rest of modern Europe didn't see it as a model for promoting the equality of women in management positions. In Croatia, women are now protected, even encouraged to political participation, by a number of laws. However, the number of women in Parliament, especially in management positions, is in complete disproportion to the law. That's why today we have the smallest percentage of participation of women in the Croatian Government since 2009. The political discrimination of women during the last 26 years since the Independence of the Republic Croatia until today is visible and there is a large gap between women's rights and the realization of them. Consequently, the first hypothesis of this study has been proven to be true. The percentage of women in the Government does not show the expected increase in comparison to men. The exclusion of women from the domain of the political decision-making process is evident, with the exception of a two-year period, from 2009 to 2011, when in fact a woman replaced a man at the head of the Government by a unanimous decision of the currently ruling party. Croatia has proven to be a country of prominent contradictions and discontinuities. From the times when women had not been involved at all in the executive branch over the period in which they were only part of the political infantry to the times when the only woman was head of Government. The second hypothesis in this paper isn't confirmed. Women haven't been in charge of only those Government departments which were primarily concerned with family, culture and education. They were head of departments like finances, constructions, and even defence. The third hypothesis was also shot down. The percentage of women in the Croatian executive branch has been lower than in neighbouring Slovenia over the past 26 years. Slovenia had 42% more women in the executive branch in this period than Croatia. Croatia is not last on the European scale in terms of the number of women in the Government, but neither is it first. While Hungary does not have a single female member in the executive branch, Slovenia, in which 47% women participate in the Government, is a bright shining light for countries from the former Eastern bloc, and an exemplary country for reaching a consensus on gender equality in political life. The fourth hypothesis has been proven to be correct. The percentage of women in the Croatian Government in management positions is lower than the average percentage of women in the Governments of the 28 EU member states. Reasons for the discouragingly low political participation of women today are not to be found in applicable regulations, but rather in the traditional understanding of the biological role of women, which keeps them away from the "gentlemen's club" centres of political power. Political parties have a key role, together with the motivational factor of women, for encouraging women to a more active involvement in politics, especially in the executive branch of politics, which, in the long run, will help the political confirmation of women in politics. Achieving gender equality, as a universal objective, should be the task of the whole society.

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DISKRIMINACIJA ŽENA NA UPRAVLJAČKIM POZICIJAMA U HRVATSKOJ POLITICI - SLUČAJ POLITIČKE PARTICIPACIJE ŽENA U IZVRŠNOJ VLASTI OD 1990. DO 2016. GODINE

Sažetak

Demokracija je, u suvremenom i modernom svijetu, nezamisliva bez aktivne i ravnopravne participacije žena na svim poljima društvenoga i političkoga života, posebice na upravljačkim položajima. U ovom je radu cilj bio istražiti koliko je, i je li uopće, tranzicijski put do moderne demokracije pratila i primjerena politička participacija žena na upravljačkim položajima u izvršnoj vlasti. Stoga se postavilo pitanje je li udio žena u Vladama Republike Hrvatske od 1990. do 2016. bilježio porast u odnosu na muškarce? S obzirom na to da je Republika Hrvatska imala sličan politički put od proglašenja neovisnosti, kao i susjedna Republika Slovenija, pokušalo se istražiti kakav je udio žena u Vladama Republike Hrvatske nasuprot onome u susjednoj Sloveniji. Kako bi se dodatno argumentirali podatci dobiveni iz kvantitativnoga istraživanja, pokušalo se podatke o udjelu žena u Vladama Hrvatske i Slovenije usporediti s aktualnim prosjekom udjela žena u vladama 28 zemalja članica Europske unije. U prvom dijelu rada opisan je put žena do prava glasa u svijetu te razvoj ženskih prava u Hrvatskoj. Analizirano je 13 hrvatskih Vlada od neovisnosti do danas, s naglaskom na udjelu žena u izvršnoj vlasti, kao i područja političkog interesa žena u Vladama. Analiziran je i udio žena u istom razdoblju u Vladama Republike Slovenije te je dana usporedba s udjelom žena u Vladama Republike Hrvatske. Slijedom toga, pokušalo se usporediti udio žena s prosjekom udjela žena u Vladama zemljama EU 28.

Ključne riječi: žene u politici, menadžment, upravljačke strukture, politička komunikacija, Vlada RH, Vlada EU

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R&D AND INNOVATION ACTIVITY OF THE EU CHEMICALS

Abstract

This article analyses R&D, innovation and foreign trade activity of the chemical industry in the selected EU Member States. The paper examines the period from 2005 to 2015. The methodology is based on the application of key indicators in order to provide objective conclusions on work productivity and effectiveness of chemicals production and production of basic pharmaceutical products and preparations. The aim of this research is to analyse the European chemical industry from the aspect of R&D and innovation activity. The main research results include R&D, innovativeness, foreign trade activity results, the rank of technological position of the European chemical industry, and recommendations and proposals for enhancing innovation and international competitiveness.

Keywords: Chemical industry, innovation, R&D, EU, international competitiveness

1. *Introduction*

This paper provides an overview of R&D and innovation activity of the chemical industry in the EU Member States. The main reason for choosing the chemical industry is its continuous investment in R&D activity. The main characteristics of the chemical industry are defined in the first part of the paper, while the second part analyses R&D, innovation and economic activity of the EU chemical industry enterprises. In general, the chemical industry has characteristics of medium- and high-technology sectors. The chemical industry, as the third largest sector of the European manufacturing industry, produces heterogeneous products based on different technical and scientific aspects and R&D objectives. The chemical industry sector includes enterprises which are exclusively or primarily producing by converting substances. Extractive industry enterprises create added value to raw materials that are converted into chemicals. The main task of chemical industry enterprises is substitution of natural substances and/or production of new substances (Albach et al., 1996).

The chemical industry is divided into several main sectors. The first is the production of basic chemicals. Besides the pharmaceutical industry, it is important to mention the industry of fine chemicals (complex, pure chemical substances that are part of the final product), industrial chemicals (detergents, cleaning products, varnishes, photography and photocopy developing chemicals), and special chemical production (Albach et al., 1996). CEFIC (2012) categorizes the European chemical industry in the same way. According to CEFIC (2012), the European chemi-

cal industry comprises the sector of basic chemicals, special chemicals, the pharmaceutical industry, and consumer chemicals. Basic chemicals include petrochemistry, its derivatives and basic inorganic chemicals. Products of the basic chemical sector are being produced in large quantities and sold to other producers in the chemical industry, and to other industries. They are used as inputs for different industries, such as leather, textile, paper, plastic, pharmaceutical, and rubber industry (Bhat, Narayanan, 2009). On the other hand, special chemicals are produced for special market needs and in smaller quantities. They include additives, adhesives, coatings, plastics, paint and ink, products for crop protection, dyes, pigments, etc. The pharmaceutical industry includes basic pharmaceutical production and pharmaceutical preparations, while consumer chemical sector covers products for final consumption (soaps, detergents, perfumes, and cosmetics). One of the key characteristics of chemical industry enterprises is the fact that most of their output are intermediary products (approximately 65%) for final products of other industries (Albach et al., 1996). Albach et al. (1996) claim that the automotive and construction industry, as well as the agricultural sector are some of the key chemical industry consumers. CEFIC (2012) confirms the importance of mechanical, electric, textile, clothing and paper industry as some of the main creators of demand for chemical industry products. It should be noted that vertical integration marks the chemical industry, but is not represented in all segments (e.g. commodity chemicals – alcohol, acids, wax, solvents, etc.). Some of the main characteristics of the chemical industry also include high heterogeneity of products, great importance of innovation and R&D activity, capital intensity, concentrated market structure, and high level of energy dependency. An interesting fact is that the chemical industry consumes almost one quarter of the produced output. However, the EU chemical industry is facing serious challenges: globalization, growing competitiveness of Asia, floating exchange rate, higher raw material costs, along with regulation and standardization of the European Union legislation (Bezić et al., 2011). The paper is based on the hypothesis that it is possible to evaluate current export competitiveness and comparative advantages of the Croatian manufacturing industry by analysing the trends and applying the indicators. The aim of the research is to evaluate economic and technological aspects of the selected European chemical industry enterprises from which it is possible to derive conclusions.

2. Analysis of foreign trade activity of EU chemicals

The chemical industry has an important role in the economy and society of the European Union. Namely, the chemical industry is not only one of the leaders in creating additional value and jobs, but also the main net exporter of the European Union, which has a positive impact on macroeconomic financial growth, i.e. economic stability. Most of the data are collected from CIS[1] and Eurostat, in which the data for some European countries are not fully available. Table 1 below shows the EU share of the global chemicals market in the period of twenty years in percentage and billions of euros.

Table 1 EU share of the global chemicals market

Year	EU chemicals sales (€ bill.)	World	World share %
1995	326	1,008	32.3%
1996	335	1,029	32.5%
1997	362	1,171	30.9%
1998	362	1,112	32.5%
1999	366	1,183	30.9%
2000	421	1,469	28.7%
2001	421	1,408	29.9%
2002	416	1,361	30.6%
2003	414	1,323	31.3%
2004	436	1,427	30.6%
2005	458	1,622	28.2%
2006	505	1,802	28.0%
2007	524	1,904	27.5%
2008	530	2,056	25.8%
2009	418	1,846	22.7%
2010	495	2,394	20.7%
2011	548	2,743	20.0%
2012	553	3,050	18.1%
2013	548	3,077	17.8%
2014	536	3,100	17.3%
2015	519	3,534	14.7%

Source: Cefic Chemdata International (2016)

The first row in Table 1 presents the EU chemicals sales in the period from 1995 to 2015, where it is evident that the sales have almost doubled, with highest sales in 2012 amounting to 553 billion euros. Sales of chemicals in the world recorded excellent results, from 1,008 billion euros in 1995 to 3,534 billion euros ten years later. However, when we examine the third row, which presents the share of EU chemicals in the world, it is notable that the share has more than halved. The fast growth of Asian countries might be the reason why the EU share of chemicals in the world has reduced so significantly while the sales continued to rise.

The strategic and economic importance of the European chemical industry is illustrated in Table 2 which presents imports, exports and trade balance of European chemical industry enterprises. (CEFIC, 2016).

Table 2 Extra EU trade flows with major geographic blocs

	€ billion			
2015	**Exports**	**Imports**	**Balance**	**% Trade balance**
NAFTA	36.5	25.0	11.4	25.5%
Japan	5.1	5.8	-0.8	-1.8%
Latin America	10.4	3.3	7.1	15.9
Africa	11.5	3.4	8.1	18.0%
China	11.6	11.6	0.0	0.0%
Rest of Europe	35.3	25.8	9.5	21.2%
Asia	48.4	41.6	6.7	15.1%
Rest of world	4.6	2.7	1.9	4.3%

Source: Cefic Chemdata International (2016)

Table 2 presents competitiveness indicators such as extra EU exports, imports and the trade balance. However, the EU still has an important competitive place in both world exports and imports. EU chemicals are leading in the world exports. When we look at the trade balance, the EU has the leading position which shows that, although Table 1 above shows extensive share reductions, the EU still has the best position in imports, exports and trade balance, which means that it has a great competitive role in the world chemical industry.

3. *Research and development activity and innovation activity of the EU chemical industry*

Investing in R&D activity, i.e. innovation, is one of the main prerequisites for the success of market-oriented enterprises in certain sectors. In high-technology based industries, such as biotechnology, pharmaceutical and IT industry, innovations are often radical. Successful investment in R&D activity and innovation are not an accidental result, but rather a well-planned and disciplined analytical process in the context of applied research.

R&D activity (resulting from the innovation that "has become applicable") has an impact on the growth of economic activity and share of most of the enterprises on the market. Market demand, the costs of human and material resources, investments in material assets and business environment of enterprises can become key factors of R&D, i.e. innovation activities of successful enterprises. Enterprise orientation towards R&D and innovation results in higher effectiveness of input-to-output transformation and productivity enhancement. Such productivity contributes to higher export competitiveness of the enterprise, which is manifested as a final result through market share growth, reduction of costs, and profit maximization on a foreign market. Innovation integrated in competitors' products might be an additional impulse to investment growth in R&D activity of one's own enterprise, especially in high-technology enterprises and medium-level technology industries (e.g. the chemical industry). More investments in R&D activity and innovation of certain industries bring economic benefits for customers who receive products of higher quality and lower price. Table 3 below presents R&D in the EU chemical industry, i.e. shows how much the EU invests in R&D and the share of R&D in total sales.

Table 3 R&D in the EU chemical industry

EU28	R&D Spending (€ billion)	Sales (€ billion)	R&D spending (% sales)
1993	7.2	276.5	2.6%
1994	7.1	298.8	2.4%
1995	7.2	325.6	2.2%
1996	7.1	334.7	2.1%
1997	7.4	361.6	2.0%
1998	7.5	361.6	2.1%
1999	7.6	365.6	2.1%
2000	8.1	421.0	1.9%
2001	7.9	420.9	1.9%
2002	7.7	416.3	1.8%
2003	7.6	413.9	1.8%
2004	7.8	436.3	1.8%
2005	7.6	457.7	1.7%
2006	8.3	504.7	1.6%
2007	8.0	524.3	1.5%
2008	8.2	530.1	1.5%
2009	7.9	418.2	1.9%
2010	7.9	495.3	1.6%
2011	8.0	548.0	1.5%
2012	8.5	553.0	1.5%
2013	8.4	548.1	1.5%
2014	9.1	536.3	1.7%
2015	9.1	519.0	1.8%

Source: Cefic Chemdata International (2016)

R&D activity in the EU has been oscillating in the past ten years, but it has not increased with the sales; namely, the share of R&D in sales has almost halved and has only slightly increased over the last two years. EU chemical companies tend to invest less in R&D activity although the sales increase. In the framework of R&D analysis, it is necessary to examine separately intramural[2] and extramural[3] R&D activity of European chemical industry enterprises. Table 4 and Table 5 present the number of European chemical industry enterprises and their R&D activity which includes technological and non-technological innovation (production, process, marketing, organization)[4]. The reference year is 2010. In the framework of the analysis, the used data are based on NACE Rev. 2 classification.

Table 4 Number of European chemical industry enterprises included in the implementation of intramural R&D activity in 2014

Country /Activity	C20 Production of chemicals and chemical products	C21 Production of basic pharmaceutical products and pharmaceutical preparations	Σ Intramural R&D
Belgium	150	39	189
Bulgaria	6		6
Czech	71		71
Denmark			
Germany	1,089	210	1,299
Estonia	5	4	9
Ireland			
Greece	53	20	73
Spain	456	141	597
France	404	131	535
Croatia	10	8	18
Italy	404	80	484
Cyprus	3	2	5
Latvia	8	3	11
Lithuania	14		14
Luxembourg			
Hungary	22	17	39
Malta	1	5	6
Netherlands	189	39	228
Austria	97		97
Poland	108	40	148
Portugal	67	22	89
Romania	20		20
Slovenia	21	3	24
Slovakia		6	6
Finland	64		64
Sweden	59	19	78
UK			
Iceland	4		4
Norway			
Switzerland	195	64	259

** Empty spaces – data not available*
Source: Eurostat (2017)

Most chemical industry enterprises from Germany, Italy, France, Spain, and the Netherlands invest in intramural R&D activity. Taking this into account, it is important to point out the Croatian chemical industry and the tendency of its enterprises to implement intramural R&D activities. According to the number of enterprises, the division of chemicals and chemical products that maintains intramural R&D activities is more dynamic in comparison with pharmaceutical industry enterprises.

Table 5 Number of European chemical industry enterprises included in the implementation of extramural R&D activity in 2014

Country /Activity	C20 Production of chemicals and chemical products	C21 Production of basic pharmaceutical products and pharmaceutical preparations	Σ Extramural R&D
Belgium	124	33	157
Bulgaria	12		12
Czech	71		71
Denmark	14	7	21
Germany	542	125	667
Estonia	9	4	13
Ireland	31	20	51
Greece	35	19	54
Spain	198	105	303
France	317	98	415
Croatia	12	4	16
Italy	270	69	339
Cyprus	1	2	3
Latvia	6	4	10
Lithuania	10		10
Luxembourg			
Hungary	5	9	14
Malta	0	0	
Netherlands	137	25	162
Austria	42		42
Poland	99	32	131
Portugal	32		32
Romania	0		
Slovenia	19	3	22
Slovakia		2	2
Finland	45		45
Sweden	40	16	56
UK			
Iceland	3		3
Norway	41	8	49
Switzerland	78	55	133

** Empty spaces – data not available*
Source: Eurostat (2017)

German, Italian, French, and Spanish enterprises participate more actively in the implementation of extramural R&D activities in comparison with other enterprises in the European chemical industry. The general conclusion is that European chemical industry enterprises are more inclined to implement R&D activities. In this case, extramural R&D activity is not a priority, but an alternative solution for chemical industry enterprises. Namely, in pharmaceutical industry activities, it is common to independently develop final products. It is notable that a greater number of chemical industry enterprises in highly developed countries implement intramural and extramural R&D activities, while former (transition) countries are characterized by a smaller number of this type of enterprises. Table 6 presents the share of enterprises from the production of chemicals and chemical products (C20), and production of basic pharmaceutical products and pharmaceutical substances (C21) with technological and non-technological innovation in the total number of enterprises, according to the last available data for 2014.

Table 6 Enterprises with technological and non-technological innovation in the European chemical industry in 2014 (%)

	C20		C21	
Country/Activity	**Technological innovation**	**Non-technological innovation**	**Technological innovation**	**Non-technological innovation**
Belgium	16	9.9	20.2	15.9
Czech	22.7	2.6		
Denmark	6.5	8.9	12	8.4
Germany	21.4	2.3	17.9	7.7
Estonia	36	0	66.7	0
Ireland	16.9	9.6		
Greece	11.3	8.5		
Spain	27.7	9.5	24.4	2.9
France	20.2	11.4	12.9	4.3
Croatia	9.4	5.5		18.7
Italy	18.4	9.1	30	17.9
Cyprus			0	0
Latvia	8.6	7.8		10
Lithuania	23.5	5.9		0
Luxembourg				
Hungary	13.8	8.8	17.9	5.1
Malta	12.5	12.5	30	0
Netherlands	25	6.3	41.9	
Austria	21.8	1.9		
Poland	20	5.2	22.1	
Portugal	21.4		13.5	
Romania	4.8	8.7	7.9	
Slovenia	20			
Slovakia			20	13.3
Finland	49.5	0		
Sweden		3		
UK	37.6			
Iceland	50	16.7		

** Empty spaces – data not available*
Source: Eurostat (2017)

An interesting conclusion can be reached from the comparison of relative values in Table 10. In general, there is evidently a larger amount of technological innovation in comparison with non-technological innovation of chemical industry enterprises (division C20 and C21). In the production of chemicals and chemical products the orientation towards technological innovation has prevailed. Among the enterprises from industrialized countries, there is an evident difference between the share of enterprises with technological and non-technological innovation. By contrast, in the framework of (former) transition countries, there is an evident smaller difference between the share of enterprises with technological and non-technological innovation. It is important to point out similar results in the framework of the pharmaceutical industry. There is one important characteristic, namely the European chemical industry includes enterprises with technological innovation. Croatian enterprises are an exception, where most of the enterprises are with non-technological innovation, while in Latvia the shares of enterprises with technological and non-technological innovation are close.

The producers of basic chemicals do not have an inclination towards innovative products (unlike in the pharmaceutical industry), but represent a large and important part of the chemical industry, with a share of more than 54-72% in innovation process in total innovation activity (Albach et al., 1996). The production of synthetic fibre is characterized by a low level of innovativeness, which is proven by the small number of patent applications. The production of agrochemical products (biotechnology) represents one of the most innovative sectors of the chemical industry. However, income reduction, complexity of long-term incubation of R&D into innovation and difficult adjustment to health and environmental standards are making the achievement of expected results of agrochemical products production more difficult. Table 7 presents the production value of enterprises in the European chemical industry in 2015.

Table 7 Production value in European chemical industry enterprises in 2015

Country/ Activity	C20 Production value of chemicals and chemical products	C21 Production value of basic pharmaceutical products and pharmaceutical preparations	Σ Production
EU28	460,000	237,891	697,891
Belgium	33,924.0	17,416.3	51,340
Bulgaria	1,412.9		1,413
Czech	5,736.3	1,301.9	7,038
Denmark	4,898.9	13,161.5	18,060
Germany	125,460.7	42,645.1	168,106
Estonia	424.0	43.9	468
Greece	2,057.2	1,080.7	3,138
Spain	33,397.5	13,611.7	47,009
France	60,758.6	34,760.6	95,519
Croatia	782.6	726.4	1,509
Italy	51,137.3	25,402.9	76,540
Cyprus	54.4	212.0	266
Latvia	223.0		223
Lithuania	1,921.9	191.7	2,114
Luxembourg	303.0		303
Hungary	5,112.5	2,917.6	8,030

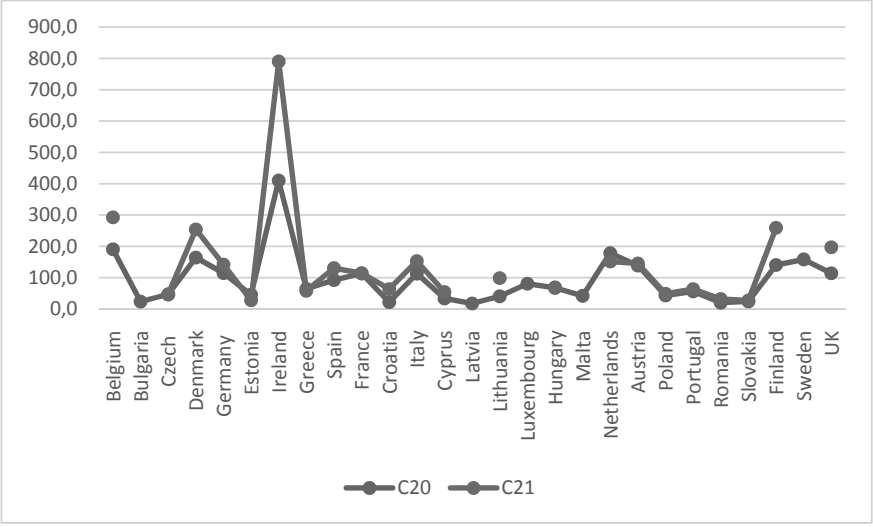
Country/ Activity	C20 Production value of chemicals and chemical products	C21 Production value of basic pharmaceutical products and pharmaceutical preparations	Σ Production
Malta	31.3		31
Netherlands	39,676.8	4,153.3	43,830
Austria	12,846.8	4,050.6	16,897
Poland	14,409.7	3,728.6	18,138
Portugal	4,209.0	1,039.5	5,249
Romania	2,255.9	766.7	3,023
Slovenia	1,253.6		1,254
Slovakia	1,554.1	191.7	1,746
Finland		1,663.7	1,664
Sweden	7,958.4	8,995.2	16,954
UK	36,042.6	17,732.7	53,775

Source: Eurostat (2017)

As the value rises, the use of human resources in the chemical industry (and its related divisions) becomes more efficient. The indicator is adequate for measuring staff efficiency for high- and medium-level technology enterprises. The revenues of chemical industry enterprises are denominated in millions of euros, while the variable of the number of employees includes one employee per total achieved enterprise revenue. The analysis of results of the indicators provides the conclusion that chemical industry enterprises in Germany, the Netherlands and the UK have the highest level of human resource efficiency.

Figure 1 presents employee productivity in European chemical industry enterprises for divisions C20 and C21 in 2014. Employee productivity is calculated as a result of the ratio of gross added value and the employees. The data from 2017 refer to most of the EU member states (C20, C21). Data for Bulgaria, Latvia, Luxembourg and Sweden were not available (C21), nor the data for Croatia (C20, C21).

Figure 1 Productivity of employees in the European chemical industry in 2014

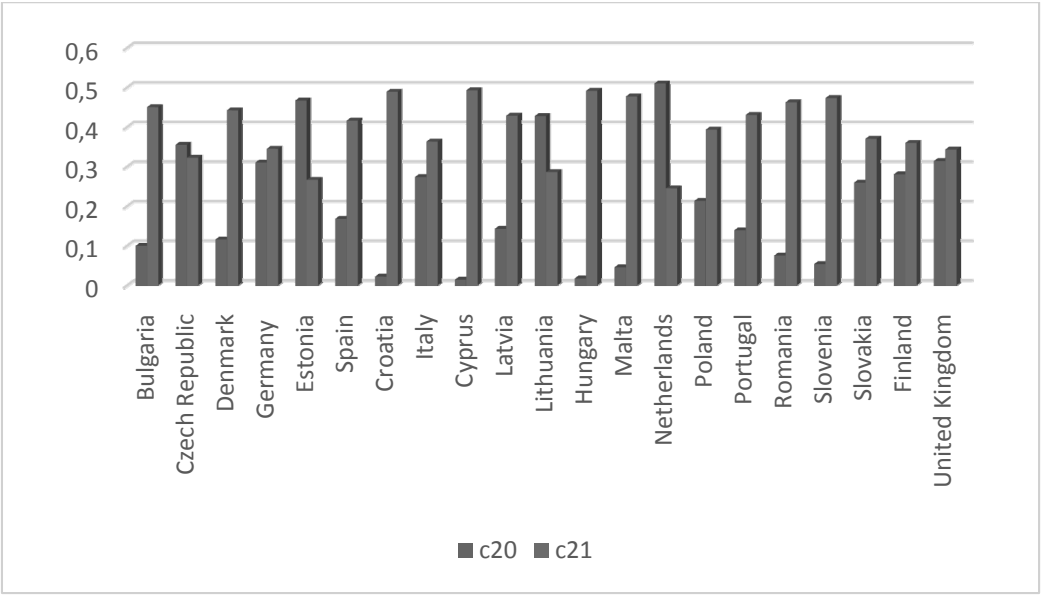


Source: Eurostat (2017)

It is important to point out that the level of work productivity of the pharmaceutical industry exceeds the productivity in the chemical industry, except in the enterprises from Estonia, Lithuania, Norway and the Netherlands. Since the pharmaceutical industry is not affected by cyclic movements and achieves higher revenues in relation to the production of chemicals and chemical products, this kind of result has a logical base. It can be concluded that there is a great difference between the level of productivity of enterprises in the chemical and the pharmaceutical industry. The exception is the case of Irish enterprises, where work productivity of the pharmaceutical industry notably exceeds the productivity of pharmaceutical and chemical enterprises from other European countries.

The Dutch, Norwegian and Belgian production of chemicals and chemical products (C20) achieves the highest level of work productivity. Croatian enterprises are ranked last but one, before the enterprises of the Romanian chemical industry. The highest work productivity has been recorded in the framework of pharmaceutical industry enterprises (C21) of Ireland, the United Kingdom, Denmark and Belgium. The work productivity of pharmaceutical enterprises from Croatia is at a higher level in comparison to the productivity of Croatian enterprises from the division C20. Croatian pharmaceutical enterprises are ranked in the middle of the productivity scale among the analysed countries. In order to calculate the efficiency and effectiveness of R&D expenditure, one must use the indicator of the ratio between R&D and sales revenue. In general, the results of the ratio between R&D and revenue of the manufacturing industry sector differ. An interesting example is that of the pharmaceutical industry, which shows a higher ratio value compared to other areas of the manufacturing industry. Taking into account these arguments, the Figures below compare the ratio results between R&D expenditure and achieved revenues of the two divisions (Figure 2), and the results of the ratio between R&D expenditure and total production of the chemical industry in the selected European countries (Figure 3). The reference year is 2014. The analysed activities are collected from the NACE Rev. 2 classification.

Figure 2 The share of R&D expenditure in total turnover of the European chemical industry division in 2014

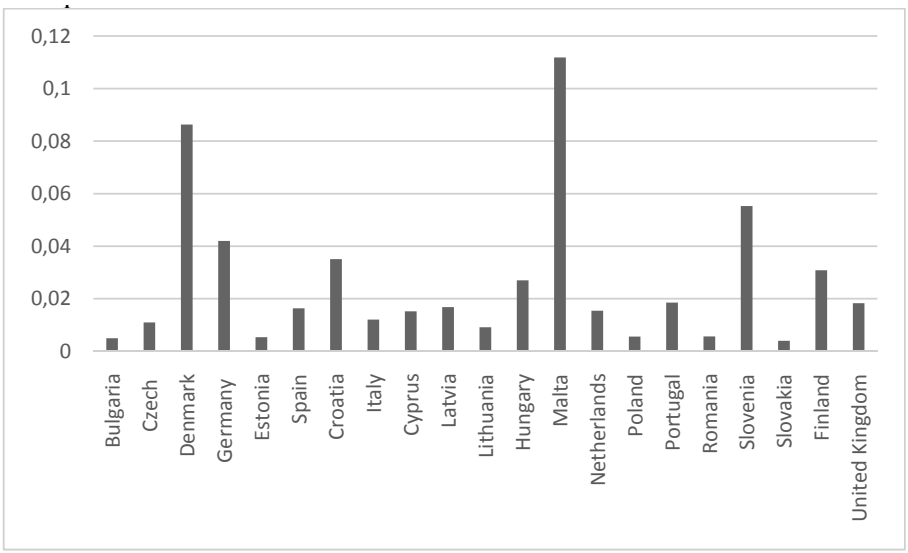


Source: Eurostat (2017)

The analysis of the results from Figure 2 indicates that the highest share of R&D expenditure is in the turnovers of the pharmaceutical industry enterprises (C21 – The production of basic pharmaceutical products and pharmaceutical preparations). Taking into account that pharmaceutical industry presents high-technology sector, the high level of its R&D activity in generated revenues has a theoretical and empirical base. The highest share of expenditure on R&D in achieved turnovers has been recorded on the example of Bulgaria, Denmark, Croatia, Cyprus, Hungary and Slovenia, while the lowest ranked enterprises in the pharmaceutical industry come from the Netherlands, Estonia and Lithuania. The production of chemicals and chemical products (C20) has reached multiple lower shares of R&D expenditure in the achieved turnovers of the European chemical industry in 2014.

It is important to point out the importance of share indicators for R&D in total production, which is often used in sector analysis. The main objective of calculations of the share of R&D and production is in the identification of the level of high-technology activity. The ratio results vary significantly among industries, due to different industrial structures. Countries with a large number of high-technology industries will have a higher relation indicator between R&D and production than the countries with a larger number of low-technology industries.

Figure 3 R&D expenditure as a share of realized production of European chemical industry enterprises in 2014



Source: Eurostat (2017)

The results from 2014 can confirm the thesis that countries with a large number of high-technology industries are marked as countries with higher intensity of R&D expenditure and production, unlike the countries with a larger number of low-technology enterprises. The example of the European chemical industry shows that countries with a notable share of the pharmaceutical industry, i.e., high-technology industry, have the highest share of R&D expenditure in production. Among these countries are Denmark, Slovenia, Germany and Malta. On the other hand, chemical industry enterprises from Poland, Lithuania, Romania and Slovakia are characterized by a relatively low ratio between R&D expenditure and total production. Croatia is located in the middle of the scale by its R&D intensity in the framework of total production.

There is a large disparity in innovation activity among enterprises from Europe, Asia, the US, and the enterprises from the Middle East. Challenging investments in R&D increase the probability for innovation. Taking into consideration that R&D and innovation activity are very important for the chemical industry, and their importance as one of the main

factors of enterprises, export competitiveness can be confirmed. The majority of innovations in European chemical industry enterprises are products of enterprises' own R&D activity, which represents the results of technological and innovation strategies. There is a marked difference in the level of innovativeness among the analysed countries. The disparity in innovation activities is defined by different indicators of enterprises which are specific for each analysed country. Therefore, unequal intensity of R&D and innovation activity has various implications on export competitiveness of chemical industry enterprises. Also, innovativeness of the chemical industry of highly developed European countries is mostly quantitative, but prevails in terms of quality over (former) transition countries.

4. Conclusion

The enterprises of the European chemical industry have been facing serious challenges, such as globalization, the rise of Asian competitiveness, exchange rate fluctuation, an increase in prices of raw materials, intensive regulation, and standardization of EU legislation. The conclusion of the analysis of the European chemical industry implies that more rational consumption of raw materials, a higher level of international competitiveness and environmental protection require certain postulates. Most innovation in European chemical industry enterprises originate from their own R&D activity as a result of technological and innovative enterprise strategies. Extramural R&D activity is not presented as a priority, but as an alternative for chemical industry enterprises. The chemical industry of highly developed countries has a larger number of enterprises which implement intramural and extramural R&D activities, while the enterprises in certain middle-income countries and transition countries are usually ranked last according to the number of enterprises. In principle, it has been established that there is disparity in innovation activity among European chemical industry enterprises as well as Asian, American, and Middle Eastern chemical industry enterprises. It is important to consider the enterprises in the German, Belgian, Dutch, Austrian, French, Italian, Danish, Finnish and Swedish chemical industry that have the best results and achievements in R&D, innovation and economic activities.

The European chemical industry should emphasise the importance of innovation in production and processes as a final result of R&D activity. However, regarding the main characteristics of the chemical industry sector, it is important to be aware of the applicability of a specific innovation type. Considering that successful realization of product innovation is the main goal, it is necessary to take into account the risks and the need to improve the product. European chemical industry enterprises can achieve competitive advantage only if they continuously invest in profitable and economically viable R&D projects. The competition also implements the innovations that are present in European chemical industry processes. The innovation process is harder to copy in terms of product innovation, which represents an additional competitive advantage for export companies of the European chemical industry. The patent activity of the chemical industry of rival countries (especially China) records constant growth. It shows China's strong orientation to investment into R&D activity, but also towards transfer (purchase) of technology. When we consider the government's security measures, the optimal level of cost competitiveness, the growing market and its geographical position, it is important to point out that high-level European chemical industry needs to focus on strengthening export competitiveness. The EU needs to provide the environment that will boost investment in R&D activity. In that case, the most sustainable course of action would be to intensify financial support through sustainable and profitable R&D projects, which could enhance the security of export competitiveness. With continuous investment in specialization and education of current and potential R&D departments, and at the same time, with the awareness of the importance and perspectives of R&D activities, we make a step forward towards achieving technological advantage and export competitiveness of European chemical industry enterprises. When we generate and accept technological advantages, which are manifested as a result of efficient investment in R&D, it is possible to boost the production of energy-efficient products and processes that will enable sustainable development of the European chemical industry.

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(Endnotes)

1 Communication Innovation Survey

2 Intramural costs are defined as total costs for R&D (research and development) performed within a statistical unit or economy sector in a given period of time, regardless of the source of funds.

3 Extramural costs are defined as the amounts which units, organizations or sectors paid by themselves or have committed to pay to other units, organizations or sectors for carrying out R&D in a given period of time.

4 Detailed calculation can be found in Annex 2.

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ISTRAŽIVANJE I RAZVOJ I INOVACIJE KEMIJSKE INDUSTRIJE EU-a

Sažetak

U ovome se radu analiziraju istraživanje i razvoj, inovacije te međunarodna trgovinska aktivnost kemijske industrije u odabranim članicama Europske unije. U radu se provodi analiza za razdoblje od 2015. do 2015. godine. Metodologija je temeljena na primjeni ključnih indikatora sa svrhom postizanja objektivnih zaključaka radne produktivnosti i učinkovitosti proizvodnje kemikalija i proizvodnje bazičnih farmaceutskih proizvoda i preparata. Cilj je istraživanja analizirati europsku kemijsku industriju s gledišta istraživanja i razvoja i inovacija. Glavni rezultati istraživanja uključuju istraživanje i razvoj, inovativnost i rezultate međunarodne trgovine, stupanj tehnološkoga pozicioniranja europske kemijske industrije te preporuke i prijedloge za unaprjeđenje inovacijske i međunarodne konkurentnosti.

Ključne riječi: kemijska industrija, inovacije, istraživanje i razvoj, EU, međunarodna konkurentnost

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TESTING THE FACTOR PROPORTIONS MODEL FOR CROATIA

Abstract

The factor proportions model is one of the main models in international trade theory. It was developed by Swedish economists Eli Heckscher and Bertil Ohlin in the early 1920's. Based on the merchandise trade data between Croatia and the countries of the European Union and the world and the relative availability of key factors of production, the factor proportions model was tested in the case of Croatia. The sign test was used for this purpose. It compares the expected sign according to the factor proportions model with the sign of the revealed comparative advantages index (RCA). The results of the analysis showed that the factor proportions model does not apply in the case of Croatia. According to the factor proportions model, Croatia does not use its comparative advantages effectively due to the lack of specialization in the production of products which intensively use the country's relatively abundant factor of production. Limitations of the model are reflected in the fact that some of the assumptions of the factor proportions model are not satisfied.

Keywords: Factor proportions model, Croatia, SITC, sign test

1. Introduction

The factor proportions model (or the Heckscher-Ohlin model) is one of the main models in international trade theory developed by Swedish economists Eli Heckscher and Bertil Ohlin in the early 1920's (Heckscher, 1919; Ohlin, 1924). It leans on Ricardo's theory of comparative advantages (Ricardo, 1817). The Heckscher-Ohlin model is often called the factor proportions model. Some researchers also called it the Heckscher-Ohlin-Samuelson model in recognition of Samuelson's contributions in formulating the Stolper-Samuelson and Factor price equalization theorem[1]. Early studies tested the Heckscher-Ohlin model by comparing the factor content of exports with that of imports and comparing this with the country's factor endowments. The first such study was made by Leontief (1953). Using the 1947 input-output tables for the United States he came to the conclusion that the United States exports labour-intensive products and imports capital-intensive products, which is contrary to the Heckscher-Ohlin theory, popularly known as the Leontief paradox. In response to the Leontief paradox, many economists have tested the Heckscher-Ohlin model for different countries and time periods. Vanek (1968) was the first to formulise this relationship and generalize the model for the many factors and many goods cases. The Heckscher-Ohlin-Vanek theorem states that countries will be net exporters of the services of factors they have in relative abundance.

The goal of this paper is to test the factor proportions model in the case of Croatia using the sign test which compares the expected signs of the factor proportions model with the signs of the revealed comparative advantaged index. The paper consists of six chapters. The first chapter is the introduction, the second explains the theoretical aspects of the factor proportions model and the third presents a historical overview of economic literature on the factor proportions model. The fourth chapter gives the methodology and describes data used in the analysis, the fifth chapter analyses the factor proportions model in the case of Croatia while the last chapter gives the concluding remarks.

2. Theoretical aspects of the factor proportions model

The Heckscher-Ohlin model is a model comprised of two goods, two countries and two factors of production (labour and capital). Assumptions of the model include identical constant returns to scale, identical homothetic preferences across countries, perfect competition with no market distortions, balanced trade, and perfectly mobile goods between countries, while factors are internationally immobile, relative factor endowments differ across countries and there is no factor intensity reversal (Heckscher, 1919). Various researchers have introduced modifications into those rigid assumptions in order to lose them and increase the predictive power of the appropriate tests. Leontief (1953) was the first to confront the Heckscher-Ohlin model with data. He measured the amount of capital and labour required for $1 million worth of US exports and came to the conclusion that US exports labour-intensive products and imports capital-intensive products which is contrary to the factor-proportions theory. Later studies criticise the methodology used by Leontief extending the Heckscher-Ohlin model by allowing for technology differences, intermediate trade, intra-industry trade and firm heterogeneity (Davis et al., 1997; Trefler, Zhu, 2005; Reimer, 2006). The main reasons why Leontief came to the paradox in the Heckscher-Ohlin theory is that he did not use land as a factor of production and underestimated the role of human capital in production. In the expanded Heckscher-Ohlin-Vanek model (Vanek, 1968) there are at least as many goods as factors of production and complete specialization in no more than the number of goods minus the number of factors. There are significant differences between these strict assumptions and real trade flows between countries. Returns to scale in production are mostly decreasing although globalization and the technological revolution have brought increasing returns to scale, product differentiation and economies of scale. Consumer preferences are not homothetic nor identical; there are market distortions in the form of customs, quotas and other trade barriers, while factors of trade can move freely across national borders, although there are some limitations. Almost all empirical tests of the H-O-V theorem have failed to find support in data for this theory (Maskus, 1985; Bowen et al., 1987). Factor endowments correctly predict the direction of trade only 50 percent of the time, equal to a coin toss. The reason for that are mainly strong restrictive assumptions of the model.

3. Economic literature on the factor proportions model

After Leontief's testing of the Heckscher-Ohlin theory many researchers have tried to prove the theorem using empirical data. Travis (1964), Melvin (1968) and Vanek (1968) extended the Heckscher-Ohlin model to allow for more goods and factors. Melvin added a third good in the model, which led to the problem of indeterminacy of production and trade. In that case, a capital-abundant country does not need to export the most capital-intensive good.

Stern and Maskus (1981) included a measure of human capital in their analysis. They excluded services industries, agriculture and natural resource industries when computing the factor endowments. The results indicated that the Leontief paradox was not present using data for the USA for the year 1972. Using data for 79 sectors in 1958 and 1972, Maskus (1985) ranked five factors: high-skilled labour, unskilled labour, other labour, physical capital and human capital. Comparing physical capital with labour, he came to the conclusion that labour is relatively more abundant than physical capital, indicating the existence of the Leontief paradox, contrary to the results of Stern and Maskus. Bowen et al. (1987) tested the traditional Heckscher-Ohlin hypothesis using the multi-dimensional extension of the two countries and conducted the first systematic and complete test of the H-O-V model.

Davis, Weinstein, Bradford and Shimpo (1997) tested the H-O-V model with international and Japanese regional data. In the case of relaxing the

assumptions of universal factor price equalization, the H-O-V model performs remarkably well. Davis and Weinstein (2001) pointed out that differences in factor endowments lead to a breakdown of factor prize equalization. In their view, such a breakdown is due to the systematic correlation between the country's capital abundance and industry input usage in both tradables and non-tradables.

Trefler and Zhu (2005) argued that developing countries, which have experienced the sharpest increase in wage inequality, have shifted their export shares towards more skill-intensive goods. It can be explained by technological catch-up. Reimer (2006) developed an approach to measure the factor content of trade when intermediate inputs are traded and techniques differ due to factor price differences. Empirical evidence documents the importance of intermediates and they mitigate cross-country differences in the factor content of finished goods.

Lai and Zhu (2007) allowed for country- and industry-specific technology differences deriving testable restrictions relating the factor content of bilateral trade to bilateral differences in technology and endowments. The results of the analysis have shown that the factor content predictions perform best for country pairs with larger endowment differences, as well as for trade between capital-abundant countries. O'Neill Fisher (2010) compared different productivities among countries when countries have different technologies. DeVries, Foster and Stecher (2012) introduced a new method for measuring value added content of trade when traded intermediates are included. This method allows for splitting up value added content of trade and generalizes the applied measures of vertical specialization in international production networks. Fisher and Marshall (2015)[2] computed direct and indirect factor requirements in 48 industries for 33 OECD countries. They strongly reject this Leontief hypothesis; hence tests of the Heckscher-Ohlin-Vanek paradigm cannot be based upon simple modifications that define factors in efficiency units.

4. Methodology

The factor proportions model is tested on the data for Croatia for the year 2013. The model is based on the Heckscher-Ohlin-Vanek theorem (Vanek, 1968) allowing for many countries, many goods and many factors of production in the model. Goods are classified according to product intensity into 5 groups as raw material intensive goods (RMIG), labour-intensive goods (LIG), capital-intensive goods (CIG), easy-to-imitate research-intensive goods (EIRIG) and difficult-to-imitate research-intensive goods (DIRIG). The five-way classification is taken from Yilmaz (2002), inspired by the work of Hufbauer and Chilas (1974)[3]. It has previously been used in the work of Erlat and Erlat (2003), Erlat and Erlat (2006). The three main factors of production are labour, capital and natural resources while differences in technology are presented with (R&D). Products are presented as HS 2 digit (from 01 to 99) harmonised with SITC 2 classification using correlation tables[4].

The relative factor endowment is formulated as the country's capital/labour ratio (K/L) opposed to the world's (K/L) ratio. If the country's (K/L) ratio exceeds the world's, then that country is capital abundant and vice versa. Relative endowment in natural resources is presented as the share of natural resources rents in the country's gross domestic product relative to the world's natural resource rents as percentage of the world's gross domestic product. If the country's natural resources rents exceed the world's, then the country is relatively abundant in natural resources. In order to increase the precision and power of a sign test, the natural resources have been divided into 5 categories: arable land, fishing, forest rents, mineral rents and coil, oil and gas rents. All these types of natural resource rents have been presented in the form of percentages of gross domestic product. Determination of relative factor endowment is presented in equation 1:

$$\left(\frac{K}{L}\right)_i > \left(\frac{K}{L}\right)_w, \left(\frac{NRR}{GDP}\right)_i > \left(\frac{NRR}{GDP}\right)_w \quad (1)$$

where K denotes capital, L is labour force, NRR are natural resource rents, GDP is gross domestic product, i denotes country and w is world.

In order to include productivity differences between countries, the variables agricultural productivity and labour productivity were introduced in the analysis. After allowing for productivity differences, new variables were formed and named as effective arable land and relative effective factor endowment. Allowing for productivity differences is important because productivity differs in various countries and consequently affects determination of factor endowments. Determination of the

relative effective factor endowment is presented in equation 2:

$$\left(\frac{K}{L}\cdot\frac{Q}{L}\right)_{ij} > \left(\frac{K}{L}\cdot\frac{Q}{L}\right)_{wj}, \left(\frac{AGR}{GDP}\cdot\frac{Q}{X}\right)_{ij} > \left(\frac{AGR}{GDP}\cdot\frac{Q}{X}\right)_{wj} \quad (2)$$

where Q is quantity of production, respectively national income or GDP, $\frac{AGR}{GDP}$ is the share of agriculture in gross domestic product, X is the sum of land and labour inputs, j is good, $\frac{Q}{L}$ denotes labour productivity and $\frac{Q}{X}$ is agricultural productivity. Differences in technologies between countries are defined as spending for research and development as a percentage of domestic GDP, $R\,\&\,D$.

$$\left(\frac{R\,\&\,D}{GDP}\right)_{ij} > \left(\frac{R\,\&\,D}{GDP}\right)_{wj} \quad (3)$$

The revealed comparative advantages (RCA) index is presented with equation 4:

$$RCA_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}} \cdot 100 \quad (4)$$

where X_{ij} represents the value of exports product j from country i and M_{ij} is the value of imports product j in country i. The index shows the degree of intra-industry trade and ranks between -100 (there is no export of product j from country i) and 100 (there is no import of product j in country i). In order to test the factor proportions model, a sign test was used. It compares the signs of relative abundance of production factors with the signs of the revealed comparative advantages index.

The sign test is presented with equation 5:

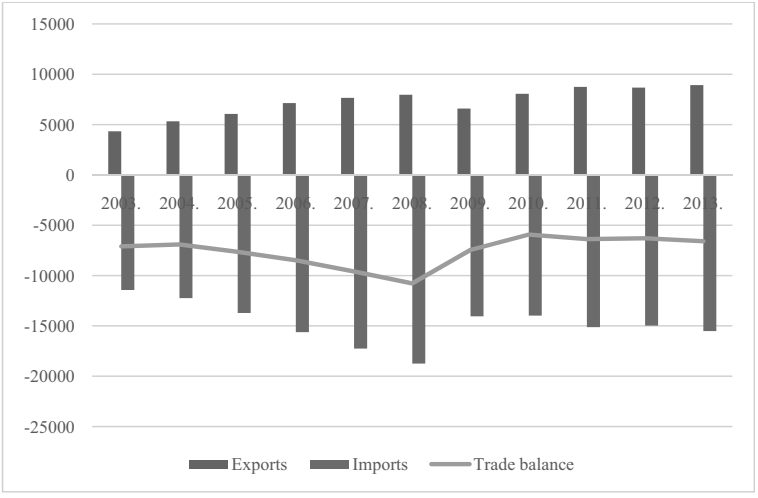
$$sign\left(\frac{\left(\frac{K}{L}\cdot\frac{Q}{L}\right)_{ij}}{\left(\frac{K}{L}\cdot\frac{Q}{L}\right)_{wj}}, \frac{\left(\frac{NRR}{GDP}\cdot\frac{Q}{X}\right)_{ij}}{\left(\frac{NRR}{GDP}\cdot\frac{Q}{X}\right)_{wj}}, \frac{\left(\frac{R\,\&\,D}{GDP}\right)_{ij}}{\left(\frac{R\,\&\,D}{GDP}\right)_{ij}}\right) = sign(RCA_{ij}) \quad (5)$$

The test was made in two ways: for merchandise trade between Croatia and the world, and specifically between Croatia and the EU because Croatia mostly trades with EU countries[5].

5. Empirical analysis and discussion

In order to conduct testing of the factor proportions model in Croatia, firstly the Croatian merchandise trade structure was analysed. Data for export and import values of merchandise trade for Croatia were taken from CBS, First Release 2013[6] and the Croatian National Bank[7]. Merchandise imports and exports classified by SITC are taken from the UN Comtrade and the US Service Trade[8]. From Figure 1 it can be noticed that Croatia had a permanent deficit in the total merchandise trade balance in the observed period. The largest deficit in the merchandise trade balance was in the year 2008 amounting to -10,775 million of euros. In 2013, the deficit was -6,587 million of euros, mainly due to a decrease in Croatian imports.

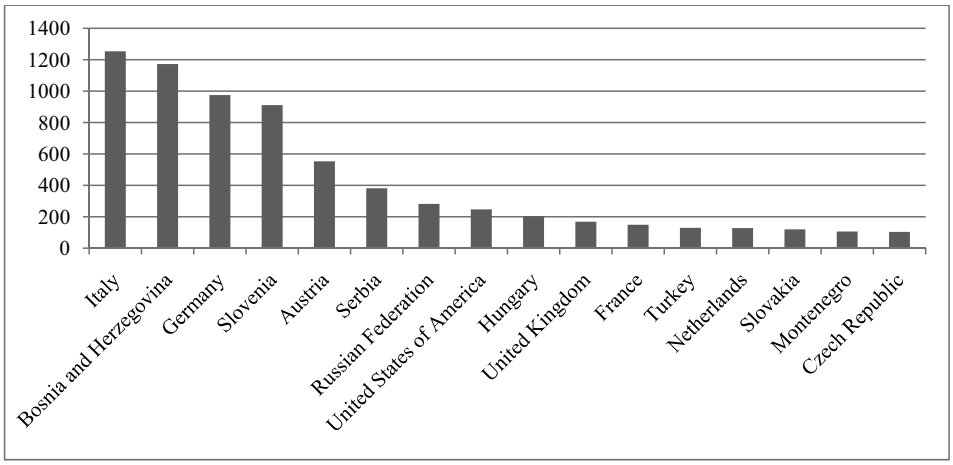
Figure 1 Merchandise trade balance, Croatia (in million of euros, 2003 - 2013)



Source: Author, according to data available at www.hnb.hr

Croatia mainly trades with with neighbouring countries and the EU countries, which is in line with the gravity model of international trade[9]. The main Croatian export markets (with trade of over 200 million of euros) are Italy, Bosnia and Herzegovina, Germany, Slovenia, Austria, Serbia, the Russian Federation, the United States of America and Hungary.

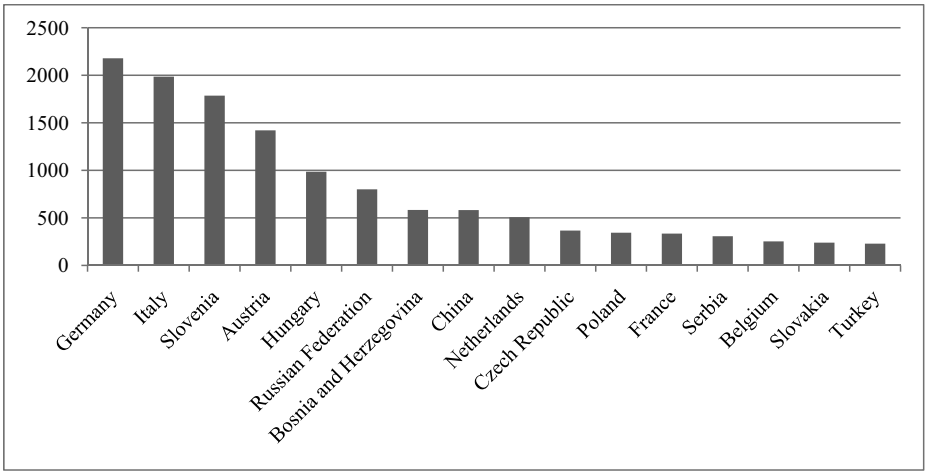
Figure 2 Exports from Croatia by country, in million of euros (2013)



Source: Author, according to CBS, First release, Foreign trade in goods of the Republic of Croatia, March 2014

The main Croatian import markets with trade of over 500 million of euros are Germany, Italy, Slovenia, Austria, Hungary, the Russian Federation, Bosnia and Herzegovina, China and the Netherlands.

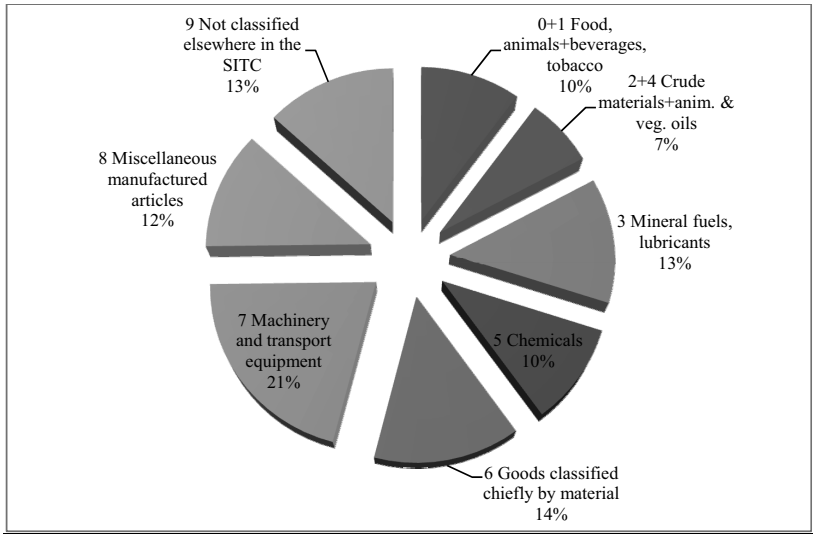
Figure 3 Imports in Croatia by country, in million of euros (2013)



Source: Author, according to CBS, First release, Foreign trade in goods of the Republic of Croatia, March 2014

Croatia is mostly an exporter of machinery and transport equipment, textiles, chemicals, foodstuffs, mineral fuels and lubricants (Figure 4).

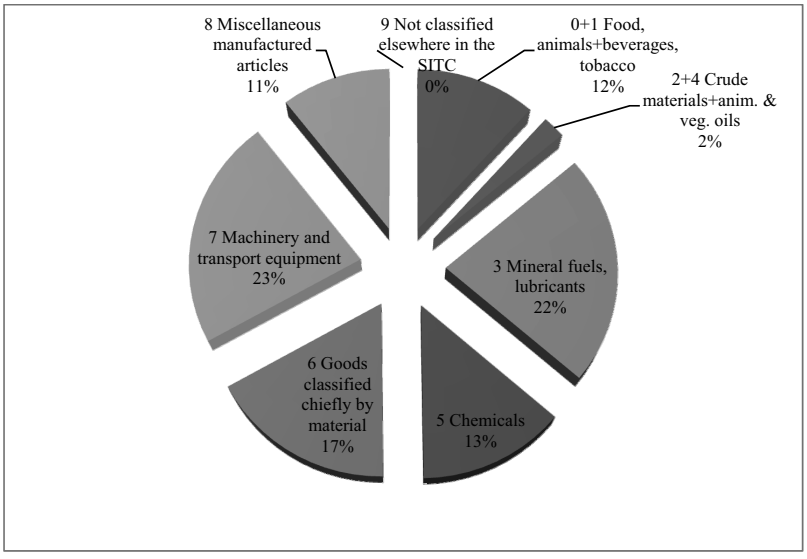
Figure 4 Merchandise exports for Croatia by SITC, 2013



Source: UN Comtrade, International Merchandise Trade Statistics. Yearbook 2014

On the other hand (Figure 5), Croatia is also an importer of machinery and transport equipment, foodstuffs, chemicals, mineral fuels and lubricants, textiles, etc., which indicates a high share of Croatia's intra-industry trade.

Figure 5 Merchandise imports for Croatia by SITC, 2013



Source: UN Comtrade, International Merchandise Trade Statistics. Yearbook 2014

Table 1 Factor endowments data

Country	GFCF (K) (in million US$)	GDP (in million US$)	Labour (L) (in 000)	Natural resources rents (% of GDP)	R&D (% of GDP)	K/L
Austria	95,015	428,698.6	4,429.8	0.4%	2.81%	21.45
Belgium	116,901	521,402.4	4,955.9	0.1%	2.28%	23.59
Bosnia and Herzegovina	3,192	17,841.4	1,490.4	1.9%	0.33%	2.14
Bulgaria	11,609	55,626.3	3,335.3	2.0%	0.65%	3.48
China	4,370,840	9,490,602.6	801,790.6	5.6%	2.01%	5.45
Croatia	**11,171**	**57,770.8**	**1,852.2**	1.7%	0.81%	6.03
Cyprus	4,260	24,057.2	603.8	0.0%	0.48%	7.06
Czech Republic	52,070	208,328.4	5,337.9	0.5%	1.91%	9.75
Denmark	61,547	335,877.5	2,901.6	1.7%	3.06%	21.21
Estonia	6,795	25,246.7	689.7	2.8%	1.74%	9.85
EU 28 (exc. Croatia)	**3,449,948.0**	**17,929,693.5**	**244,340.5**	0.5%	2.02%	14.12
Finland	56,624	269,190.1	2,721.2	1.3%	3.31%	20.81
France	619,955	2,810,249.2	30,030.7	0.1%	2.23%	20.64
Germany	737,993	3,745,317.2	41,981.4	0.2%	2.85%	17.58
Greece	27,154	239,509.8	5,008.2	0.2%	0.80%	5.42
Hungary	26,595	134,401.7	4,388.1	0.6%	1.41%	6.06
Iceland	2,314	15,376.6	190.1	0.0%	2.49%	12.17
India	556,648	1,861,801.6	487,882.1	5.9%	0.81%	1.14
Ireland	35,221	238,259.9	2,184.3	0.1%	1.52%	16.12
Italy	383,198	2,133,539.3	25,474.1	0.2%	1.26%	15.04
Japan	1,068,880	4,919,563.1	65,559.5	0.0%	3.47%	16.30
Latvia	6,324	30,241.6	1,044.1	2.7%	0.60%	6.06
Lithuania	7,517	46,412.1	1,543.7	1.0%	0.95%	4.87
Luxembourg	10,257	61,794.5	260.1	0.1%	1.16%	39.44
Macedonia	2,530	10,767.4	945.8	3.7%	0.44%	2.68
Malta	1,333	9642.8	186.8	0.0%	0.89%	7.13
Montenegro	847	4464.2	251.2	0.9%	0.38%	3.37
Netherlands	155,740	864,169.2	8,998.3	1.0%	1.98%	17.31
Norway	116,071	522,349.1	2,695.1	10.7%	1.66%	43.07
Poland	98,972	524,059.0	18,294.7	1.8%	0.87%	5.41
Portugal	34,419	226,073.5	5,397.2	0.5%	1.37%	6.38
Romania	44,534	191,587.2	9,520.8	2.2%	0.39%	4.68
Russian Federation	450,239	2,079,024.7	76,886.4	18.8%	1.13%	5.86

Country	GFCF (K) (in million US$)	GDP (in million US$)	Labour (L) (in 000)	Natural resources rents (% of GDP)	R&D (% of GDP)	K/L
Serbia	8,634	45,519.6	3,128.4	3.3%	0.73%	2.76
Slovakia	19,975	98,033.8	2,736.1	0.5%	0.83%	7.30
Slovenia	9,461	47,675.8	1,017.2	0.3%	2.59%	9.30
Spain	257,993	1,369,261.6	23,419.9	0.1%	1.24%	11.02
Sweden	128,379	578,742.0	5,118.4	1.1%	3.30%	25.08
Switzerland	160,510	684,919.2	4,700.9	0.0%	3.13%	34.14
Turkey	167,070	823,242.5	27,354.7	0.6%	0.94%	6.11
United Kingdom	440,107	2,712,296.2	32,761.2	1.0%	1.63%	13.43
United States of America	3,244,300	16,768,053.0	159,851.2	1.3%	2.80%	20.30
World	**18,316,400**	**75,467,070.0**	**3,312,265.0**	4.9%	1.80%	5.53

Source: World Bank, IndexMundi and author's calculations

Table 1 presents factor endowment data for Croatia, the EU-28 (excluding Croatia), selected countries and the world. Variable labour refers to the total labour force and is taken from the World Bank database[10]. Variable capital refers to gross fixed capital formation (investments) at current US$ and is provided from IndexMundi[11]. Variable gross domestic product (in million US dollars) is taken from the World Bank database[12]. Variable total natural resources rents (as percentage of GDP) are also taken from the World Bank database[13] as well as R&D (as percentage of GDP)[14].

According to Table 1, Croatia is relatively labour-abundant in relation to the European Union and slightly capital-abundant in relation to the world (K/L in Croatia is 6.03, 14.12 in the EU and 5.53 in the world). Croatia invests a relatively small share of amounts into R&D as a percentage of the GDP (0.81%) in relation to the EU (2.02%) and the world (1.8%). The investments in R&D are very low compared to similar countries by income per-capita. Croatia also lags behind some countries that recently joined the EU, like Slovenia (2.59%), the Czech Republic (1.91%) and Hungary (1.41%). If natural resources rents as a percentage of the GDP are viewed, Croatia is relatively abundant in natural resources (1.7%) compared with the EU (0.5%) but is scarce with this factor of production in relation to the world (4.9%). In order to include productivity differences between countries, labour productivity is included in the analysis as it is shown in equation 2 in chapter four. The determination of effective K/L is presented in Table 2:

Table 2 Determination of effective capital-labour ratio

Country/Region	Labour force (in 000)	Capital (in million of US$)	K/L	Labour productivity (GDP/per person employed)	Effective K/L
Croatia	1,852.2	11,171.0	6.03	22,816.0	2.64
EU-28	244,340.5	3,449,948.0	14.12	41,845.0	3.37
World	3,312,265.0	18,316,400.0	5.53	19,294.5	2.87

Source: World Bank, IndexMundi, UN and author's calculations

Labour productivity for Croatia, the EU and the word is presented with variable GDP per person employed provided by World Development Indicators[15]. If effective K/L is calculated and compared, it can be seen that Croatia is relatively labour-abundant in comparison to the EU and the world. Natural resource rents are divided into five categories: arable land, fishing, forest rents, mineral rents and coil, oil and gas rents. Data about various types of natural resources are collected from the World Bank Database Wealth accounting[16] and presented in Table 3:

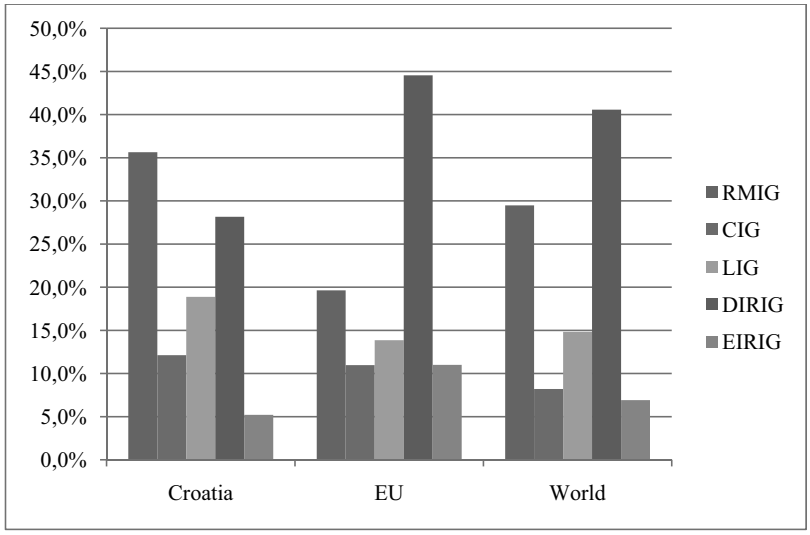
Table 3 Natural resources in Croatia, the EU-28 and the world in 2013

Country/ Region	Arable land (ha *p.c.*)	Agricultural productivity (value added per worker in US$)	Effective arable land	Fishing (% of GDP)	Forestry (% of GDP)	Minerals (% of GDP)	Coil, oil and gas rents (% of GDP)
Croatia	0.21	23,091.0	4,849.11	0.2-0.7	0.83	0.00	0.89
EU-28	0.21	33,333.3	6,999.98	0.1	0.12	0.02	0.35
World	0.20	11,657.0	2,331.40	0.5	0.33	1.67	3.83

Source: World Bank, UN, IndexMundi, FAO[17], Ministry of agriculture[18] and author's calculations

When variable arable land (ha *p.c.)* is compared for Croatia, the EU and the world it can be noticed they are on a similar level (around 0.2 ha p.c.). If agricultural productivity (value added per worker in US$) is multiplied with the variable arable land, variable effective arable land is created. Croatia is relatively abundant with arable land compared to the world but scarce in it in relation to the EU. Data for agriculture productivity are used from the World Bank database[19]. Croatia is relatively abundant in fishing and forestry in relation to both EU and the world but is relatively scarce in minerals. Also, Croatia is relatively abundant in coil, oil and gas rents compared with the EU but scarce with it in relation to the world.

Figure 6 Factor-intensity of exports for Croatia, the EU and the world in 2013



Source: Author's calculations based on ITC Trade Map database[20]

Figure 6 displays the factor-intensity of exports for Croatia, the EU and the world in 2013. It can be noticed that Croatia mostly exports raw material-intensive goods and falls short in exports of easy and difficult-to-imitate research-intensive goods.

Table 4 Sign test for the factor proportions model in Croatia (2013)

HS 2 digit	Industry	Product intensity	RCA Cro-World	Exp. sign	FPM holds	RCA Cro-EU	Exp. sign	FPM holds
01	Live animals	RMIG	-27.3	+	No	-79.5	-	Yes
02	Meat and edible meat offal	RMIG	-77.0	+	No	-87.8	-	Yes
03	Fish, crustaceans, molluscs, aquatic invertebrates nes	RMIG	23.9	+	Yes	14.1	+	Yes
04	Dairy products, eggs, honey, edible animal product nes	RMIG	-59.0	+	No	-84.7	-	Yes
05	Products of animal origin, nes	RMIG	-28.9	+	No	-20.9	-	Yes
06	Live trees, plants, bulbs, roots, cut flowers, etc.	RMIG	-90.2	+	No	-92.2	-	Yes
07	Edible vegetables and certain roots and tubers	RMIG	-82.3	+	No	-79.6	-	Yes
08	Edible fruit, nuts, peel of citrus fruit, melons	RMIG	-75.9	+	No	-65.9	-	Yes
09	Coffee, tea, mate and spices	RMIG	-78.5	+	No	-84.8	-	Yes
10	Cereals	RMIG	46.3	+	Yes	45.4	-	No
11	Milling products, malt, starches, inulin, wheat gluten	RMIG	-23.3	+	No	-76.3	-	Yes
12	Oil seed, oleagic fruits, grain, seed, fruit, etc. nes	RMIG	28.6	+	Yes	21.3	-	No
13	Lac, gums, resins, vegetable saps and extracts nes	RMIG	-97.4	+	No	-88.0	-	Yes
14	Vegetable plaiting materials, vegetable products nes	RMIG	-83.8	+	No	-55.2	-	Yes
15	Animal, vegetable fats and oils, cleavage products, etc.	RMIG	-61.4	+	No	-72.1	-	Yes
16	Meat, fish and seafood food preparations nes	RMIG	27.5	+	Yes	-12.9	+	No
17	Sugars and sugar confectionery	RMIG	-2.7	+	No	35.6	-	No
18	Cocoa and cocoa preparations	RMIG	-39.9	+	No	-78.7	-	Yes
19	Cereal, flour, starch, milk preparations and products	RMIG	-31.6	+	No	-46.6	-	Yes
20	Vegetable, fruit, nut, etc. food preparations	RMIG	-55.1	+	No	-69.0	-	Yes
21	Miscellaneous edible preparations	RMIG	-1.7	+	No	-43.3	-	Yes
22	Beverages, spirits and vinegar	CIG	-1.7	-	Yes	-37.7	-	Yes
23	Residues, wastes of food industry, animal fodder	RMIG	-59.1	+	No	-80.6	-	Yes

HS 2 digit	Industry	Product intensity	RCA Cro-World	Exp. sign	FPM holds	RCA Cro-EU	Exp. sign	FPM holds
24	Tobacco and manufactured tobacco substitutes	CIG	5.2	-	No	-31.6	-	Yes
25	Salt, sulphur, earth, stone, plaster, lime and cement	RMIG	39.4	-	No	39.9	-	No
26	Ores, slag and ash	RMIG	-34.6	-	Yes	68.4	-	No
27	Mineral fuels, oils, distillation products, etc.	RMIG	-45.5	-	Yes	-21.4	-	Yes
28	Inorganic chemicals, precious metal compound, isotopes	EIRIG	-66.7	-	Yes	-35.2	-	Yes
29	Organic chemicals	EIRIG	-66.2	-	Yes	-89.1	-	Yes
30	Pharmaceutical products	EIRIG	-21.3	-	Yes	-53.3	-	Yes
31	Fertilizers	RMIG	39.5	+	Yes	48.9	-	No
32	Tanning, dyeing extracts, tannins, derivs, pigments, etc.	CIG	-54.4	-	Yes	-77.7	-	Yes
33	Essential oils, perfumes, cosmetics, toiletries	CIG	-33.5	-	Yes	-79.1	-	Yes
34	Soaps, lubricants, waxes, candles, modelling pastes	CIG	-39.0	-	Yes	-81.1	-	Yes
35	Albuminoids, modified starches, glues, enzymes	EIRIG	-82.5	-	Yes	-91.8	-	Yes
36	Explosives, pyrotechnics, matches, pyrophorics, etc.	EIRIG	-23.0	-	Yes	-63.7	-	Yes
37	Photographic or cinematographic goods	DIRIG	-87.3	-	Yes	-96.1	-	Yes
38	Miscellaneous chemical products	EIRIG	-70.6	-	Yes	-81.7	-	Yes
39	Plastics and articles thereof	DIRIG	-51.3	-	Yes	-56.2	-	Yes
40	Rubber and articles thereof	RMIG	-81.1	+	No	-84.2	-	Yes
41	Raw hides and skins (other than fur skins) and leather	RMIG	-46.4	+	No	-62.7	-	Yes
42	Articles of leather, animal gut, harness, travel goods	LIG	16.7	+	Yes	-10.2	+	No
43	Fur skins and artificial fur, manufactures thereof	RMIG	2.7	+	Yes	-34.8	-	Yes
44	Wood and articles of wood, wood charcoal	RMIG	57.0	+	Yes	49.2	+	Yes
45	Cork and articles of cork	RMIG	-96.0	+	No	-97.4	+	No
46	Manufactures of plaiting material, basketwork, etc.	LIG	-24.9	+	No	-17.6	+	No
47	Pulp of wood, fibrous cellulosic material, waste etc.	RMIG	46.1	+	Yes	64.1	+	Yes
48	Paper & paperboard, articles of pulp, paper and board	LIG	-48.5	+	No	-51.6	+	No

HS 2 digit	Industry	Product intensity	RCA Cro-World	Exp. sign	FPM holds	RCA Cro-EU	Exp. sign	FPM holds
49	Printed books, newspapers, pictures etc.	LIG	-8.9	+	No	-27.2	+	No
50	Silk	LIG	-92.8	+	No	-88.8	+	No
51	Wool, animal hair, horsehair yarn and fabric thereof	LIG	-84.6	+	No	-93.1	+	No
52	Cotton	LIG	-61.4	+	No	-52.3	+	No
53	Vegetable textile fibres nes, paper yarn, woven fabric	LIG	-91.2	+	No	-90.3	+	No
54	Manmade filaments	LIG	-44.2	+	No	-29.7	+	No
55	Manmade staple fibres	LIG	-38.8	+	No	-58.3	+	No
56	Wadding, felt, nonwovens, yarns, twine, cordage, etc.	LIG	-26.2	+	No	-27.4	+	No
57	Carpets and other textile floor coverings	LIG	-94.4	+	No	-95.7	+	No
58	Special woven or tufted fabric, lace, tapestry, etc.	LIG	-44.8	+	No	-47.8	+	No
59	Impregnated, coated or laminated textile fabric	LIG	-71.7	+	No	-85.4	+	No
60	Knitted or crocheted fabric	LIG	-92.7	+	No	-92.6	+	No
61	Articles of apparel, accessories, knit or crochet	LIG	2.4	+	Yes	13.2	+	Yes
62	Articles of apparel, accessories, not knit or crochet	LIG	-30.7	+	No	-15.1	+	No
63	Other made textile articles, sets, worn clothing, etc.	DIRIG	-64.9	-	Yes	-49.6	-	Yes
64	Footwear, gaiters and the like, parts thereof	LIG	-11.3	+	No	8.8	+	Yes
65	Headgear and parts thereof	LIG	33.7	+	Yes	4.0	+	Yes
66	Umbrellas, walking-sticks, seat-sticks, whips, etc.	LIG	-17.5	+	No	36.4	+	Yes
67	Bird skin, feathers, artificial flowers, human hair	LIG	-93.4	+	No	-98.6	+	No
68	Stone, plaster, cement, asbestos, mica, etc. articles	LIG	11.2	+	Yes	12.3	+	Yes
69	Ceramic products	LIG	-34.8	+	No	-67.6	+	No
70	Glass and glassware	LIG	14.5	+	Yes	1.9	+	Yes
71	Pearls, precious stones, metals, coins, etc.	LIG	63.8	+	Yes	42.3	+	Yes
72	Iron and steel	CIG	-44.6	-	Yes	-57.8	-	Yes
73	Articles of iron or steal	CIG	-19.6	-	Yes	-26.5	-	Yes
74	Copper and articles thereof	CIG	-38.1	-	Yes	-29.0	-	Yes

HS 2 digit	Industry	Product intensity	RCA Cro-World	Exp. sign	FPM holds	RCA Cro-EU	Exp. sign	FPM holds
75	Nickel and articles thereof	CIG	-81.9	-	Yes	-90.9	-	Yes
76	Aluminium and articles thereof	CIG	-1.9	-	Yes	22.1	-	No
78	Lead and articles thereof	CIG	3.7	-	No	15.7	-	No
79	Zinc and articles thereof	CIG	-74.9	-	Yes	-77.5	-	Yes
80	Tin and articles thereof	CIG	-77.8	-	Yes	-83.7	-	Yes
81	Other base metals, cermets, articles thereof	CIG	-75.3	-	Yes	-7.2	-	Yes
82	Tools, implements, cutlery, etc. of base metal	LIG	-59.6	+	No	-67.4	+	No
83	Miscellaneous articles of base metal	LIG	-49.2	+	No	-54.2	+	No
84	Boilers, machinery, nuclear reactors, etc.	DIRIG	-24.4	-	Yes	-38.7	-	Yes
85	Electrical, electronic equipment	DIRIG	-18.5	-	Yes	-16.9	-	Yes
86	Railway, tramway locomotives, rolling stock, equip.	DIRIG	48.0	-	No	30.5	-	No
87	Vehicles other than railway, tramway	DIRIG	-65.6	-	Yes	-69.0	-	Yes
88	Aircraft, spacecraft, and parts thereof	DIRIG	28.7	-	No	2.6	-	No
89	Ships, boats and other floating structures	DIRIG	44.4	-	No	-44.4	-	Yes
90	Optical, photo, technical, medical, etc. apparatus	DIRIG	-43.5	-	Yes	-50.6	-	Yes
91	Clocks and watches and parts thereof	DIRIG	-82.4	-	Yes	-87.5	-	Yes
92	Musical instruments, parts and accessories	LIG	-60.0	+	No	-84.8	+	No
93	Arms and ammunition, parts and accessories thereof	LIG	70.8	+	Yes	-61.9	+	No
94	Furniture, lighting signs, prefabricated buildings	LIG	6.6	+	Yes	8.4	+	Yes
95	Toys, games, sports requisites	LIG	-70.5	+	No	-83.1	+	No
96	Miscellaneous manufactured articles	LIG	-46.1	+	No	-81.7	+	No
97	Works of art, collectors' pieces and antiques	LIG	1.4	+	Yes	21.2	+	Yes
99	Commodities not elsewhere specified	N.A.	91.7	N.A.	N.A.	-10.1	N.A.	N.A.

Source: Author's calculations

The sign test for the factor proportions model in Croatia for the year 2013 is formulated and implemented in Table 4. Products are classified according to HS 2 digit into five product intensity groups as raw material intensive goods (RMIG), labour-intensive goods (LIG), capital-intensive goods (CIG), easy-to-imitate research-intensive goods (EIRIG) and difficult-to-imitate research-intensive goods (DIRIG). Additional distribution of raw material intensive goods is on mineral products (H2 25, 26,

27), wood (forestry) products (HS 44, 45, 47), fish products (HS 3, 16), and agriculture products (all other products classified as RMIG). The sign test compares the expected sign according to the factor proportions model with the sign of the revealed comparative advantages index (RCA). The expected sign predicts that a country will export a product intensively using its relatively abundant factor of production. Input data for calculating the index of revealed comparative advantages were provided from the ITC Trade Map. The sign test for the factor proportions model is made in two ways; for merchandise trade between Croatia and the world and for merchandise trade between Croatia and the EU countries because Croatia mostly trades with EU countries. Relative effective values of the K/L ratio and effective arable land were used in the analysis. The results of the sign test have shown that the factor proportions model (FPM) holds only in 46.8% cases for merchandise trade between Croatia and the world and in 62.5% of cases for merchandise trade between Croatia and the EU[21].

It can be concluded that Croatia did not specialize according to the factor proportions model and that it does not use its comparative advantages well. The reason for that is the fact that Croatia net exports only 22 out of 96 HS 2 digit products to EU countries and 23 out of 96 HS2 products to the world[22] so there can be no discussion about any kind of specialization in exports. Future investigations can be carried out in the direction of expanding the analysis to HS 4 or HS 6 digit and more precise division of production factors (for example division of labour into unskilled and skilled labour). Limitations of the model are associated with the statement that some of the assumptions of the factor proportions model are not satisfied when confronted with merchandise trade data, namely the assumptions of constant returns to scale, identical homothetic preferences across countries, perfect competition with no market distortions, balanced trade, perfectly mobile goods between countries, while factors are internationally immobile, relative factor endowments that differ across countries and no factor intensity reversal assumption. It undoubtedly affected the results of the analysis and final conclusion whether the factor proportions model holds in the case of Croatia.

6. Conclusion

The factor proportions model is based on the expanded Heckscher-Ohlin-Vanek theorem and tested for Croatia using data for the year 2013. There are three main factors of production included in the analysis (labour, capital and natural resources). In order to test the factor proportions model the sign test was used. It compared the expected sign according to the factor proportions model with the sign of the revealed comparative advantages index (RCA). The sign test for the factor proportions model was made in two ways; for the merchandise trade between Croatia and the world and for the merchandise trade between Croatia and EU countries because Croatia mostly trades with EU countries. The results of the sign test have shown that the factor proportions model holds only in 46.8% cases for the merchandise trade between Croatia and the world and in 62.5% cases for the merchandise trade between Croatia and EU.

According to the factor proportions model, it can be concluded that Croatia did not specialize and that it does not use its comparative advantages well. Limitations of the model are reflected in the strictness of the model assumptions and in the fact that some of the model assumptions were not satisfied. Future investigations can be carried out in the way of increasing the precision and predictive power of the sign test with the extension of analysis to HS 4 and HS 6 digit and a more precise division of production factors.

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(Endnotes)

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21 According to Bowen et al. (1987), the sign tests are correct about 60% of the time, which is often no better than a coin toss.

22 The plus sign of the RCA index indicates net exports while the minus sign indicates net imports.

Appendix

Raw Material Intensive Goods

SITC 0 Food and Live Animals
SITC 2 Crude Material, Inedible, Except Fuels (excluding 26)
SITC 3 Mineral Fuels, Lubricants and Related Materials (excluding 35)
SITC 4 Animal and Vegetable Oils, Fats and Waxes
SITC 56 Fertilizers (Other Than Those of Group 272)

Labour-Intensive Goods

SITC 26 Textile Fibres (Other Than Wool Tops and Other Combed Wool) and Their Wastes (Not Manufactured Into Yarn or Fabric)
SITC 6 Manufactured Goods Classified Chiefly by Material (excluding 62, 67, 68)
SITC 8 Miscellaneous Manufactured Articles (excluding 88, 87)

Capital-Intensive Goods

SITC 1 Beverages and Tobacco
SITC 35 Electric Current
SITC 53 Dyeing, Tanning and Colouring Materials
SITC 55 Essential Oils and Resinoids and Perfume Materials; Toilet, Polishing and Cleansing Preparations
SITC 62 Rubber Manufactures, n.e.s.
SITC 67 Iron and Steel
SITC 68 Non-Ferrous Metals
SITC 78 Road Vehicles (Including Air-Cushion Vehicles)

Easy-to-Imitate Research-Intensive Goods

SITC 51 Organic Chemicals
SITC 52 Inorganic Chemicals
SITC 54 Medicinal and Pharmaceutical Products
SITC 58 Plastics in Non-Primary Forms
SITC 59 Chemical Materials and Products, n.e.s.
SITC 75 Office Machines and Automatic Data-Processing Machines
SITC 76 Telecommunications and Sound-Recording and Reproducing Apparatus and Equipment

Difficult-to-Imitate Research-Intensive Goods

SITC 57 Plastics in Primary Forms
SITC 7 Machinery and Transport Equipment (excluding 75, 76, 78)
SITC 87 Professional, Scientific and Controlling Instruments and Apparatus, n.e.s.
SITC 88 Photographic Apparatus, Equipment and Supplies and Optical Goods, n.e.s.; Watches and Clocks

Hrvoje Jošić

TESTIRANJE MODELA FAKTORSKIH PROPORCIJA NA PRIMJERU REPUBLIKE HRVATSKE

Sažetak

Model faktorskih proporcija jedan je od temeljnih modela u teoriji međunarodne trgovinske razmjene. Razvili su ga švedski ekonomisti Eli Heckschera i Bertila Ohlina početkom 20-ih godina prošloga stoljeća. Na temelju trgovinskih podataka između Republike Hrvatske i zemalja Europske unije i svijeta te relativne raspoloživosti temeljnih faktora proizvodnje, model faktorskih proporcija je testiran na primjeru Republike Hrvatske. U tu je svrhu korišten test predznaka. On uspoređuje očekivani predznak prema modelu faktorskih proporcija s predznakom indeksa otkrivenih komparativnih prednosti (RCA). Rezultati analize su pokazali da model faktorskih proporcija ne vrijedi na primjeru Republike Hrvatske. Republika Hrvatska ne koristi učinkovito svoje komparativne prednosti uslijed izostanka specijalizacije u proizvodnji proizvoda koji intenzivnije koriste proizvodni faktor kojim Republika Hrvatska relativno obiluje. Ograničenja modela su vezana uz činjenicu da pojedine pretpostavke modela faktorskih proporcija nisu zadovoljene.

Ključne riječi: model faktorskih proporcija, Republika Hrvatska, SITC, test predznaka

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THEORY AND PRACTICE OF HUMAN RESOURCE MANAGEMENT: THE CASE OF MEDICAL STAFF RECRUITMENT IN THE KINGDOM OF SWEDEN

Abstract

In a highly globalized world, the freedom of movement is one of the fundamental principles in the business community. More concretely, free movement of workers is a fundamental principle of the Treaty enshrined in Article 45 of the Treaty on the Functioning of the European Union. The purpose of this paper is to discuss from the legal and managerial aspect the purpose and function of recruitment as an important part of contemporary human resource management. The theoretical aspect of freedom of movement in the European Union is discussed within the legal institutional framework that enables EU citizens to move across borders and exercise their rights. The empirical part of the paper provides a practical example of recruitment of medical doctors (Croatian citizens) to work in the Kingdom of Sweden.

Keywords: Freedom of movement, European Union, human resource management, recruitment

1. Introduction

In times of globalisation and major challenges that have changed the economy and the business community, modern companies have recognised that their employees are the key to success in an increasingly competitive global game. As the productive potential of knowledge and activities of individuals (Vodopija, 2006: 3), human capital has taken a leading role in achieving a competitive advantage of not only companies but also of the economy at all levels - from local to global. Namely, people who possess the knowledge, competencies, skills, and adequate motivation can respond to change as a source of opportunities and chances, rather than threats. This is one of reasons why human resource management is becoming increasingly important today both as a scientific discipline and a managerial function. In this context, finding adequate employees is

one of the important activities of human resource management, especially in terms of the *free movement of workers* which has occurred as a result of integration and globalisation processes (see more in Bahtijarević Šiber, 1999: 289).

Companies seek for human resource excellence across borders in order to obtain the best possible employees. Thus, recruitment has become an important function of human resource management, which has a critical impact on the performance of any organization. The importance of recruitment has been documented in the work of various academic scholars (see, for example, Purcell, Purcell, 1998; Click, 1997; Hogler et al., 1998; Fein, 1998).

The purpose of this paper is to briefly discuss recruitment and employment as a part of the legal discussion on freedom of movement for workers in the European Union (EU) as well as to provide a practical example of recruitment of medical doctors, Croatian citizens, to work in the Kingdom of Sweden. The paper is structured in five sections. After introductory remarks, the second section of the paper deals with the legal basis of the freedom of movement of workers within the EU. The section three focuses on recruitment of medical doctors (Croatian citizens) to work in the Kingdom of Sweden. The section four discusses the principle of Total Quality Management in the recruitment process. The paper concludes with the section five.

2. Freedom of movement of workers across borders: the legal basis

One of the four freedoms enjoyed by all citizens of the European Union is the freedom of movement of workers. It includes the right of movement and residence in another Member State, as well as the right of entry and residence for family members, and the right to work. However, there are certain restrictions that apply to these rights, which the citizens of the Republic of Croatia have faced since 1 July 2013, particularly with regard to the rights of entry and residence and the right to employment in the public sector. Restrictions are particularly present with regard to EU citizens from the new Member States. If we review all the rights obtained on the basis of the freedom of movement of workers, we can see that some of them are carried out in practice, while others are not implemented so well. In addition to the Treaty on European Union, the legal basis of this freedom lies in certain directives and regulations: Directive 2004/58/EC[1] on the right of citizens of the Union and their family members to move and reside freely within the territory of the Member States, Regulation (EU) No 492/2011 on freedom of movement for workers within the Union, Regulation (EC) No 883/2004 on the coordination of social security systems and its implementing Regulation (EC) 987/2009, as well as case law from the EU Court of Justice are also relevant (Schmid-Drüner, 2014)[2].

The first right is the *right to work in another EU Member State*. That right enables individuals to compete not only in national labour markets but also in labour markets of all other EU Member States. The problem arises in practice, since a large number of people are familiar neither with this option nor with the terms and conditions when competing in foreign markets. Croatian citizens do not know how they can exercise the right to seek employment within the EU, how they can access a foreign employer, what conditions and qualifications are necessary and required in each Member State, or what national provisions in each Member State restrict their quest. The aforementioned rights apply to people who exercise their right to free movement for work purposes.

Restrictions exist primarily in issues related to public security, public policy, public health and public sector employment. European law has regulated the freedom of movement for workers in terms of the definition, rights and obligations, but national laws of the Member States are to regulate conditions and restrictions on the employment of foreign workers within their own borders. However, all Member States agree that the freedom of movement for workers should be restricted in all matters of national security and strictly national issues.

Temporary restrictions placed by some Member States also apply to Croatian citizens. These temporary restrictions are divided into three stages[3], starting with 1 July 2013. In the first phase that ended on 30 June 2015 all Member States could apply their national laws if they chose to do so and were not legally obliged to stand by the principles

associated with the free movement of workers under Article 45 of the TFEU and Regulation (EU) No 492/2011. In the second phase, i.e. the period from 1 July 2015 to 30 June 2018, Member States must notify the European Commission if they wish to continue to apply national laws over the next three years and not to apply the principles associated with the free movement of workers. In the third phase covering the period from 1 July 2018 to 30 June 2020, or the so-called final phase of temporary restrictions, after notifying the European Commission, Member States may continue to apply national laws only if there are serious disturbances of the labour market (or a threat thereof). A certain number of EU Member States imposed restrictions on workers from the Republic of Croatia in the first phase of temporary restrictions, which ended on 30 June 2015, because of which Croatian nationals needed work permits to work in these countries. Austria, Belgium, Cyprus, France, Greece, Italy, Luxembourg, Malta, the Netherlands, Germany, Slovenia, Spain and the United Kingdom introduced temporary restrictions in the first phase (European Commission, 2015a: 3)[4]. Croatia notified the European Commission that it likewise imposed restrictions on these 13 Member States in the first phase in terms of employment of their nationals on its territory (Europska komisija, 2015b)[5]. As the first phase of temporary restrictions came to an end on 30 June 2015, by that date 13 EU Member States, which placed restrictions on Croatia in the first phase, should have notified the Commission of their intention to maintain restrictions in the second phase or to fully open their markets to Croatian citizens. Eight of the thirteen countries (Belgium, Cyprus, France, Germany, Greece, Italy, Luxembourg and Spain) decided to allow Croatian citizens full access to their labour markets. These eight countries have fully implemented EU legislation in the area of the freedom of movement of workers since 1 July 2015. The remaining five countries (Austria, Malta, the Netherlands, Slovenia and the United Kingdom) will maintain the existing restrictions in the next three years (Thyssen, 2015)[6].

The second right granted by the freedom of movement for workers is the *freedom to move to another EU country to work without a work permit*. This right can be immediately exercised by Croatian citizens in all Member States that have not entered the second phase of temporary restrictions. Persons interested in exercising the right to work in another Member State should be able to get all the information from national authorities in charge thereof.

The third right is to *reside in the country as well as to remain in the country after stopping work*, which is regulated by Directive 2004/58/EC on the right of EU citizens and their family members to move and reside freely within the territory of the Member States[7]. Workers have the right to enjoy equal treatment as regards access to employment, working conditions and all other social and tax benefits.

3. Recruitment of medical doctors (Croatian citizens) to work in the Kingdom of Sweden

Recruitment of medical doctors that are Croatian citizens and are willing to work in the Kingdom of Sweden may provide a practical and useful example of how the right to the freedom of movement for workers is exercised and stress the importance of recruitment as a function of human resource management. As the Kingdom of Sweden has not put restrictions on workers from the Republic of Croatia, after Croatia's accession to the EU, a large number of Croatian citizens have decided to look for jobs in that country. Swedish agency *Li-reco*[8] acts as an employment intermediary recruiting personnel to work in Swedish hospitals and the Swedish health care system in general. As a recruiting agency, it receives requests from Swedish hospitals and other health care institutions, with an accurate description of candidates these institutions are looking for. Their task is to find an ideal match for the institution in question. Their goal is twofold: they must find the best possible medical doctor/other medical personnel for that institution (the client), and on the other hand, to that particular medical doctor/other medical personnel they must provide the best possible start for a new life in Sweden. At this point, human resource management comes to the fore. It is one of the most important strategic management functions, because by acting on the material and financial resources, human resources enable their optimal use, and by their knowledge, skills and experience they are an indispensable factor contributing to the success of the organisation.

The whole process takes place in four phases or stages, in which a key role is played by good human resource management, i.e., if all four phases are implemented in the best possible way, a positive result is unquestionable. The four stages are as follows: Phase 1 - Expressing a demand for an employee, Phase 2 - Finding a candidate, Phase 3 - Interviewing, and Phase 4 - Learning Swedish.

3.1 Phase 1 - Expressing a demand for an employee

In the first phase, a Swedish employer expresses a demand for an employee they need. All relevant terms and conditions are set at this stage, i.e. when a hospital or another institution hires an agency to look for the required specialist. It is possible that an employer requires a certain specialisation listed as a shortage occupation, such as a medical doctor specialised in radiology. Such a request can get even more specific if the hospital needs specialist radiologists who also perform mammography. The age of the specialist, years of experience in the required specialisation, years in independent medical practice, a person's character, the ability to communicate in foreign languages, motivation and desire for resettlement to Sweden, and the like, might be some conditions that are also taken into consideration. At this stage, the agency sets all parameters by which they have to find the ideal candidate for the client.

3.2 Phase 2 - Finding a candidate

The implementation of this phase can also be subdivided into three steps. The first step is advertising and searching for candidates according to the profile requested by the agency, the second step is to check whether candidates are serious job candidates determined to resettle to Sweden, and the third step is the presentation of candidates first to the agency and then to the hospital. For all three steps to follow the rules and have a positive outcome, it is important that the agent is effective and firmly adheres to proper implementation of these three steps.

3.2.1 Advertising and searching for candidates according to the agency profile

The way in which the agent finds candidates normally varies from country to country. At the moment, the most effective way of marketing and attracting the attention of the population in the Republic of Croatia is through the media. By various media resources, from newspapers to television, it is possible to attract the attention of the required personnel, in this case medical doctors and other medical professionals. In Croatia, it is also still possible to attract interested candidates via e-mail and word of mouth. After coming into contact with medical doctors and other medical personnel, the agent sends them a CV template of the agency that needs to be filled out in English. The CV template focuses on the candidate's personal data such as the name, last name, year of birth, marital status and number of children, but also the address, phone number and a list of foreign languages the candidate speaks. Furthermore, other specific information refers to education, specialisation and the date of passing the specialist examination, as well as the names and the number of (surgical) procedures performed annually. Finally, candidates are asked to briefly describe not only their own desires and aspirations, but also their family members' wishes, as they also participate in the resettlement process. Even if a particular candidate is not directly sought by the agency, the agent can initiate the procedure and fill in a CV template for that candidate and the so-called data bank. The data bank is used as a registry of all candidates considered by the agent, who are not needed by any Swedish hospital at a given moment, but they might be needed in the future.

3.2.2 Checking whether candidates are serious job candidates determined to resettle to the Kingdom of Sweden

The second step is to check to which extent candidates are serious job candidates determined to resettle to the Kingdom of Sweden. In this step, it is most important for the agent to check whether all information provided in the CV is accurate and current, as well as to which extent the candidate is a serious job candidate ready to resettle to Sweden. Here the agent should focus not only on the candidates themselves, but also on their families who are directly affected by the whole process of changing the place of residence. It often happens that a candidate is fully prepared to change the environment, but his/her family is not ready for such a step, the result of which is eventually that the candidate in question withdraws from the entire process. In order to prevent such situations, especially in the later stages of the process when the candidate has already been presented to the employer, it is essential at this stage to assess how determined both

the candidate and his/her family are to resettle to Sweden. It is also important to assess the candidate as a person, because the change itself brings both positive and negative impacts. Candidates must be aware that their career in Sweden starts from the very beginning, which means they will have to learn from others until they prove themselves and gain their position in the work environment. When assessing candidates as potential employees, employers pay more attention to the candidate as a person, i.e., his/her character, and how he/she would fit into their work environment, but also into the community of the city as a whole, rather than solely to the expertise and references of candidates in a professional sense.

3.2.3 Presentation of candidates to the employer

In the third step, a CV in English is submitted to the agency together with all necessary documents and references. The agent has to evaluate the credibility of references attached to the candidate's CV by calling or talking in person to people who prepared these references. Upon receipt of documentation from the agent, the agency presents the candidate to the employer who expressed the need for this kind of specialist.

3.3 Phase 3 - Interviewing

In most cases, employers want to meet the candidates face to face, and in these situations, candidates are called for an interview in Sweden. Interviews are carried out in Sweden in 3-4 days; day 1 is the day of arrival, the candidate spends day 2 in the hospital (full-time) and meets his/her potential colleagues, day 3 is reserved for sightseeing and familiarising themselves with the community, and the return home is planned for day 4. In those few days, the most important impression of the candidate is his/her ability to adjust to and integrate into the environment. Swedes extremely appreciate a healthy work environment; they keep saying that satisfied employees work harder and hence their results at work are better. They invest in promotion and education, but also encourage their employees to reach their full potential, both professionally and privately. Because of that, the hospital is investing in the whole procedure of finding the candidate, the hospital is the one who is paying the agency to find the candidate and organize the interview and is paying all the expenses incurred during the procedure, such as flight tickets, hotel bills, sightseeing, etc. The interesting fact is that not only the candidate is invited to an interview to a Swedish hospital, but also his/her family, partner and children. This is viewed as an investment in their new potential employee. What candidates do not know and what is also part of the assessment at the job interview is that its most important part is actually dinner, which is organised together with the employees of the department to which the candidate could potentially be affiliated. The day a candidate spends in the hospital certainly affects the assessment of his/her competences in a professional sense, but the next day that is dedicated to sightseeing and the evening that is dedicated to dinner with members of the department are actually an essential part of every interview. At that dinner, everybody meets the candidate as a person, finds out how much he/she likes his/her job, what ideas he/she has, what kind of person he/she is, if he/she is a family person, how he/she functions as part of the community. All of this is essential to successful performance and progress of not only the hospital but also the community as a whole. The community can thrive only if the components of individual development, professional advancement and development of the individual and the development of the organisation or community are fulfilled (Žugaj, 1991: 248). "Individual development refers to the acquisition of new knowledge, skills, abilities and attitudes, improving the behaviour of individuals associated with the work performed or to be performed. Professional development of the individual within an organisation (career development) refers to the planned efforts involving both the individual and the organisation. Its goal is to optimise the interests of both the individual and the organisation. Organisation development refers to development of new, more creative solutions to improve results (achievements, success) and healthier inter- and intra-organisational relationships that allow groups to initiate change management" (Žugaj, 1991: 248).

3.4 Phase 4 - Learning Swedish

In the fourth phase, assuming that the candidate has signed an employment contract with the employer, he/she is supposed to learn Swedish for several months. At this stage, the candidate, now an employee of a Swedish hospital, who still lives in Croatia in his/her own home, is entitled to financial compensation, i.e., he/she receives the so-called equivalent salary, and learns Swedish with special-

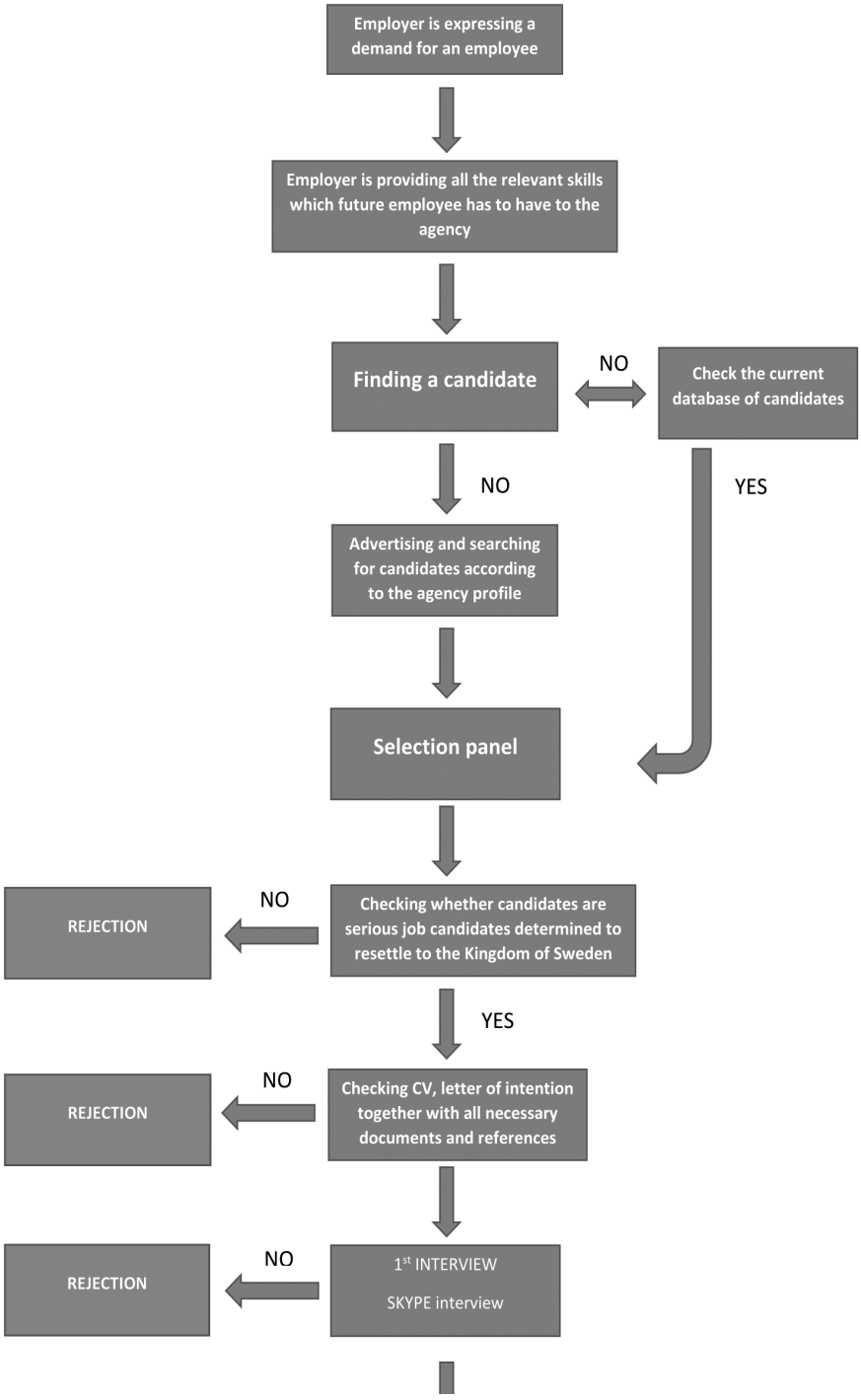
ised teachers. In this period, a Swedish language course as well as the aforementioned compensation for living is financed by the employer, i.e. a Swedish hospital. Led by numerous studies examining good human resource management, employers in Sweden believe that life-long learning in the workplace in general and encouraging employees to become life-long learners are crucial for the development of any company, in this case the hospital, and society as a whole. Results of investments in various types of training of company's employees can be seen in the so-called Spain study, in which two professors carried out research into 94 Spanish companies from different sectors wanting to determine how training of employees affected the success of the company itself. They found out that what increases worker productivity are investments in education, because in this way we can emphasise unique characteristics of human resources. In their opinion, training plays an important role in meeting the two objectives, i.e., managing human capital to achieve maximum productivity on the one hand, and reaching economic prosperity on the other. The term 'strategic human resource management' should be introduced at this point, which primarily includes the possibility for greater competition in the market, but also helps improve the ability to retain qualified employees, thus minimising swift changes in personnel. All of this has an impact on the organisation, which receives long-term commitment from its employees and strengthens individual motivation and commitment to the organisation and its objectives (Castelanos, Martin, 2011). Hence employers believe that investing in education of their employees in terms of learning Swedish will in the long run help the employee and his/her family to assimilate into Swedish society faster and much better, in both work environment and community contexts. In so doing, they believe employees and their families will be satisfied, which means they will be more productive at work, which would in turn contribute to the community as a whole. It was pointed out that the key to doing business well lies in systems thinking, personal development of the individual, mental models, building shared vision and team learning (Džubur, 2003: 47). In addition to learning the Swedish language, the course also includes learning about Swedish culture, tradition, work and life in Sweden with an additional emphasis on the Swedish medical terminology.

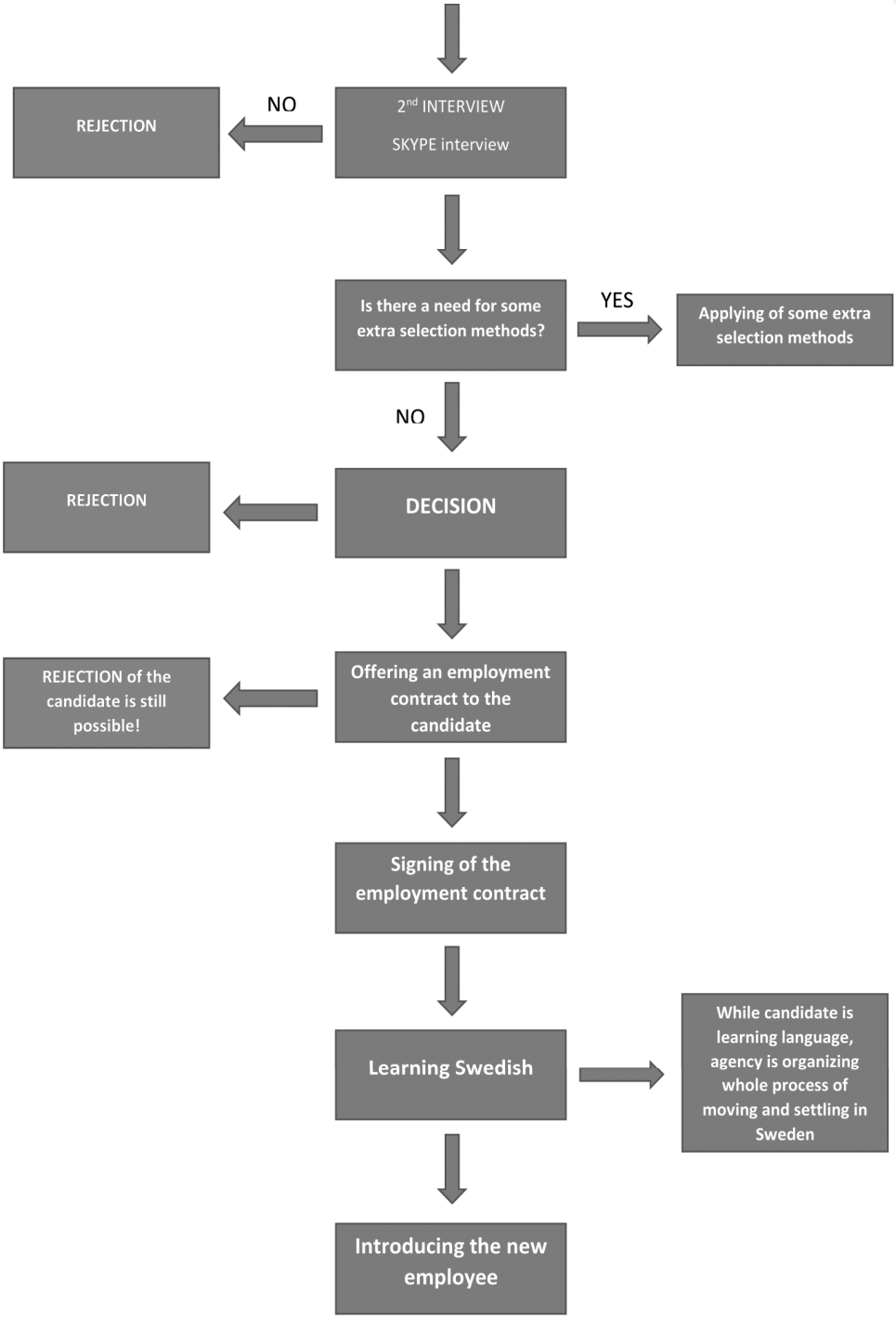
3.5 Obligations of the agency

Throughout the process, as a body responsible for finding the ideal candidate for the employer and the ideal employer for the candidate, the agency takes care of all current obligations of candidates to facilitate the whole process for both sides, which makes adjustment of the candidate to the new environment psychologically easier. The agency finds accommodation for the candidate who has signed an employment contract based on his/her preferences, organises and covers all costs related to resettlement, helps with all necessary documents, helps the candidate's partner to find an appropriate job, helps candidates to enrol their children in kindergartens, schools, colleges (depending on their age), and generally runs all errands until the family is settled, i.e. while they are adapting to the new environment.

A typical recruitment and selection process of medical doctors in the Kingdom of Sweden is illustrated in Figure 1.

Figure 1 Recruitment and selection process of medical doctors in the Kingdom of Sweden





Source: Adapted from Doornenbal et al. (2012: 5-6)[9]

4. Total Quality Management in Recruitment Process

Just like any other successful HR manager, agencies are also led by the so-called Total Quality Management (TQM) principle. Total quality management describes an approach to management characterised by a long-term orientation towards continuous improvement of the quality and the greatest possible level of satisfaction of the customer or client. In TQM all members of the organisation work together to improve the quality of the entire organisation.[10] There are six key components within TQM: leadership, people management, customer/client focus, the use of all information and analyses, process and strategy development, and the quality of planning (Terziovski, Samson, 1999). This kind of human resource management is called strategic human resource management and it is somewhat different from human resource management. "Strategic management is defined as a process that involves goal setting, strategic analysis, strategic decision making, strategic design and implementation, and performance control. In foreign literature, some authors summarise strategic management activities and express them as the acronym MOST (standing for Mission, Objectives, Strategy, Tactics), which includes a mission and vision of the organisation and points to the course of action, the objectives the organisation wants to achieve, the strategy in terms of resources and competences, and tactics in terms of planned actions" (Križmarić, 2014: 49).

4.1 TQM in medical personnel recruitment agencies

Before candidates start working, it is important to carry out the planning and preparation phase in order to facilitate the implementation of the whole process and minimise time (Wescott, 2013). When planning, desires and needs of the client must be taken into account and everybody involved should be informed in advance about what is expected of them throughout the process. Preparation can help us detect in advance the greatest risks throughout the process, which might occur if errors were committed in the recruitment process. If errors are considered in the preparation phase, they can be easily avoided or easily solved if they occur during the process itself. Documentation must also be submitted during the process, which may initially be only templates or samples that can be used later as the basis for providing detailed documentation. By collecting supporting documents, we reduce the risks of losing information, facilitate the entire process, but also significantly reduce the time of its implementation. This phase is important not only for the person who carries out the process, in this case the agency, but also for the contracting party, i.e. the customer.

4.1.1 Work is performed in accordance with the established guidelines

Guidelines and procedures are important in the operation of any company. If everyone within the organisation is both aware of all the procedures and processes and follows them, it helps their colleagues to follow the procedures understanding all the previous steps, as well as understanding what they are expected to do. For this reason, it is important to keep records relating to each step in the procedure in order to help everyone first to find and then to do their part of the job properly.

4.1.2 Professional requirements

Professional requirements apply to all employees of the company who are obliged to respect the principles of confidentiality, objectivity, integrity and professional conduct. In respect of the principle of confidentiality, no information within the company can be disclosed either out of the company or to unauthorised persons. Therefore, all the material the agent receives must be kept in a safe place and should not be shared with third parties. Agents are supposed to act impartially and independently and perform their work with due professional care. It is very important to understand that professional secrecy guarantees a client's sense of safety and trust.

4.1.3 Professional skills and competencies

All employees within the company must have expertise and skills needed for employees to successfully perform their duties and achieve objectives. Sometimes it is necessary that those workers who are already employed in the company receive further training and develop their professional skills in order to be able to do their jobs. For this reason, a job description should also include the possibilities of additional training to help employees become more effective, more independent and more efficient. This step implies modernisation in terms of understanding the importance of human resources. Taking into consideration that creativity and flexibility of any business entity crucially depends on the skills, knowledge and

creativity of its employees, these aspects of business systems have come to the fore. Hence, today we can speak of the new economy, the knowledge economy, the economy that is global and that is marked by a constant struggle with uncertainty and change (Jambrek, Penić, 2008: 1181).

4.1.4 Delegation

Five guidelines given in the paper - goal setting, strategic analysis, strategic decision-making, strategic design and implementation, and performance control, which are presented through four phases of the recruiting process - indicate that all the work should be controlled and managed in order to meet all requirements. If the agent is the one who does the work, then as a responsible person, he/she always needs to be available and support the candidates throughout the entire process, from the planning phase to the implementation phase, i.e., employment. The level of support will depend on the given tasks and previous experience. Records and questionnaires are an example of what can be used to help the agent in his/her work.

4.1.5 Client acceptance and retention

Every new case will be checked and evaluated before being accepted. The reason for that is to gain the trust of the client and avoid misunderstanding, confusion and, ultimately, failure. It is necessary to investigate who the client is, to establish his wishes, preferences and requirements, as well as the job functions. All this contributes to a better understanding of what the client wants, what ethical values the client holds and what risks may occur.

4.1.6 Quality assurance monitoring program

As such, organisation of the procedure should be maintained throughout the process; it is necessary to carry out checks to ensure compliance with all the standards. At the end of the process, the quality is to be confirmed by both parties, the client and the candidate, by means of harmonising and monitoring of their reports, for six months after the candidate starts working for the client.

5. Concluding remarks

Human resources and their management are becoming increasingly important in developed European countries, but also in Croatia. Following Croatia's accession to the European Union and cooperation in the fields of employment in other Member States, Croatia has started to realise the importance of good and well-organised human resource strategic management. Cooperation in the field of hiring Croatian medical personnel in hospitals and health institutions in Sweden provides a new look at the whole process by taking over the Swedish model of strategic human resource management. In this recruitment process, each phase is developed and carried out in the pre-planned way. In strategic management, it is important to follow pre-established guidelines. Risks and losses in the event of failure of the entire project, as well as the profit in case of a positive outcome, are taken into account in the elaboration of the process as a whole. It is believed that good elaboration of the whole process significantly reduces potential risks. Particularly noteworthy is the importance of the interview, in which evaluation of the candidate's ability to assimilate (fit) into the organisation's work culture / environment is the most important part. Swedes believe that employee satisfaction in the work environment, harmony and unanimity are factors necessary for any successful business. In the case of medical personnel, we refer to successfully performed medical procedures and surgeries and further development of new methods of treatment.

Market research gives space to HR recruitment agencies to develop new objectives, vision and tactics. A large number of changes in various fields take place in the world on a daily basis. In order to achieve greater success in business, it is important to keep track of these changes, learn from them and adapt to them. Only then may we accomplish the goals and mission set in our projects and business plans. Depending on the demand expressed in the market (and there are obviously more and more requests) and especially if it wants to be profitable and have satisfied employees, every company will soon have to set up an HR department that will carry out all the tasks related to the elaboration of processes, guidelines and projects to achieve the goals and vision of their company. That is why we need to emphasise the importance of strategic management that includes goal setting, strategic analysis, strategic decision-making, design and implementation of the strategy, and performance control of the set process.

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TEORIJA I PRAKSA UPRAVLJANJA LJUDSKIM POTENCIJALIMA: PRIMJER REGRUTACIJE MEDICINSKOGA OSOBLJA U KRALJEVINI ŠVEDSKOJ

Sažetak

U izrazito globaliziranom svijetu, sloboda kretanja jedno je od temeljnih načela u poslovnoj zajednici. Konkretnije, slobodno kretanje radnika temeljno je načelo sadržano u članku 45. Ugovora o funkcioniranju Europske unije (eng. *Treaty on Functioning of the European Union*). Svrha je ovoga rada raspraviti s pravnoga i upravljačkoga gledišta funkciju regrutacije i selekcije kao važnoga dijela suvremenoga upravljanja ljudskim potencijalima. Teorijsko gledište slobode kretanja u Europskoj uniji prikazuje zakonodavni i institucionalni okvir Europske unije koji omogućuje ljudima kretati se izvan granica vlastite zemlje u ostvarivanju svojih (radnih) prava. Empirijski dio rada nudi praktičan primjer regrutacije i selekcije liječnika (hrvatskih građana) za rad u Kraljevini Švedskoj.

Ključne riječi: sloboda kretanja, Europska unija, upravljanje ljudskim resursima, regrutacija

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CONSIDERATIONS OF NATIONAL CULTURE'S ROLE IN EXPLAINING COMPETITIVENESS

Abstract

This paper aims to map the connection between national culture and competitiveness. Competitiveness includes the set of institutions, policies, and factors that determine the level of productivity of a country. Although competitiveness can be a result of several drivers, we argue that as some of these are people driven, competitiveness must be related to basic underlying assumptions, espoused values and artefacts shared by the people from the observed entity. This makes competitiveness closely related to national and organizational culture. Cross-country analysis has indicated that national culture features do have an impact on national competitiveness. The empirical analysis of global competitiveness index and Hofstede's cultural variables has shown that uncertainty avoidance index negatively affects competitiveness, but long term orientation index affects competitiveness in a positive way. Therefore, policy makers should be aware that not only tangible economic factors lead to competitiveness but intangible factors such as culture should also be considered in attempts to improve competitiveness.

Keywords: Competitiveness, national culture, organizational culture

1. Introduction

The concept of competitiveness has been largely discussed over the last decades. An important aspect of those discussions is the level at which the concept of competitiveness is defined since both companies and countries are forced to compete with each other in order to sustain economic development (Overbaugh, 2013). A separate issue is the question what causes the differences in competitiveness.

World Economic Forum defines competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity determines the level of prosperity that can be reached by an economy. Pursuant to said definition, the Global competitiveness report assesses the competitiveness of 140 economies, providing insight into the drivers of their productivity and prosperity.[1] Although those drivers are organized in 12 relatively independent pillars, we argue that, as being people driven, all those pillars are closely related to basic underlying assumptions, espoused values and artefacts shared by the people from the observed entity. This makes competitiveness closely related to national and organizational culture.

The concept of culture has been studied by many scholars; as a result, specific characteristics of culture at different levels (nations, industries, organizations) have become part of the extant knowledge.

As a consequence of different cultures, human behaviour becomes somewhat predictable. However, when it comes to managing specific cultures in a way that would foster certain goals, for instance productivity or competitiveness, there is a gap that requires further research and better understanding. The purpose of this paper is to perform an investigation of cultural determinants of competitiveness. The research question to be answered by this paper is: "Are some nations and organizations predetermined to be more competitive due to prevailing cultural values?"

Global competitiveness index was used[2] as the measure of country-level competitiveness. National cultures have been conceptualized by using Hofstede's framework of cultural dimensions (Hofstede, 1991). The results of this study identify critical features of national culture that are important for the effective management of organizational culture in order to boost competitiveness.

2. Theoretical framework

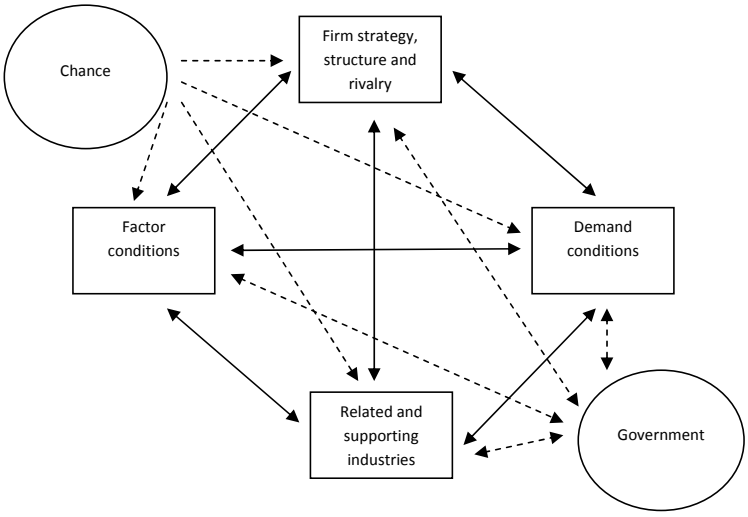
2.1 Competitiveness

Countries and leaders place great emphasis on competitiveness, since it is considered a key determinant for growth and new jobs creation. The issue of national productivity is a long-standing topic that occupied even classical scholars like Montesquieu, Smith and Weber (Yeganeh, 2013). These authors argued that work ethic in some countries influences economic development or is the reason for lower economic development in some countries. Yet, national competitiveness is considered a relatively new concept that has been widely defined and measured.

However, competitiveness is not an unambiguous concept and existing studies identify differences in unit entity. Meyer Stammer[3] suggested four levels of competitiveness: microlevel (where companies compete in competitive markets), mesolevel (targeted interventions against market failure), macrolevel (institutions, economic policies and framework conditions) and metalevel (basic orientations in a given society). Another study distinguished between competitiveness of companies, sector competitiveness, regional competitiveness, national competitiveness, bloc competitiveness and global competitiveness (Balkyte, Tvaronavičiene, 2010). Thus, definitions of competitiveness differ with respect to the level aspect.

In this paper we focus on country competitiveness. Regarding the country competitiveness, numerous scholars contributed to the contemporary theory. In his book "The competitive advantage of nations", Michael Porter introduced the Diamond model, comprising of four key elements that lead to national competitiveness (Porter, 1990).

Figure 1 Porter's Diamond model

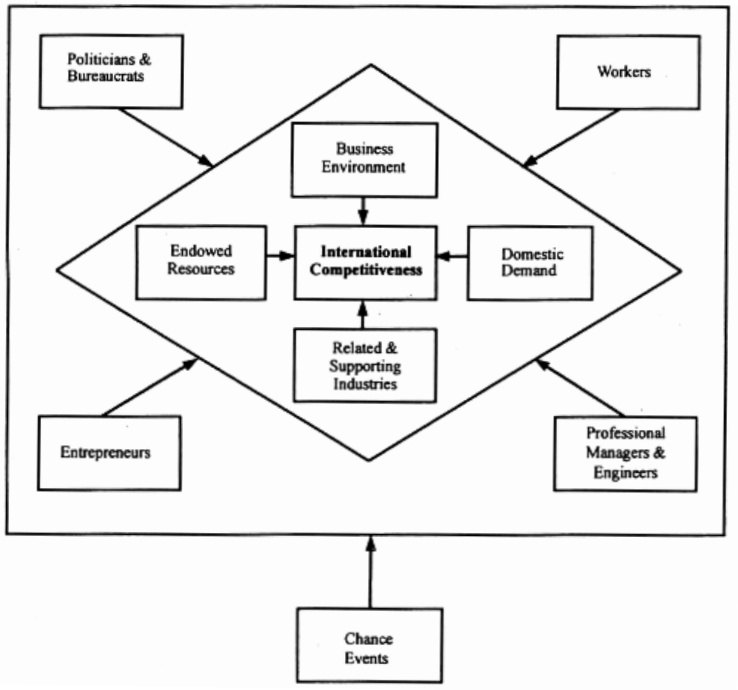


Source: Porter (1990: 127)

Many studies appreciated Porter's model and have evaluated the concept of national competitiveness based on it (Berger, 2008; Snowdon, 2006), but there are also researchers who have criticized it. Among the critics and due to the research question of this paper, it is interesting to single out the opinion of Bosch and Prooijen (1992), who have commented the lack of attention given to the role of national culture in the Diamond model. They emphasize that different national cultures cause different national environments, which give rise to differences in competitive advantages between European countries.

There are many other different frameworks of competitiveness (for an overview see e.g. Walter, 2005; Cellini, Soci, 2002), but speaking of cultural determinants of competitiveness, it is interesting to emphasize that even at the national level of competitiveness there are models appreciating "soft" elements. Moon and Cho (2000) proposed the integrated "Nine-Factor Model" of competitiveness, which encompasses both physical and human factors (Figure 2). Human factors mobilize physical factors, thereby creating and maximizing competitiveness.

Figure 2 The Nine-Factor Model



Source: Moon, Cho (2000: 22)

There are both scholarly and institutional definitions of competitiveness that are in compliance with competitiveness research at the national level. Balkyte and Tvaronavičiene (2010) argue that competitiveness refers to the overall economic performance of a nation measured in terms of its ability to provide citizens with growing living standards on a sustainable basis and broad access to jobs for those willing to work. World Economic Forum defined competitiveness as "the set of institutions, policies and factors that determine the level of productivity of an economy, which in turn sets the level of prosperity that the country can achieve"[4]. Official opinion of the National Competitiveness Council in Croatia is built on that basis, describing competitiveness as "a group of elements, development policies and institutions which, by their correlation, influence the general level of productivity and the quality of the business sector and business environment"[5]. In the International Institute for Manage-

ment Development's (IMD) World Competitiveness Yearbook, competitiveness is defined as a field of economic theory which analyzes the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people (Garelli, 2005). According to the findings from the WWWforEurope project, promoted by The Organisation for Economic Co-operation and Development (OECD), competitiveness is "the ability of a country (region, location) to deliver the beyond-GDP goals for its citizens today and tomorrow" (Aiginger et al., 2013). Similarly, at the German Development Institute in Berlin, competitiveness is defined as the "ability of a locality or region to generate high and rising incomes and improve livelihoods of the people living there."[6]

Building on level discussions, there are also authors (Yeganeh, 2013) suggesting that national competitiveness can be considered as the aggregation of competitiveness of all businesses operating in a country, meaning that a country is competitive when its companies are competitive. Thus, factors enhancing national competitiveness are very likely to encourage companies' competitiveness. As Michael Porter said: "It is the firms, not nations, which compete in international markets" (Porter, 1990: 33). Another Harvard Business School professor, Christensen, agrees that "nations/regions can compete only if their firms compete" (as per Ambastha, Momaya, 2004: 48). Indeed, the connection of macroeconomic competitiveness with company level competitiveness seems to be straightforward: a stable macroeconomic context increases the opportunity for the new value creation, but it does not create the value itself. The value is created by utilizing at best human capital and natural resources to produce goods and services, i.e. 'productivity'. But productivity depends on the microeconomic capability of the economy which ultimately resides in the quality and efficiency of the firms[7].

Firm level competitiveness can be defined as the ability of the firm to design, produce and/or market products superior to those offered by competitors, considering the price and non-price qualities (D'Cruz, Rugman, 1992), or simply as the ability to compete, to win and to retain position in the market[8]. In order to explain how competitiveness on the firm level can be achieved, business theory provides two basic concepts: market-based view (focusing on environmental factors of a company in order to explain competitive advantages) and resource-based view (focusing on successful utilization of internal resources to gain competitive advantage) (Berger, 2008).

Ambasta and Momaya (2004) have done a review of both external and internal sources of firm level competitiveness, as identified by different researchers. They have grouped them into three categories: assets, processes and performance. Firm assets can be inherited or created, and processes transform assets into economic results. All of the reviewed sources of competitiveness are presented below in Table 1.

Table 1 Sources of firm level competitiveness

ASSETS	PROCESSES	PERFORMANCE
• Brand • Reputation • Culture • Systems • Human resources • Technology	• Strategy • Innovations • Quality • Persuasion power • Flexibility, adaptability • IT applications • Managing relationships • Marketing • Manufacturing • Design & deploy talents • Managing relationships	• Customer satisfaction • Value creation • Market share • New product development • Productivity • Variety, range • Price, cost • Profitability

Source: Ambasta, Momaya (2004: 49)

Many of these sources have been studied before (Lalinski, 2013). However, there is a lack of studies analyzing cultural determinants of competitiveness (Yeganeh, 2013). As the culture has been identified not just as an asset with significant influence on competitiveness, but also as a base of several processes with significant influence (e.g. flexibility, adaptability, innovations, relationships management), we found it important to study the relationship of culture and competitiveness. Our findings shall be presented later in the paper.

2.2 National culture

Culture has become an essential factor in understanding human behaviour. In most general sense, it can be been defined as the collective programming of the mind which distinguishes members of one group or category of people from another (Hofstede, 1991). As with competitiveness, it can also be studied at different levels. A distinction is usually made between national cultures and organization culture, although one can recognize also occupational cultures, business cultures, gender cultures, age group cultures etc. (Hofstede, 1998). National cultures differ mainly on the level of fundamental values, unlike organizational cultures that differ more on the level of superficial practices and, according to Hofstede (1998), can be more manageable. To a greater or lesser extent, organizational culture will be determined by the national culture (Green, 1998; Hofstede, 1998; Ott, 1989).

Due to intangible features associated with cultures in general, organizational culture is a complex concept with different definitions. In the organizational science, the most influential scholar of the organizational culture, Edgar Schein (1992), defines organizational culture as the deeper level of basic assumptions and beliefs that are shared by members of an organization which define the organization's view of it and its environment as well as its *modus operandi*. Interestingly, although it became a widely used concept in the 1980s, its roots can be traced back to 1930s when Mayo and Barnard recognized that lack of competitiveness for some companies can be assigned to the human (cultural) factor (Green, 1998).

Numerous authors have been studying organizational culture and have identified different cultural dimensions (e.g. see Šandrk Nukić, Matotek, 2014). Despite somewhat different typologies, a consensus has emerged that individual members of any group – a nation, an industry segment, a company, etc. – share collective values and behaviour that influence the daily life and activities of that group. This very thinking is the basis of the study presented in this paper, since in this paper we shall study the relationship of competitiveness and culture at a national level but appreciating the fact that this relationship is reflected also to lower levels, especially the firm level of competitiveness and organizational culture. Therefore we shall be using dimensions of culture identified by Gert Hofstede and his colleagues (Hofstede et al., 2010), who have conducted some of the most comprehensive studies on how values in the workplace are influenced by national culture.

Hofstede's model of national culture consists of six dimensions. The cultural dimensions represent independent preferences for one state of affairs over another that distinguish countries from each other. Those dimensions are presented in Table 2.

Table 2 National culture dimensions

	Dimension	Description	Dimension	Description
1. **Power Distance Index (PDI)** *The degree to which the less powerful members of a society accept and expect that power is distributed unequally.*	Low Power Distance Index (PDI) *Value under 50*	In societies with low Power Distance, people strive to equalise the distribution of power and demand justification for inequalities of power.	High Power Distance Index (PDI) *Value over 50*	People in societies exhibiting a large degree of Power Distance accept a hierarchical order in which everybody has a place and which needs no further justification.
2. **Individualism versus Collectivism (IDV)** *A society's position on this dimension is reflected in whether people's self-image is defined in terms of "I" or "we."*	Collectivism *Value under 50*	Preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty.	Individualism *Value over 50*	Preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families.

	Dimension	Description	Dimension	Description
3. **Masculinity versus Femininity (MAS)** *In the business context Masculinity versus Femininity is sometimes also related to as „tough versus tender" cultures.*	Femininity *Value under 50*	Society's preference for co-operation, modesty, caring for the weak and quality of life. Society at large is more consensus-oriented.	Masculinity *Value over 50*	Preference in society for achievement, heroism, assertiveness and material rewards for success. Society at large is more competitive.
4. **Uncertainty Avoidance Index (UAI)** *Expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. The fundamental issue here is how a society deals with the fact that the future can never be known: should we try to control the future or just let it happen?*	Low uncertainty avoidance *Value under 50*	Weak UAI societies maintain a more relaxed attitude in which practice counts more than principles.	High uncertainty avoidance *Value over 50*	Countries exhibiting strong UAI maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas.
5. **Long Term Orientation versus Short Term Normative Orientation (LTO)** *In the business context this dimension is related to as "(short term) normative versus (long term) pragmatic".*	Short term orientation *Value under 50*	Societies who prefer to maintain time-honored traditions and norms while viewing societal change with suspicion.	Long term orientation *Value over 50*	Societies that take a more pragmatic approach: they encourage thrift and efforts in modern education as a way to prepare for the future.
6. **Indulgence versus Restraint (IND)**	Restrained *Value under 50*	Society that suppresses gratification of needs and regulates it by means of strict social norms.	Indulgent *Value over 50*	Society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun.

Source: Hofstede (1991)

Hofstede's cultural dimensions framework has been applied to several outcomes, such as human resources management, decision making, financial and economic systems or innovation and R&D (e.g. Schneider, 1988; Gupta, 2012; Jones, Davis, 2000; van Everdingen, Waarts, 2002; Kwok, Tadesse, 2006). However, it has been researched as a source of economic development as well (Moon, Choi, 2001; Peng, Lin, 2009; Kwon, 2011).

Culture, especially national culture, has been seen as a reflection of national history influencing different aspects of the society as well as the minds and behaviour of people (Moon, Choi, 2001). Therefore, it is necessary to understand that culture will have an impact on business. Hofstede's contribution here is immense because he tried to describe the nature of cultural characteristics within a country.

Power distance (PDI) focuses on inequalities that exist in the society. The core issue is how the power is distributed and the social distance between the individuals. High power distance implies a hierarchical order, in which everybody has a place and which needs no further justification. This high social distance might inhibit organizational cooperation and therefore we hypothesize that: *High power distance has a negative effect on competitiveness (H1).*

Individualism (INV) denotes the relationship between the individuals and others. Within individualistic societies beliefs and behaviour are determined by the individual; whereas in a collectivistic society, loyalty towards one's family, job, and country tend to determine the individual's action and decision-making (Moon and Choi, 2001). Due to increasing uncertainty and global competitiveness, fast individual actions are highly appreciated and therefore we hypothesize that: *Individualistic orientation will have a positive effect on competitiveness (H2).*

Masculinity (MAS) represents a preference in society for achievement, heroism, assertiveness and material rewards for success. Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. Clearly, values related to Masculinity result with competitiveness at all levels, therefore: *Masculinity will have a positive effect on competitiveness (H3).*

Uncertainty avoidance (UAI) denotes the extent to which individuals within a culture feel threatened by uncertain or unknown events; and the corresponding degree to which society creates rules, espouses absolute truth, and refuses to go against nature in order to avoid risks or any sudden changes. Countries exhibiting strong UAI maintain rigid codes of belief and behaviour and are intolerant of unortho-

dox behaviour and ideas. Clearly, with the globally accelerating pace of change individuals must accept risk as the norm. We hypothesize that: *High uncertainty avoidance will have a negative effect on competitiveness (H4).*

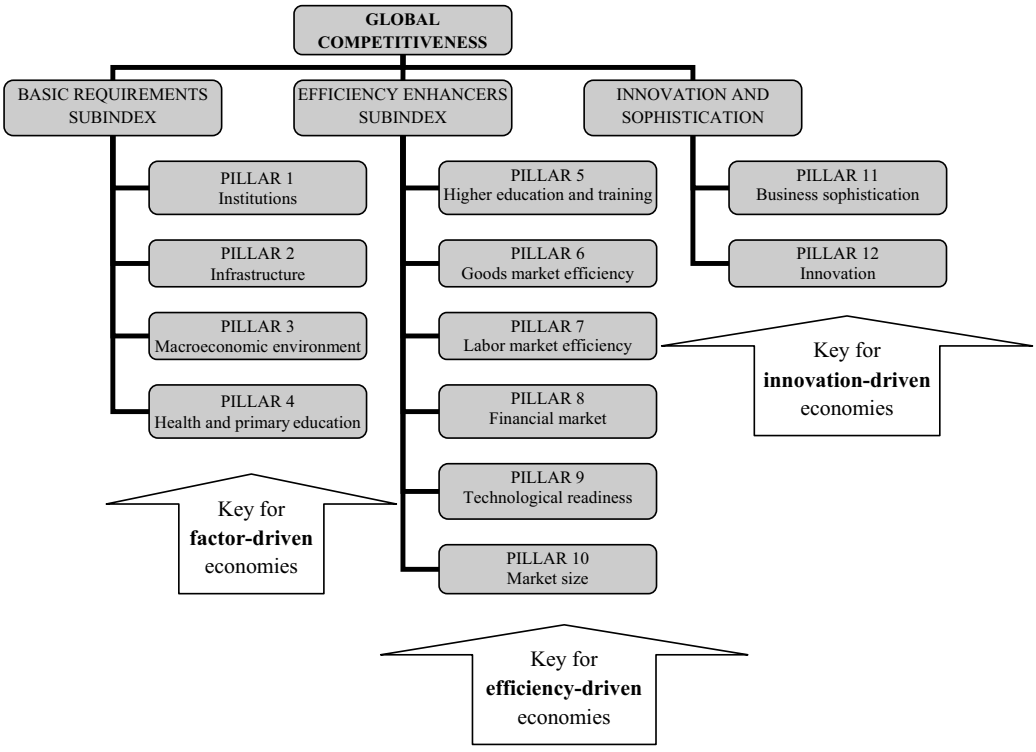
Long versus short term orientation (LTO) describes society's attitude towards past, present and future. Short term orientation societies prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion. High score societies encourage thrift and efforts in modern education as a way to prepare for the future. Clearly, *Long term orientation has a positive effect on competitiveness (H5).*

Indulgence versus restraint (IND) measures whether people freely accept gratification of natural human desires or feel that gratification needs to follow existing social rules. Indulgent societies encourage their members to have fun and enjoy life, while restraining societies suppress gratification by imposing strict norms of social behaviour. We hypothesize that: *Indulgence will have a positive effect on competitiveness (H6).*

3. Methodology of research

Based on the presented theoretical framework, we define national competitiveness as the dependent variable that is likely to be affected by cultural dimensions (independent variables) and economic development (control variable). In order to measure national competitiveness, the World Economic Forum has constructed the Global Competitiveness Index (GCI). GCI provides a weighted average of 114 indicators, grouped into 12 pillars of competitiveness, each of which reflects one aspect of the complex concept of competitiveness.[9] As such, it is the internationally recognized and acclaimed competitiveness index and therefore it has been chosen as a dependent variable in our study. The basic framework of the GCI is presented in Figure 3.

Figure 3 The Global Competitiveness Index Framework



Source: World Economic Forum[10] *(2016: 6)*

The GCI assumes that, in the first stage, the economy is factor-driven and countries compete based on their factor endowments - primarily unskilled labour and natural resources. Maintaining competitiveness at this stage of development hinges primarily on well-functioning public and private institutions (1st pillar), a well-developed infrastructure (2nd pillar), a stable macroeconomic environment (3rd pillar), and a healthy workforce that has received at least a basic education (4th pillar)[11].

Michael Porter states that in the past, economic growth of nations was founded on comparative advantages like cheap workforce and natural resources, but today national competitiveness depends on advantages based on knowledge, developed infrastructure, high technologies and innovations (Porter, 2008). Although such opinion appreciates development stages, it does not recognize that even today there are countries driven by the 1st group of factors. Perhaps Porter's suggestion should be interpreted in the light of another study, saying that even in developing countries, that are generally factor-driven, the key engine for economic growth is the group of people with high level of education, motivation and dedication (Balkyte, Tvaronavičiene, 2010), being in fact the carriers of 2nd and 3rd group of pillars.

As a country becomes more competitive, productivity will increase and wages will rise with advancing development. Countries will then move into the efficiency-driven stage of development, when they must begin to develop more efficient production processes and increase product quality because wages have risen and they cannot increase prices. At this point, competitiveness is increasingly driven by higher education and training (5th pillar), efficient goods markets (6th pillar), well-functioning labour markets (7th pillar), developed financial markets (8th pillar), the ability to harness the benefits of existing technologies (9th pillar), and a large domestic or foreign market (10th pillar).

Finally, as countries move into the innovation-driven stage, wages will have risen by so much that they are able to sustain those higher wages and the associated standard of living only if their businesses are able to compete using the most sophisticated production processes (11th pillar) and by innovating new ones (12th pillar)[12].

1. It should be emphasized that the GCI takes into consideration also the stages of development, by attributing higher relative weights to those pillars that are more relevant for an economy, as proxied by its GDP *per capita* and the share of exports represented by raw materials[13]. So, although all 12 pillars matter, the relative importance of each one depends on a country's particular stage of socio-economic development. Since many of those factors included in the 12 pillars are human-based, it is interesting to investigate whether culture features can be a source of competitiveness and its improvement. Because of that, Hofstede's national culture dimension scores have been analysed as independent variables. Additionally, secondary data from the World Bank[14] for the gross domestic product per capita in 2015 was used to measure economic development. Our sample included only those countries with available both GCI and all national culture dimensions, so our final sample includes a total of 64 countries whose scores are shown in the following table.

Table 3 Countries at respective stages of development

Economy	GCI	Cultural dimensions					
		pdi	idv	mas	uai	ltovs	ivr
Switzerland	5.8	34	68	70	58	74	66
Singapore	5.7	74	20	48	8	72	46
United States	5.6	40	91	62	46	26	68
Finland	5.5	33	63	26	59	38	57
Germany	5.5	35	67	66	65	83	40
Hong Kong SAR	5.5	68	25	57	29	61	17
Japan	5.5	54	46	95	92	88	42
Netherlands	5.5	38	80	14	53	67	68

Economy	GCI	Cultural dimensions					
		pdi	idv	mas	uai	ltovs	ivr
Norway	5.4	31	69	8	50	35	55
Sweden	5.4	31	71	5	29	53	78
United Kingdom	5.4	40	91	62	46	26	68
Canada	5.3	39	80	52	48	36	68
Denmark	5.3	18	74	16	23	35	70
New Zealand	5.3	22	79	58	49	33	75
Qatar	5.3	80	38	53	68	23	34
Belgium	5.2	65	75	54	94	82	57
Luxembourg	5.2	40	60	50	70	64	56
Malaysia	5.2	100	26	50	36	41	57
United Arab Emirates	5.2	80	38	53	68	23	34
Australia	5.1	38	90	61	51	21	71
Austria	5.1	11	55	79	70	60	63
France	5.1	68	71	43	86	63	48
Ireland	5.1	28	70	68	35	24	65
Korea, Rep.	5.0	60	18	39	85	100	29
China	4.9	80	20	66	30	87	24
Czech Republic	4.7	57	58	57	74	70	29
Estonia	4.7	40	60	30	60	82	16
Chile	4.6	63	23	28	86	31	68
Spain	4.6	57	51	42	86	48	44
Thailand	4.6	64	20	34	64	32	45
Indonesia	4.5	78	14	46	48	62	38
Italy	4.5	50	76	70	75	61	30
Latvia	4.5	44	70	9	63	69	13
Lithuania	4.5	42	60	19	65	82	16
Poland	4.5	68	60	64	93	38	29
Portugal	4.5	63	27	31	99	28	33
Malta	4.4	56	59	47	96	47	66
Philippines	4.4	94	32	64	44	27	42
Russian Federation	4.4	93	39	36	95	81	20
South Africa	4.4	49	65	63	49	34	63
Turkey	4.4	66	37	45	85	46	49
Bulgaria	4.3	70	30	40	85	69	16
Colombia	4.3	67	13	64	80	13	83
India	4.3	77	48	56	40	51	26
Mexico	4.3	81	30	69	82	24	97
Romania	4.3	90	30	42	90	52	20
Slovenia	4.3	71	27	19	88	49	48
Vietnam	4.3	70	20	40	30	57	35

Economy	GCI	Cultural dimensions					
		pdi	idv	mas	uai	ltovs	ivr
Hungary	4.2	46	80	88	82	58	31
Morocco	4.2	70	46	53	68	14	25
Peru	4.2	64	16	42	87	25	46
Slovak Republic	4.2	100	52	100	51	77	28
Brazil	4.1	69	38	49	76	44	59
Croatia	4.1	73	33	40	80	58	33
Iran, Islamic Rep.	4.1	58	41	43	59	14	40
Uruguay	4.1	61	36	38	98	26	53
Greece	4.0	60	35	57	100	45	50
El Salvador	3.9	66	19	40	94	20	89
Serbia	3.9	86	25	43	92	52	28
Trinidad and Tobago	3.9	47	16	58	55	13	80
Argentina	3.8	49	46	56	86	20	62
Bangladesh	3.8	80	20	55	60	47	20
Pakistan	3.4	55	14	50	70	50	0
Venezuela	3.3	81	12	73	76	16	100

Note: pdi = Power distance index, idv= Individualism, mas= Masculinity, uai= Uncertainty avoidance index, ltovs= Long term orientation index, ivr= Indulgence
Source: Authors' selection based on Hofstede et al. (2010)

It is obvious from the rankings presented in Table 3 that countries differ both in terms of competitiveness and cultural characteristics. For example, although Finland, Germany, Hong Kong, Japan and Netherlands have the same global competitiveness ranking (index 5.5), they differ in cultural dimensions (e.g. see Finland versus Hong Kong). With such varied secondary data, our research question is: Can national culture cause differences in national competitiveness and in fact act as a determinant of national competitiveness?

Before presenting the results of our research, it is very important to elaborate also a time aspect of the methodological approach. Although technological and other changes have generated a huge difference in the way of life as it is today in comparison to the past, in terms of culture there are only superficial changes. This outer, changed dimension of culture concerns practices, but core culture dimensions, i.e. values and assumptions remain stable over decades. Exactly those fundamental elements have been measured and presented by the scores of cultural dimensions in Table 3.

At Professor's Hofstede official web page (https://geert-hofstede.com/national-culture.html)[15] there is even a question whether the scores of cultural dimensions are up to date. The given explanation says that the most recent 3rd edition of scores, resulting from Professor's work, dates from 2010, but since culture only changes very slowly, the scores can be considered up to date.

Because of that, authors of this paper find it appropriate to study the influence of culture dimensions on competitiveness, although the chosen variables date from different years.

4. Research results and discussion

The effect of national culture on country level competitiveness is not a well-researched topic. However, although scarce, existing empirical evidence supports the existence of such a relationship. On a sample of post-communist countries Overbaugh (2013) found that two cultural variables, power distance and uncertainty avoidance, are significant predictors in determining the global competitiveness of these countries. Yeganeh (2013) found that autonomy, hierarchy and mastery, cultural dimensions according to Schwartz's (1994) cultural model, foster national competitiveness. Moon and

Choi (2001) have also concluded that culture is an exogenous variable affecting economic and business performance at the country level in a measurable way.

Correlation and ordinary least squares regression were used to determine the relationship between national competitiveness, cultural dimensions and economic development. The analysis was performed by using SPSS software.

Table 4 Bivariate correlations between national culture dimensions and competitiveness

		GCI	pdi	idv	mas	uai	ltovs	ivr
GCI	Pearson Correlation	1	-.445**	.544**	-.062	-.457**	.270*	.771**
	Sig. (2-tailed)		.000	.000	.628	.000	.031	.000
	N	64	64	64	64	64	64	64

***. Correlation is significant at the 0.01 level (2-tailed).*
**. Correlation is significant at the 0.05 level (2-tailed).*
Source: Authors' calculations

Bivariate correlations presented in Table 4 show that competitiveness has significant negative correlation with power distance index (PDI). In cases of countries with high power distance index like Croatia, this could imply lower competitiveness. Negative correlation has been found for competitiveness and both Masculinity (MAS) and uncertainty avoidance (UAI) as well. Individualism versus collectivism (IDV) as well as Long term orientation versus short term normative orientation (LTOVS) and Indulgence versus restraint (IVR) show a positive correlation with competitiveness. Although correlation coefficients offer some indication for the sign of relationship (positive or negative) due to multidimensional nature of national culture, the overall effect of national culture to competitiveness was assessed by using ordinary least squares (OLS) regression analysis including all six culture variables (Table 5).

Table 5 Modelling the relationship between competitiveness and culture dimensions

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			B	Std. Error	Beta		
	Model 1					Model 2				
(Constant)	4.276	.463		9.239	.000	1.321	.560		2.361	.022
pdi	-.001	.004	-.041	-.311	.757	.003	.003	.085	.846	.401
idv	.010	.003	.375	3.014	.004**	.003	.003	.132	1.317	.193
mas	-.002	.003	-.074	-.782	.437	-.001	.002	-.048	-.665	.509
uai	-.010	.003	-.358	-3.828	.000**	-.010	.002	-.361	-5.157	.000**
ltovs	.010	.003	.359	3.282	.002**	.005	.002	.201	2.364	.022*
ivr	.007	.003	.246	2.130	.037*	.001	.003	.029	.316	.753
LNGDPcapita						.358	.053	.637	6.734	.000**
	R=.725[a] R^2=.526 Adjusted R^2=.476					R=.859[a] R^2=.738 Adjusted R^2=.705				
a. Dependent Variable: GCI										

Source: Authors' calculations

Table 5 shows that when all independent cultural dimensions are taken together (Model 1) there is a slight change with respect to the impact of cultural variables on competitiveness. As indicated by the results of Model 1, Power distance index and Masculinity are not any more significant predictors of competitiveness. All other cultural dimensions maintained their significance and rate of impact (positive/negative) as in the case when they were explored independently (correlation).

In order to control for economic development, due to its impact on overall competitiveness, LNGDP/capita variable was introduced in Model 2. Regression model shows some modifications when compared to Model 1, namely, only two cultural variables remain statistically significant predictors of competitiveness: Uncertainty avoidance (UAI) with a negative sign (stand. coeff.= -0.361, t=-5.157, p=0.0) and Long term versus short term orientation (LTOVS) with a positive association (stand. coeff.= 0.201, t=2.364, p=0.022). Economic development has a positive impact on competitiveness.

Both presented models have a high predicting value. Model 1 explains almost 53% of competitiveness variability (R^2=.526), whereas the second models is even stronger and explains 74% of variability (R^2=.738).

Based on the empirical results presented in Table 5, hypothesis H4 and H5 are supported (both by Model 1 and Model 2). H2 and H6 are supported only by Model 1. Other hypotheses (H1 & H3) are not supported by the analyzed models. This means that we can argue that the increase in the uncertainty avoidance index hinders competitiveness, but the increase of long term orientation index improves national competitiveness.

Although this study conceptualized and analyzed the competitiveness and culture at the national level, due to strong influence the national culture exhibits on organizational culture it is possible to extrapolate the findings to the business level as well.

5. Conclusion

As an often mentioned theoretical concept, competitiveness has an extensive theoretical aspect, but also a deep practical value. On the one hand, it refers to the ability of companies to compete in domestic and global markets. On the other hand, competitiveness relates to the capacity of countries to support the development of businesses. As presented in the paper, numerous definitions of competitiveness orientate themselves around the challenges for nations, regions, industries and/or firms to succeed in passing the test of the market and to maintain and expand the real income of people.

Throughout this paper the role of culture in determining competitiveness was explored. Culture exists at different levels, with national and organizational culture being the most researched levels. The research and discussion presented in this paper suggests that national culture not only has an impact on organizational culture, but also some wider consequences on national competitiveness. To be more precise, the regression analysis of global competitiveness index (GCI) and Hofstede's cultural variables has shown that uncertainty avoidance index negatively affects competitiveness, but long term orientation index affects competitiveness in a positive way. Such findings can be used by policy makers in order to improve competitiveness.

The regression models presented in this paper have a strong explanatory power and explain almost 74% of variability in global competitiveness index. However, an additional point to mention is that it is very difficult to change culture, especially at the national level. Thus, our research results can be used for shaping organizational cultures. It has been shown that by increasing long term orientation, adapting to changing circumstances, increasing awareness that the traditions can be changed and planning ahead will result in some improvements in competitiveness. On the other hand, fixed societal norms, emphasizing traditions, religious or ideological fundamentalism will lead to decreased competitiveness. At the same time, high uncertainty avoidance, manifested as increased formalism, emphasizing security, rejecting risks and ambiguities, will result in decreased competitiveness. Prototypically, low uncertainty avoidant cultures, i.e. those that possess features like informal governing structures, acceptable risk taking and receptiveness to new ideas and concepts, will lead to increased competitiveness.

However, we must also emphasize that competitiveness and its determinants form a very complex issue. There can be large-scale differences in national cultures among different countries (e.g. Arab countries vs. Anglo-Saxon countries), but their national competitiveness indexes can be similar.

We acknowledge that the study presented in the paper has limitations. A major limitation for our study is the lack of longitudinal data. However, since it is usually assumed that culture is relatively permanent, we find that our sample might be appropriate for the purpose of this study. As the data for some countries were not available, only 64 countries were included in our study, which is less than 50% of the total number of countries in the world. Future research should be based on a larger sample and include longitudinal data about competitiveness and economic development.

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RAZMATRANJE ULOGE NACIONALNE KULTURE U OBJAŠNJAVANJU KONKURENTNOSTI

Sažetak

Cilj je ovog rada identificirati poveznice nacionalne kulture i konkurentnosti. Konkurentnost uključuje niz institucija, politika i čimbenika koji određuju razinu produktivnosti neke zemlje. Iako konkurentnost može biti rezultat različitih čimbenika, obzirom da su neki od tih čimbenika ovisni o ljudima i njihovom ponašanju, tvrdimo da uslijed toga konkurentnost mora ovisiti i o osnovnim pretpostavkama, vrijednostima i simbolima koji su zajednički ljudima iz promatrane skupine. To čini konkurentnost usko vezanom za nacionalne i organizacijske kulture. Međunarodna analiza je pokazala da nacionalna obilježja kulture imaju utjecaja na nacionalnu konkurentnost. Empirijska analiza globalnog indeksa konkurentnosti i Hofstedeovih kulturnih varijabli pokazala je da indeks izbjegavanja neizvjesnosti negativno utječe na konkurentnost, ali indeks dugoročne orijentacije utječe na konkurentnost na pozitivan način. Zbog toga kreatori politike moraju biti svjesni da nisu materijalni ekonomski čimbenici jedini koji dovode do konkurentnosti, nego i nematerijalne čimbenike, kao što je kultura, također treba uzeti u obzir u nastojanjima da se unaprijedi konkurentnost.

Ključne riječi: konkurentnost, nacionalna kultura, organizacijska kultura

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DEINDUSTRIALIZATION AS A PROCESS IN THE EU

Abstract

Deindustrialization is a natural process in the developed countries, which takes place under the influence of external and internal factors and occurs as a result of economic growth. It is marked by the decline in the share of industry in GDP and employment with a simultaneous increased importance of the service sector. Considering the complexity of the concept, there are many theoretical approaches of deindustrialisation. In this paper the analysis of deindustrialization in the EU was conducted. The research results indicate the existence of relative deindustrialization in the EU, which is characterized by reduced share of agriculture and industry and increased share of the service sector in GDP. Also, it was found that the decrease in employment in the industry was not created as a result of a decrease in industrial production. The EU economy, including the industrial sector, is heavily influenced by the globalization process, while the process of deindustrialization is significantly impacted by the increased volume of foreign direct investment. In key strategic documents European industry is recognized as the main "engine" of the recovery of the European economy. Therefore, the highest priority is the creation of conditions for the process of reindustrialization, i.e. the development of industry in the variable circumstances, with an emphasis on strengthening and improving the industrial foundation and implementation of new solutions based on innovation, research and new technologies.

Keywords: EU, deindustrialization, industry, labour productivity, reindustrialization

1. Introduction

Industrialization refers to the process of industry development. In the developed European countries it was occurring spontaneously; light industries appeared first, and then heavy industries (Družić et al., 2012). Most theorists emphasize that there is no general way of industrialization and that in fact it takes place under the influence of a large number of internal factors. According to numerous authors (Palma, 2007; Boulhol, Fontagné, 2006; Rowthorn, Ramaswamy, 1997), the development of industry follows a certain path, whereby its share in GDP and in total employment grows to a certain point, and then decreases, while the share of services increase. The beginning of integration processes[1] on

the European continent is based particularly on the industry. In fact, in 1951, by signing the Treaty of Paris the European Coal and Steel Community was established, which included six founding countries (Belgium, Netherlands, Luxembourg, Italy, Germany and France), later known as the "hard core" countries of the EU (Kandžija, 2003). The integration was continued in 1957 (Treaty of Rome) in the sector of nuclear energy by establishing the European Atomic Energy Community (EURATOM). However, the Treaty of Rome did not provide a common industrial policy[2] until the 1992 Treaty on European Union introduced the subtitle on industry, but not on industrial policy (Kandžija, Cvečić, 2010). According to the 2007 Treaty of Lisbon, it was defined that industry belongs to the area in which the Union *takes decisions on the activities of support, coordination and complementing the activities of Member States. This implies that the EU in the field of industry has no direct competences, but encourages cooperation and helps and encourages the development of industry in the Member States.* Article 173 of the Treaty on the Functioning of the EU emphasizes that the *aim of the EU and its Member States is to create favourable conditions for improving the competitiveness of European industry in accordance with a system of open and competitive markets.* Therefore, effects on the environmental factors of the company are anticipated, with particular emphasis on innovation, research and technological development, development of small and medium-sized enterprises and acceleration of structural reforms in industry.

The EU is faced with a reduction in the share of industry in GDP and in total employment, i.e. the process of deindustrialization is present. On the other hand, the key strategic documents emphasize the importance of industry in modern business as one of the key factors of the EU economic recovery. The EU economy is lagging behind major competitors, particularly the United States, since the research activity is focused mainly on traditional industries. Huge energy dependence is present and the whole European continent is affected by the aging of the population, which has a negative impact on innovation and consumer capacity of the population. The aim of the study is to present the theoretical aspect of the concept of deindustrialization and determine its key elements and factors. Furthermore, based on the presented theoretical aspects, the goal of the research is an analysis of deindustrialization in the EU. The purpose of the study is to evaluate the deindustrialization of the EU, to identify the challenges faced by European industry, strategic documents and key measures that the EU conducts towards ensuring the viability and competitiveness of the industrial sector.

In this paper a descriptive analysis was carried out on the process of deindustrialization in the EU. In addition, together with the basic macroeconomic indicators, specific indicators of industry and industrial production in the EU are analysed as well. According to the availability of data the study refers to the period from 1995 to 2015.

The paper consists of five interconnected parts. After the introduction, the following section presents the most important theoretical insights about the process of deindustrialization and covers the period from 1957 to 2011. Presentation of research methodology is accompanied by the analysis of deindustrialization in the EU. Furthermore, the paper presents the basic instruments and objectives of EU industrial policy, the key challenges and policy documents by which the EU wants to work on strengthening the competitiveness of the industrial sector. The paper ends with the conclusion which contains the key cognitions that were obtained during the investigation.

2. *The theoretical background of deindustrialization*

The term deindustrialization appeared for the first time in 1950s and 1960s in the works of Clark (1957) and Kaldor (1966), who pointed out the connection between GDP growth and growth in the industrial sector, and whose research was continued by many other authors. In general, although there is still no single definition, the most relevant authors agree on deindustrialization as a "natural process, which occurs as a result of economic growth and changes in the economic structure." As such, deindustrialization is a concept characteristic of developed countries (Baumol, 1967; Fuchs, 1968), occurring as a normal and positive result of the rapid growth of industrial productivity, which, despite the decline in the share of industry in employment and GDP, remains stable. On the other hand, a negative view of deindustrialization is given in Singh (1977), according to which deindustrialization is a "pathological condition" in the economy, i.e., the inability of the economy to achieve the full potential

of economic growth, employment and utilization of resources. Blackaby (1978) gives the first systematization of theoretical approaches of deindustrialisation and states that this concept "crept" into the scientific literature of that period. In defining the deindustrialization Caincross (1982) and Lever (1991) rely on four approaches that are still commonly used. According to the first approach (1), deindustrialization implies a reduction of production or decrease in employment in the industrial sector. Furthermore, deindustrialization represents a shift from industrial production to service industries (2). The authors point out a reduction in the share of industrial products in international trade, resulting in the progressive failure to maintain the balance of trade balance (3). In addition, the continuous deficit of foreign trade grows to such an extent where country is not able to "pay" for the imports necessary to sustain further production and where downward economic growth begins, which in this case is called deindustrialization (4).

Bluestone and Harrison (1982) build on previous authors and define the deindustrialization as "systemic disinvestment in the nation's basic productive capacity". Crafts (1992) points out that, although industrial production is growing, its growth is relatively slow, the proportion of the workforce in the industry is reduced and the trade balance moves from a surplus to a deficit. Different theoretical approaches "allow" different methods of measuring the level of deindustrialization. In doing so, as its main determinants the level of GDP per capita, expansion or recession of economy, trade patterns and structural changes in the economy are taken into the consideration. Priewe (1993) introduced the term premature[3] deindustrialization and describes it as a negative process, which is in most cases present in less developed, transition countries, and which as such should be barred or at best slowed down. Čavrak et al. (2011) determine deindustrialization as a process of reducing the importance of industry in the national economy, expressed through its share in GDP.

Deindustrialization is a process that occurs due to the effects of internal and external factors. Rowthorn and Ramaswamy (1997) and Rowthorn and Coutts (2004) emphasize the internal factors. Rowthorn and Ramaswamy (1997) affirm the current opinions of the author about "positivity" of the process of deindustrialization, as a result of successful economic development, achieved due to productivity[4] growth, while the share of spending on industrial goods is stable in recent decades. The authors indicate that the increase in productivity is responsible for more than 60% reduction in the share of employees in industry, and conclude that "on each 4.4 lost jobs in the industrial sector due to the competition of cheap imports, on average one working position is opened in industry through export growth of more sophisticated products". Labour productivity growth implies a situation in which with the same amount of work it is possible to achieve higher production levels and it is as such determined as a key factor of deindustrialization. In the industrial sector, productivity growth has a double impact on employment, i.e., faster productivity growth makes industrial goods comparatively cheaper, stimulating demand at the same time. On the other hand, in such a situation, fewer and fewer workers are required. Furthermore, productivity growth and differences in the revenue elasticity of demand trigger structural changes, which initially result in industrialization, and then in deindustrialization (Rowthorn and Wells, 1987). The growth of labour productivity implies relative deindustrialization i.e. a situation where the level of employment in industry goes down, but without reducing the overall industrial productivity.[5] Rowthorn and Coutts (2004) emphasize changes in consumption patterns and trade with low-income countries as the most important factors of deindustrialization with productivity growth. On Rowthorn and Coutts builds Kollmeyer (2009), who emphasizes income elasticity of demand as the most important factor contributing to employment in industry.

Furthermore, it is necessary to identify the key external factors of deindustrialization. Consideration of the impact of international trade on the process of deindustrialization is represented in the works of authors from the mid-1980s to mid-1990s. By participating in international trade flows and stimulating competition, domestic industrial enterprises are encouraged to increase the efficiency of their production. That results in productivity growth in industry and eliminating inefficient enterprises, whose products are substituted by imports. At the same time, developed countries specialize in capital-intensive industries with high added value. On the example of the United States Lawrence (1983) indicates that the international trade caused a reduction by one third in industrial employment. On the other hand, Bluestone (1984) points out that the deindustrialization of the

United States happened despite the fact that employment in industry has remained constant. The author draws attention to the large job losses in the industrial regions as the "most negative" effect of deindustrialization. Sachs and Shatz (1994) on the example of the United States empirically established a link between international trade and the expansion of deindustrialization. Furthermore, through his analysis of employment in industry and imports from developing countries Wood (1995) proves the impact of increasing the volume of trade on reducing the importance of industry in OECD countries. According to Saeger (1997), four phenomena explain the impact of opening the economy on the decreasing importance of industry: 1) transfer of "comparative advantages" of highly industrialized countries from the factory into offices or distribution networks, resulting in a growing specialization in the services sector, 2) the pressure of new competitors with low labour costs and weak environmental legislation, resulting in the "survival" of only the most productive firms, whose products have no substitutes in low-cost imports, 3) the reorganization of the company to take advantage of differences in international costs on the global level, through the opening of foreign subsidiaries (for different segments of the production process) on (economically) the most favourable locations, 4) developing countries become "new" markets, i.e. a shift in international trade results in displacement of producers from developed countries to developing countries.

During the 1980s and 1990s many middle-income countries were passing the phase of deindustrialization, without reaching high levels of industrial production (Dasgupta, Singh (2009). The modern conditions of globalization have moved the attention of researchers to the "new" factors of deindustrialization. Alderson (1999) emphasizes the role of foreign direct investment (FDI) in the process of employment reduction in the industrial sector. The author concludes that 1) FDI reduces employment in industry since companies in search of cheaper labour move their factories to developing countries, and 2) FDI may increase the required marginal rate of return on domestic investments, move investments from industry to the services sector and reorient them from productive investments. Alderson (1999) distinguishes positive[6] and negative deindustrialization and deindustrialization associated with trade. Positive deindustrialization occurs as a result of economic development and productivity growth, while the negative one occurs due to structural imbalances in the economy, which as a result have stagnating income and rising unemployment. Finally, deindustrialization associated with trade depends on whether a country has a surplus or deficit in international trade.

Most authors state that the internal and external factors independently affect deindustrialization. Kang and Lee (2011) consider their mutual influence i.e. the effect of external factors on internal factors and inversely. The authors agree that the process of deindustrialization is decisively influenced by internal factors i.e. labour productivity and changes in consumption patterns, with the important role of trade in case of low-income countries.

Most studies of deindustrialization and its effects are focused toward developed countries. However, the transition i.e. post-communist countries also went through this process. In these countries, the economic reforms in the majority of cases occurred as a result of changes in the political regime, and not as a natural course, which is affirmed in the economic literature as a term of forced deindustrialization. Mickiewicz and Zalewski (2001, 2002, 2006) investigate the processes of deindustrialization in the post-communist transition countries.

Based on the presented theoretical findings, we can conclude that deindustrialization is a natural process, which in developed countries is a consequence of economic growth and is determined by the actions of internal and external factors. In addition, of greatest importance are labour productivity and the volume of foreign direct investment, which is increasing as a result of the ever-present globalization process. On the other hand, less developed countries "perceive" deindustrialization as a negative phenomenon, occurring primarily due to political and regime change in situations when the economy has not yet reached high levels of industrial production. In such cases, deindustrialization results in an increasing unemployment and deterioration of the overall social situation.

3. Analysis of deindustrialization in the EU

3.1 Research methodology

Analysis of deindustrialization in this part of the work is carried out by taking into consideration the above theoretical assumptions, with particular emphasis on the following indicators: 1) GDP per capita (in euros), 2) gross value added in industry (% of

GDP), 3) employment rate (% of total employment), 4) employment rate in industry (% of total employment), 5) index of industrial production, 6) index of labour productivity and 7) foreign direct investment (% of GDP). According to the statistical classification of economic activities of the EU (NACE Rev. 2), in the analysis of industry a wide range of activities is included, such as: mining and quarrying (B), processing industry (C), production and supply of electricity, gas, steam and air-conditioning supply (D), water supply, sewerage, waste management and remediation activities (E), and construction (F) (Eurostat (5)[7], 2016). The analysis covers the period from 1995 to 2015. The data were collected from secondary statistical base of the World Bank and Eurostat.

Taking into account the basic assumption according to which deindustrialization implies *a natural process in the developed countries, which is a result of economic growth, marked by decrease in the gross value added of industry and its importance in total employment*, in the paper the projection of movement of listed indicators until 2020 is done. The projection is carried out using the method of exponential smoothing, which is commonly used in time series. Using this method, the forecast for the period is obtained as a weighted average of actual and forecasted values of the time series in period t. The actual value of the time series in the period is joined by the weight w (smoothing constant), which takes a value between 0 and 1, while weight is added to the forecast t. The higher the value of the parameter, the greater the weight which adds to the previous period (Winters, 1960).

The Holt-Winters method uses triple smoothing and has three smoothing constants:

1) a constant which is used in each exponential smoothing (overall smoothing)
2) a constant which is used in determining the trend of the value (trend smoothing)
3) a constant which is used to determine the periodicity of the value (seasonal smoothing).

Calculation of prediction is based on the following formulas:

$$St = \alpha\, yt / It\text{-}L + (1-\alpha)(St\text{-}1 + bt\text{-}1) \quad (1)$$

$$bt = y(St\text{-}St\text{-}1) + (1-y)\, bt\text{-}1 \quad (2)$$

$$It\ \beta = yt / St + (1-\beta)\, It\text{-}L$$

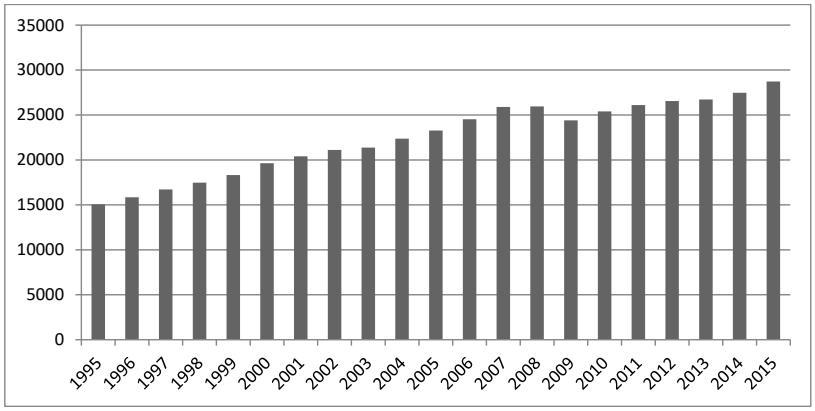
$$Ft + m = (St + MBT)\, It\text{-}L + m, \text{ where} \quad (3)$$

Y = observed values
S = smoothed values
b = factor trend value
I = index periodicity value
f = prediction for m periods ahead
t = index that represents the period

3.2 Analysis

The level of GDP per capita in the EU was constantly increasing until 2008, when the level of 25,897 euros was achieved. The negative effects of the economic crisis had an impact on its reduction in 2009. Further growth of GDP per capita started in 2010 and continued until 2015, when the GDP per capita in the EU was 28,725 euros (Chart 1).

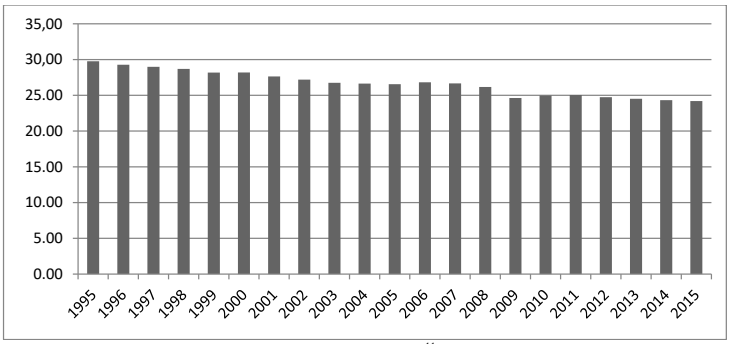
Chart 1 Movement of GDP per capita of the EU in the period from 1995 to 2015 (euro per capita)



Source: Developed by the authors, based on the AMECO (1)[8], 2016

Below is the analysis of gross value added by activities. In this case, a three-sector model is used, according to which activities are divided into three basic groups: the primary sector, the secondary sector and the tertiary sector. The analysis indicates that in the observed period the structure of gross value added in the EU was changing. The primary sector has over the whole observed period (except 2011 and 2013) realized value impairment. At the beginning of the period, its value was at the level of 2.99%, while in 2015 the gross value added of the primary sector was 1.56% (World Bank (2)[9], 2016). On the other hand, the gross value added of the tertiary sector during the entire observed period (except for 2006 and 2011) increased and in 2015 reached the level of 74.25% (World Bank (3)[10], 2016). During the entire observed period a constant decrease in gross value added of the secondary sector was recorded (with the exceptions in 2006, 2010 and 2011). Gross value added of the secondary sector in 2015 in the EU was 24.19% (Chart 2).

Chart 2 Gross value added of the secondary sector in the EU from 1995 to 2015 (% of GDP)

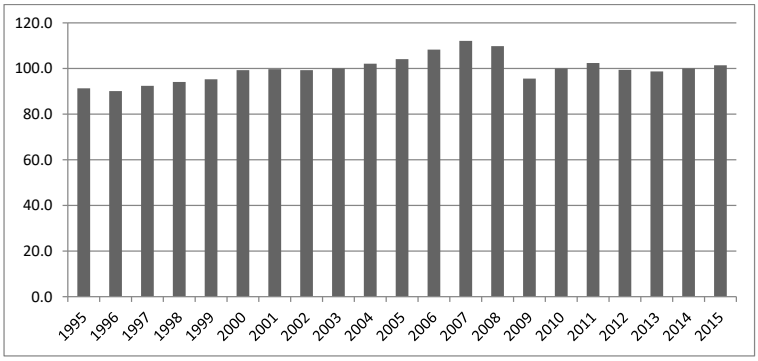


Source: Developed by the authors, based on the World Bank (1)[11], 2016

The data from Charts 1 and 2 suggest that the increased deindustrialization in the EU began in 1995, when the level of GDP per capita stood at the level of 25,897 euros, while gross value added of the industrial sector was 29.57% of GDP.

Furthermore, industrial production in the EU has risen steadily in the observed period, with the exceptions of 2008 and 2009, which can be connected with the negative effects of the economic crisis. Also, the reduction of industrial production was recorded in 2012 and 2013 (Chart 3).

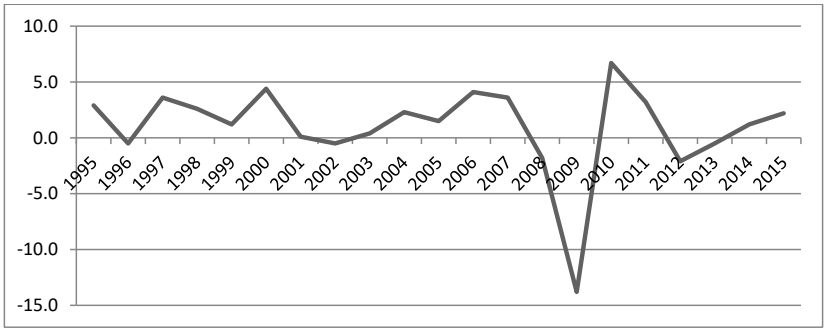
Chart 3 Index of industrial production in the EU in the period from 1995 to 2015



Source: Developed by the authors, on the basis of the Eurostat (1)[12], 2016

Industrial production in the EU grew an average of 1.04% annually in the period from 1995 to 2015. Also, in the period before the 2008 crisis, the average growth of industry was 1.8% annually. However, the negative effects of the economic crisis affected the slowdown of industrial production (Chart 4). Namely, as shown in Chart 3, the industrial production in the EU is still largely growing, but at a slower pace.

Chart 4 Industrial growth rates in the EU in the period from 1995 to 2015

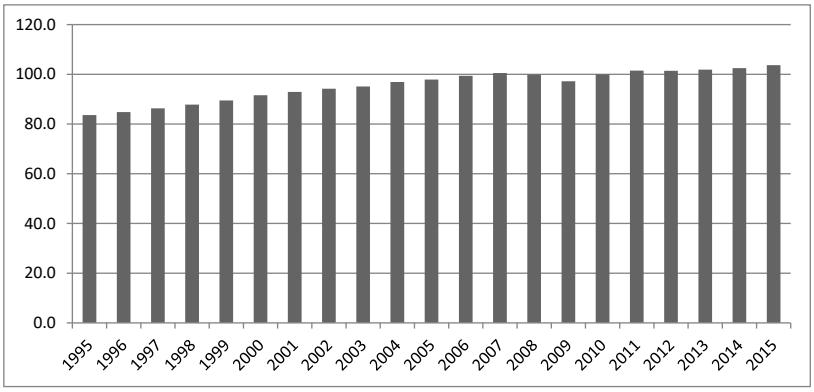


Source: Developed by the authors, on the basis of the Eurostat (4)[13]*, 2016*

The largest decrease in industrial production was recorded in 2009 (-13.8%), followed by recovery in 2010 and 2011. In 2015, the industrial production in the EU has recorded a growth of 2.2%. Generally, in the years of economic crisis and after it was over, the industrial production in the EU achieved an average reduction of 0.44%.

Also, the existence of deindustrialization in the EU indicates the movement of the index of labour productivity, which is a constant (except in 2008 and 2009), increased throughout the study period (Chart 5).

Chart 5 The index of labour productivity in the EU in the period from 1995 to 2015

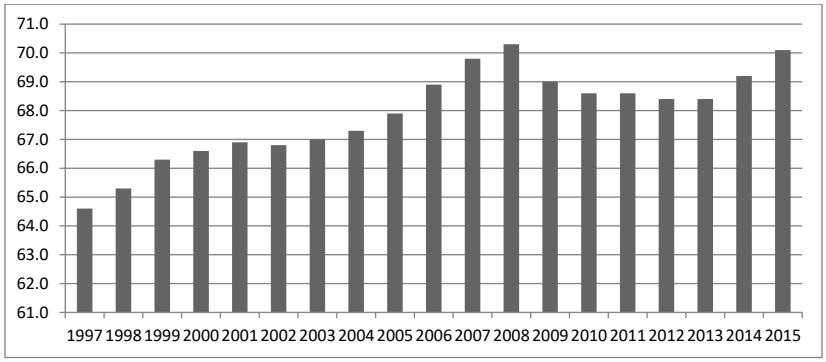


Source: Developed by the authors, on the basis of the Eurostat (2)[14]*, 2016*

The data in Charts 1-5 suggest that the process of deindustrialization in the EU unfolded along the paths characteristic for the developed countries. Namely, the growth of GDP per capita in the EU followed the reduction in gross value added of industry and agriculture in GDP, while gross value added of the tertiary sector was increasing. Furthermore, the decrease in industrial employment is accompanied by the growth of labour productivity and an increase in industrial production, which indicates the process of relative deindustrialization.

The trends in the employment rate and its structure in the EU are analysed below. The employment rate in the EU increased until 2008, when it began to stagnate and decline, and that went on until 2013. New employment growth began in 2014 and continued until 2015, when the employment rate in the EU was 70.1% (Chart 6).

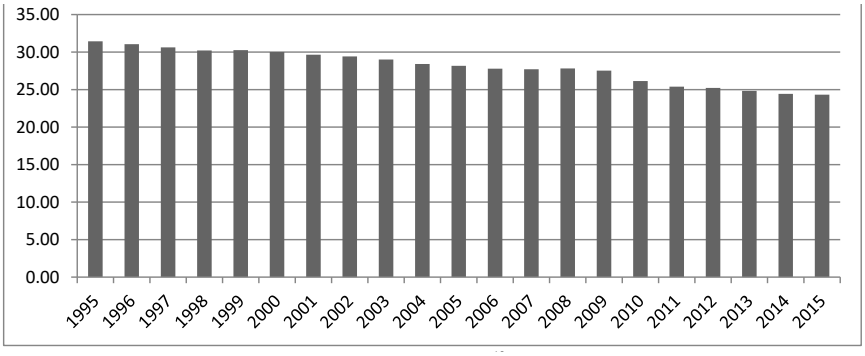
Chart 6 The employment rate in the EU in the period from 1997 to 2015



Source: Developed by the authors, based on the data from the Eurostat (3)[15], 2016

By analysing the structure of employment by sector, it is evident that during the whole observed period, employment in the primary sector was steadily declining (exceptions of 2009 and 2010) and in 2015 it accounted for 4.42% of total employment (World Bank (5)[16], 2016). On the other hand, employment in the tertiary sector was constantly increasing and in 2015 it was 70.69% (World Bank (6)[17], 2016). Also, over the whole observed period the employment was decreasing in the industrial sector as well, whose level of 31.43% in 1995 fell to 24.43% in 2015 (Chart 7).

Chart 7 Movement of the employment in the secondary sector of the EU in the period from 1995 to 2015

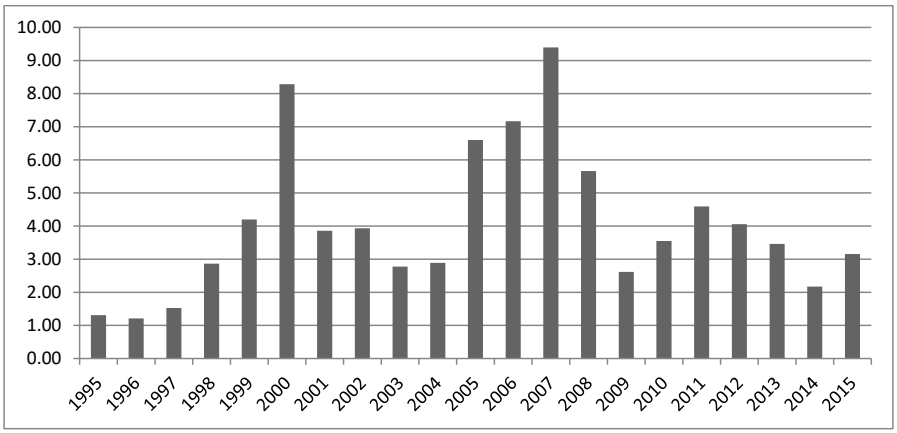


Source: Developed by the authors, based on the World Bank (4)[18], 2016

According to the data from the previous charts it can be concluded that the employment growth in the EU is followed by a decline in the share of employees in industry and the primary sector, while on the other hand, employment in the service sector increases, and the latter accounts for the largest share of employment in the EU.

The level of foreign direct investment increased throughout the observed period, with certain exceptions. The highest values were recorded in 2000 and 2007. According to the latest available data, foreign direct investment in the EU in 2015 was at the level of 3.16% of EU GDP, which represents an increase compared to 2014 (Chart 8).

Chart 8 Foreign direct investment in the EU in the period from 1995 to 2015 (% of GDP)

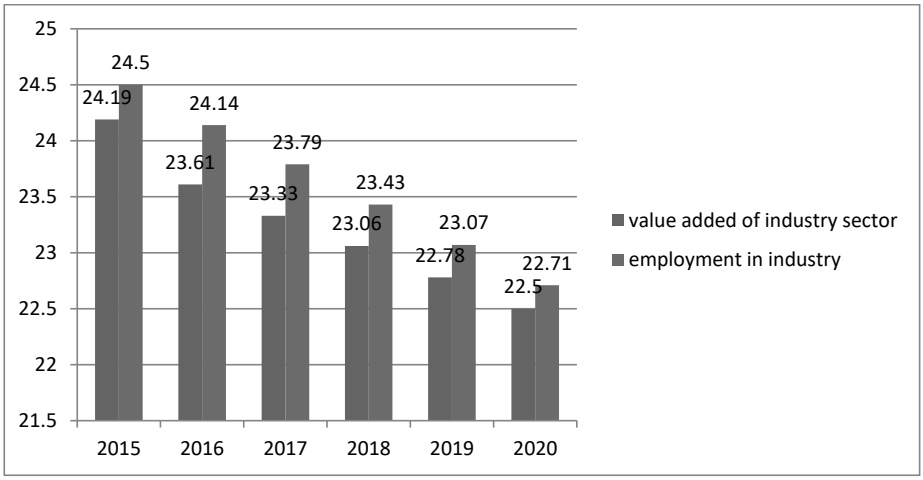


Source: Developed by the authors, based on the World Bank (7)[19], 2016

As previously stated, in the same period occurred the decrease in employment in industry in the EU. These results, referring to Alderson (1999), show a relationship between the growth of foreign direct investment and the reduction in employment in the industrial sector.

Using the method of exponential smoothing, the projection of gross value added of industry and employment in industry up to 2020 is made (Chart 9).

Chart 9 Projections of gross value added and employment in industry up to 2020



Source: Developed by the authors, based on the World Bank (1) and the World Bank (4)

The data from Chart 9 indicate that at the EU level up to 2020, reducing the share of industry in GDP and total employment is going to continue. Also, projections indicate that by 2020 the share of gross value added of industry and employment in industry will continue to decline steadily, and their value will be 22.71% of total employment i.e. 22.50% of GDP.

4. EU industrial policy and the prospects for future development

In general, EU industrial policy covers all state intervention aimed at the supply side of the economy, which targets to affect the industrial structure of the economy and its changes. Also, the interventions impact on encouraging the production of specific goods and on the decision to enter or exit the specific market goods. Industry is not limited to the processing industry; it can refer to a range of commercial activities in the economy, including trade and services. Also, approaches to and types of industrial policy differ widely (Kandžija, Cvečić, 2010). The highest emphasis is on market-oriented and interventionist approach. According to a market-oriented approach, the most effective way to encourage competition is to enable the free operation of market mechanisms. On the other hand, interventionist approach includes interventions to specific companies or industries, in order to improve their market position and achieve competitive advantage (Kandžija, Cvečić, 2010). As the basic types of industrial policy, it is necessary to sort out general and selective industrial policy. In doing so, selective industrial policy "favours" certain enterprises, industries or sectors, while in the general industrial policy there is no discrimination between companies, industries and sectors.

Budzinski and Schmidt (2006)[20] state how running of industrial policy is based on various instruments, which can be divided into basic and auxiliary ones. The basic instruments include tax reliefs and subsidies, while auxiliary instruments include guarantees, norms and standards, public procurement and the campaign "Buy Domestic". Apart from these instruments, the author also includes instruments that are not typical for market economies, which cover the public domain, price controls, investment control etc. Budzinski and Schmidt (2006) state that such instruments are generally not implemented, except in countries that are not in the capital system.

The broader principles of the EU industry were defined in early 1990s through two Bangemann memorandums on industrial policy. Since then begins the move away of the Union from selective interventions for individual companies and industries towards creation of the preconditions for the total market adjustment (horizontal approach). The main objectives of such an industrial policy include*:* *Adaptation of the EU industry to the structural changes, encouraging favourable environment for businesses and for venture capital, creating a competitive environment suitable for cooperation among enterprises and innovation policy and technology development* (Pelkmans, 2006). Kandžija and Cvečić (2010) point out that the purpose of the industrial policy is correcting market failures and institutional shortcomings. According to this, correcting market failures is carried out through research and development policy, whereby a particular economy achieves positive external effects and causes a spillover to other sectors and economies. As previously stated, industrial policy is also important to correct the institutional deficiencies which affect the adjustment costs of industry.

The EU industrial policy is based on three pillars (Kandžija, Cvečić, 2010): 1) the institutional framework of the EU for market integration, directed towards creating and strengthening the EU internal market, based on the measures and instruments of the common competition policy, regional development, social cohesion and regulation and privatization, 2) horizontal industrial policy, which includes newer instruments of action, and refers to the whole economy (research strategies, encouraging innovation, entrepreneurship, venture capital, fostering competition, public procurement) and 3) Sector or specific industrial policies which refer to the policies and interventions in sectors, clustering, cohesion policy, regional policy and technology policy.

Industrial policy is directed towards the improvement of the industrial growth and its effectiveness and the achievement of general economic growth, full employment, financial stability and improving living standards. It is a very complex concept and is based on the interaction with other policies, particularly with the competition policy, trade and educational policy, research and development and regional development policy. Under Articles 179-190 of the Treaty on the Functioning of the EU[21], the aim of research and development policy is *to strengthen the scientific and technological bases of the Union's industry and to encourage the development of international competitiveness based on the multi-annual research programmes, which establish the scientific and technological objectives.* However, current trends in the business and economic activities indicate a decline in the share of industry in GDP and employment, and an increasing importance of the services sector. Accordingly, the EU

must define measures and create favourable conditions for further development of industry in changing conditions.

"The new climate" in the European economy started in 1985, by the White Paper on the Internal Market[22] that highlighted the necessity of the growth of the integrated market, *which would allow European industry some advantages: the wholesale market, mass production, economies of scale, technical harmonization and research and innovation.*

In 2002 the European Commission identified the most important challenges of European industry and thereby emphasized globalization, technological change, innovation and entrepreneurship, sustainability and new social requirements. Due to market globalization and competition, European industry faces a new industrial revolution triggered by the development of information and communication technologies. Such changes have a significant impact on the production structure and processes, management, productivity and structural changes.

After the failure to achieve the goals set by the Lisbon strategy, further development of the European industry is closely correlated with the priorities and objectives of the Europe 2020 strategy, which was defined in 2010. Smart, sustainable and inclusive growth was defined as one of the key priorities of the Strategy and the emphasis was put on achieving five key objectives: 1) increasing the employment rate to 75%, 2) achieving the level of investment in research and development of a minimum of 3% of the EU's GDP, 3) reducing greenhouse gas emissions by 20%, increasing energy efficiency by 20% and achieving the threshold of 20% for energy coming from renewable energy sources, 4) reducing the early school leaving rates to below 10% and increasing the share of highly educated population aged 30 to 34 years to at least 40% and 5) reducing the number of poor people and people living on the edge of poverty by 20 million. Also, as a key "tool" of the Strategy the seven key initiatives are emphasized: A Digital Agenda for Europe, Innovation Union, Youth on the Move, Resource efficient Europe, An industrial policy for the globalization era, Agenda for new skills and jobs and the European platform against poverty[23].

Of these seven initiatives, four are aimed towards ensuring further progress of the European industry, and these are: Innovation Union, A Digital Agenda for Europe, An industrial policy for the globalization era and the Agenda for new skills for the jobs. A special contribution to strengthening the role of industrial policy is provided by the initiative "An industrial policy for the globalization era", in which 10 measures for the improvement of EU industry are proposed. The main goal of this initiative is to ensure improvement of the business environment (especially for SMEs) and encourage the development of strong and sustainable industrial base. In addition to this initiative, of particular significance is the Innovation Union initiative, which is specifically directed towards improving the business environment and access to finance for research and development and innovation. By encouraging business innovation the growth and creation of new jobs is encouraged, which is particularly important for the European industry (European Commission, 2013)[24]. These two initiatives are considered as pioneering initiatives of the Europe 2020 strategy in the industrial sector, as well as drivers of a new industrial revolution that gave rise to industrial policy as a key element in the future development of the Union.

Strengthening the industrial policy in the years following the adoption and entry into force of the Europe 2020 strategy was marked by several defining communications. The Communication "Industrial policy: Reinforcing competitiveness"[25], adopted in 2011, emphasizes the importance of initiating structural changes, and the coherence and consistency of policies in the Member States, with the aim of encouraging economic and industrial competitiveness and sustainable growth in the EU. The Communication "A Stronger European Industry for Growth and Economic Recovery"[26] was adopted in 2012 and was directed towards the creation and implementation of measures with the aim of encouraging investment in innovation of the industrial sector. In 2014 there was a new Communication "For a European Industrial Renaissance" (European Parliament, 2016)[27], which was created as a result of detecting a series of weaknesses and obstacles to the development of the European industry despite its excellent "performance". It is recognized that these obstacles could in future threaten the competitiveness of European industry.

5. Conclusion

In this paper the analysis of deindustrialization in the EU was conducted. By the review of previous theoretical knowledge it was found that deindus-

trialization generally can be defined as a "natural process", characteristic of developed countries, which occurs as a natural consequence of economic growth. In general, authors define deindustrialization as a process initiated by the activities of internal and external factors, which is usually characterized by the reduction in the share of industry in GDP, decreasing employment and labour productivity growth. Furthermore, globalization conditions put great emphasis on foreign direct investment, emphasizing its role in reducing employment in industry.

The conducted analysis indicates that deindustrialization of the EU in the observed period proceeded under the conditions of economic growth, the reduction in gross value added of the industries and increasing labour productivity. Moreover, employment growth in the EU is accompanied by a decrease in employment in industry and agriculture, while on the other hand, employment in the service sector increased. The analysed situation in the EU suggests that the decrease in employment in industry does not come as a result of a decrease in industrial production. In fact, in the entire period (with a few exceptions), industrial production has grown in value. That points to the existence of the so-called relative deindustrialization in the EU. Furthermore, globalization trends have resulted in the growth of foreign direct investment. The projection of gross value added of industry and the share of industrial sector in total employment indicate the continuation of the trend of their reduction by 2020.

In strategic documents and policies of the EU industry is recognized as a key "engine" of growth and recovery of the European economy. Therefore, the EU must create the conditions necessary for reindustrialization i.e. industry development in different terms. The key step is the implementation and "connection" with the priorities and objectives of the Europe 2020 strategy and encouraging the development of the industry through modern technological solutions and innovative approaches.

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(Endnotes)

1 The integration process in Europe started in 1946, with Churchill's speech in Zurich, when the first time the desire to create the United States of Europe was mentioned (Kandžija and Cvečić, 2010).

2 Although there is no chapter on industrial policy, it is wrong to conclude that it does not exist. The industrial policy in the EU has a diffuse form, based on the close "cooperation" with the competition policy, research, standardization and regional development (Kandžija and Cvečić, 2010).

3 Deindustrialization which happens when the economy has not yet reached a high level of industrial production. Such is the case often observed in the post-communist transition countries in which structural reforms are the result of the regime and political change, and not as a "natural" sequence of economic development.

4 Generally, productivity can be defined as the ability of workers to produce a certain amount of goods under certain conditions and at a given time.

5 On the other hand, Penava and Družić (2012) in the case of Croatia refer to the notion of absolute deindustrialization, i.e. a situation where the reduction of industrial production is accompanied by a reduction in employment in the industry.

6 The concept of positive and negative deindustrialization was introduced by Rowthorn and Wells (1987). Positive deindustrialization implies a situation in which employment in the industry decreases as a result of productivity growth.

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DEINDUSTRIJALIZACIJA KAO PROCES U EU

Deindustrijalizacija je prirodan proces u razvijenim zemljama, koji se odvija pod utjecajem izvanjskih i unutarnjih čimbenika, a nastaje kao posljedica gospodarskoga rasta te je obilježen smanjenje udjela industrije u BDP-u i zaposlenosti, uz istovremeno povećanje važnosti uslužnoga sektora. S obzirom na kompleksnost pojma, postoje mnogobrojni teorijski pristupi deindustrijalizaciji. U radu je provedena analiza deindustrijalizacije u EU. Rezultati istraživanja upućuju na postojanje relativne deindustrijalizacije u EU, koja je obilježena smanjenjem udjela poljoprivrede i industrije te povećanjem uslužnog sektora u BDP-u. Također, utvrđeno je kako smanjenje zaposlenosti u industriji nije nastalo kao rezultat smanjenja industrijske proizvodnje. Gospodarstvo EU-a, pa tako i industrijski sektor, nalaze se pod velikim utjecajem globalizacijskih procesa, pri čemu važan utjecaj na odvijanje procesa deindustrijalizacije ima i povećan obujam stranih izravnih investicija. Europska industrija je u ključnim strateškim dokumentima prepoznata kao ključni „motor" oporavka europskoga gospodarstva. Stoga se kao ključni prioritet nameće stvaranje uvjeta za odvijanje procesa reindustrijalizacije tj. razvoja industrije u promijenjenim uvjetima, pri čemu je poseban naglasak potrebno staviti na jačanje i unaprjeđenje industrijskih temelja te implementaciju novih rješenja temeljenih na inovacijama, istraživanjima te novim tehnologijama.

Ključne riječi: EU, deindustrijalizacija, industrija, produktivnost rada, reindustrijalizacija

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NEW INSIGHTS INTO EXPENDITURES OF HOTEL GUESTS AND PRIVATE ACCOMMODATION GUESTS

Abstract

The main purpose of this study was to analyse the level and structure of expenditure of hotel guests and private accommodation guests. Moreover, the aim was to determine the factors that influence their expenditure levels. The results are based on a survey conducted from January to December 2016 in Opatija and Rijeka, two neighbouring seaside Croatian tourist destinations. The sample consisted of 984 respondents divided into two groups, those staying in private accommodation and those staying in hotels. Descriptive analysis was used for sample profiling, and one-way analysis of variance was conducted to determine significant differences between hotel and private accommodation guests in terms of their socio-demographic and trip characteristics as well as in terms of their expenditure levels and structures. Finally, multiple regression analyses were conducted to identify the expenditure determinants for both groups of respondents.

The main findings indicate that there is a statistically significant difference in expenditure levels between hotel guests and guests staying in private accommodation. Furthermore, income, length of stay, trip organisation and traveling group have proven to be significant predictors of expenditure in the destination for both groups. However, it was found that the two groups differ with regard to other expenditure predictors.

Keywords: Tourist expenditure, expenditure determinants, private accommodation, hotel guests

1. Introduction

Rijeka and the Opatija Riviera are Croatian coastal destinations where about 1.6 million overnight stays occurred in 2016, representing 11% of overall overnight stays in the County of Primorje-Gorski kotar and 2% of total Croatian overnight stays (Croatian Bureau of Statistics, 2017)[1]. Similar to other Croatian and Mediterranean destinations, these two destinations are affected by high seasonality issues since the majority of their tourism traffic occurs during the warmer months of the year. Both destinations are making efforts to find a way to smooth out seasonality by introducing innovative and more

diverse tourism products during the whole year. Rijeka and the Opatija Riviera have almost the same share of hotel and private accommodation, with private accommodation accounting for 35%, and hotels for almost 31%, of their total accommodation capacities (Croatian Bureau of Statistics, 2017)[2]. Given the high importance of tourism for the economy of these destinations, it was found necessary to investigate the expenditure patterns of their tourists, not only during the summer but also throughout the year. Previous research has shown that there is a statistically significant difference in expenditure levels between tourists staying in hotels and those staying in other types of accommodation, with the former tending to spend more in the destination than the latter (García-Sánchez et al., 2013; Laesser, Crouch, 2006; Smolčić et al., 2017; Svensson et al., 2011). Due to the fact that private accommodation represents a large part of the Croatian accommodation structure, as well as that of many Mediterranean destinations, it was found necessary to separately investigate the expenditure of hotel guests and private accommodation guests. Thus, the main purpose of this study was to investigate the differences, if any, in the spending patterns of hotel and private accommodation guests and to identify the determinants of their expenditure in the destination.

The average tourist expenditure in Croatian coastal destinations, although increasing, is still rather low. A survey on the attitudes and expenditures of tourists in Croatia showed that the average daily expenditure of tourists during the summer months of 2014 was 66€, which is about 14% higher than that realized in 2010 (Marušić et al., 2015). According to the same study, the average expenditure in Primorje-Gorski Kotar County was even lower that the Croatian average and amounted to 58€. These results indicate the need to investigate the structure and level of expenditure in order to find ways to increase it. This in turn will result with an enhancement of tourism economic benefits for the destination.

The study is based on a survey conducted in Rijeka and the Opatija Riviera from January to December 2016, consisting of 984 respondents who were divided into two groups, those staying in private accommodation and those staying in hotels.

2. Literature review

The economic effects of tourism occur and can be measured on different spatial scales (global, continental, national, regional and local level) (Mayer, Vogt, 2016). In all of these cases, the foundation of tourism economic impacts lies in the tourist expenditure level (Mihalic, 2002). Thus, assessing tourist expenditure is of great importance in assessing the economic impact of tourism for a host community and this often involves the estimation of average tourist expenditure per trip or per night (Tang, Turco, 2001). As Disegna and Osti (2016) highlighted, the measurement and determination of the economic benefits experienced by the destination requires analyses of micro data in which individuals or households are the principal unit of analysis. However, as destination marketers become more selective with their promotions, targeting high spending tourists, it is important to provide them with the spending characteristics of different types of tourists so that they can allocate (very often scarce) resources in order to reach and influence those tourists who will most benefit the host economy (Tang, Turco, 2001).

Due to the importance of tourist expenditure for a host economy, the research on the determinants of micro-level tourism expenditure is expansive and growing (Thrane, 2014, 2016). Recently, several authors have reviewed the research focused on tourist expenditure determinants (e.g. Brida, Scuderi, 2013; Marcussen, 2011; Mayer, Vogt, 2016; Wang, Davidson, 2010a). According to those studies, the research linking tourism expenditure to a set of predictors could be divided into two groups: on site studies (where the total trip expenditure of tourists visiting a specific site or destination is used as a dependent variable in the regression models) and household studies (regression models are utilized in quantifying how total tourism expenditure varies by a set of regressors for samples of households representative of some population) (Thrane, 2016). This study fits into the first group since it is based on the expenditures of tourists staying in Rijeka or the Opatija Riviera.

The statistical methods authors use range from variance analyses to regression methods (OLS or quantile regression), while some have used more advanced econometric techniques, such as the double-hurdle, Tobit or Heckit (Mayer, Vogt, 2016). It has to be pointed out that studies on tourist expenditure determinants differ regarding the form of expenditure that is used in models. As Brida and Scuderi (2013) summarised, expenditure levels in tourist expenditure studies are expressed

as total expenditure for the whole trip (per party, per household, per person), expenditure per day, expenditure per person, and expenditure per person per day. In addition, many authors follow the econometric practice and use the natural logarithm of expenditure rather than level values (e.g. Downward, Lumsdon, 2003; García-Sánchez et al., 2013; Marrocu et al., 2015; Smolčić Jurdana, Soldić Frleta, 2017; Thrane, 2014; 2016). The present study is in line with previous research, since the natural logarithm of total expenditure for the whole trip per person was used as the dependent variable in the OLS regression model.

Following Brida and Scuderi (2013), Marcussen (2011), Marrocu et al. (2015) and Thrane (2016), explanatory variables used in previous studies on expenditure determinants can be divided into three groups: variables related to economic and sociodemographic characteristics, trip-related characteristics and psychographic characteristics. It has to be emphasised that many studies reported ambiguous results because certain variables turned out to be significant predictors of tourist expenditure in some studies, but not in others. Moreover, in some studies, results indicate that spending depends positively on certain variables, although a negative relation was found in other studies. Thus it is evident that there is a need for further research on this issue (Wang, Davidson, 2010a).

Gender, age, marital status, education level, occupation, place of residence, and income are some of the most frequently used economic and sociodemographic variables. Income is one of the most employed and most relevant determinants of tourist expenditure (Marrocu et al., 2015). It is one of the variables that has been proved to contribute significantly to tourist expenditure, as reported earlier by many authors (e.g. Brida et al., 2013; Downward, Lumsdon, 2003; Cannon, Ford, 2002; Fredman, 2008; García-Sánchez et al., 2013; Marrocu et al., 2015; Smolčić Jurdana, Soldić Frleta, 2017; Wang, Davidson, 2010b; Thrane, 2014; 2016). Furthermore, Craggs and Schofield (2009) have reported a statistically significant relationship between gender and expenditure level, whereby females tend to spend more than males. According to Brida and Scuderi (2013), however, gender was found not to be a significant predictor of tourist expenditures in the majority of studies. Empirical studies differ considerably with respect to age as well, since there are many examples of both negative and positive age effect on tourist expenditures (Thrane, 2016). The same applies to marital status. Studies of Cannon and Ford (2002) and Saayman and Saayman (2012) resulted in a non-significant relationship, while Kim et al. (2008) found a significant relationship between marital status and expenditure. Furthermore, according to Mayer and Vogt (2016) education level and occupation are significant occasionally as well, which could most probably be explained by the multicollinearities with the income variable. Additionally, Serra et al. (2015) and Wu et al. (2013) found that nationality is a significant independent variable, as did Marrocu et al. (2015) who reported that foreign tourists tend to spend more than domestic ones.

The empirical findings of the effect of trip-related variables on tourist expenditure are also often in conflict. In this group, variables that were used the most in previous research include length of stay, group size, type of accommodation, type of trip organisation, means of transportation, and tourist loyalty (first or repeat visit). Trip-related variables are not straightforward predictors of tourists' expenditures since previous studies have also reported ambiguous results. In most studies, length of stay is found to be positively and significantly related to tourist expenditures (Marrocu, 2015), although it has to be noted that it is usually positive when total travel expenditure is analysed, whereas the influence of length of stay tends to be negative when per day expenditure is a dependent variable (Mayer, Vogt, 2016). Group size is another very frequently used variable. Many studies have reported this variable to be a significant determinant of expenditure, although with a varying sign (Marrocu et al., 2015). For instance, while Craggs and Schofield (2009) and Downward and Lumsdon (2003) associated a positive sign with tourist expenditure, Wu et al. (2013) associated a negative sign. Furthermore, as Mayer and Vogt (2015) underlined, tourists staying in commercial accommodation (i.e. hotels) spend more than others, followed by tourists staying in rented apartments, whereas tourists staying in campgrounds or with friends/relatives generate the lowest expenditures. Chen and Chang (2012) reported that individually organised tourists tend to spend more in comparison with those who organised their trip and stay with a help of a travel agency, as also confirmed by Mayer and Vogt (2015). Many studies reported a significant influence of transportation means on tourist expenditure (Fread-

man, 2008; Marcussen, 2011; Svensson et al., 2011; Thrane, Fastad, 2011). Again, when it comes to the number of visits to a destination (loyalty), different results have been reported. According to Brida and Scuderi (2013) the majority of studies reported that loyalty is not significantly related to expenditure, while studies by Craggs and Schofield (2009) and Downward and Lumsdon (2003) reported a significant relationship between the number of visits and tourist expenditure.

Finally, the last group of explanatory variables refers to psychographic ones, which include motivations, tourists' evaluation of different elements, psychological characteristics and taste (Wang, Davidson, 2010a). Many authors (e.g. Brida, Scuderi, 2013; Smolčić Jurdana, Soldić Frleta, 2017; Wang et al., 2006) underlined that these variables are rarely included in the estimation models and emphasised the need for further research on the influence of psychographic variables on tourist expenditures.

3. Empirical research

The present research pools data obtained from a survey conducted via face to face interviews from January to December 2016 in Opatija and Rijeka, two neighbouring seaside Croatian tourist destinations. Respondents were individuals aged 18 or older who spent at least one night in one of these two destinations. The questionnaires were anonymous and offered in 4 languages. They gathered the socio-demographic profile of the respondents, the characteristics of their trip and stay as well as information on the level and structure of their expenditure in the destination. The sample consisted of 1,249 usable questionnaires; however, for the purpose of this paper, only questionnaires filled by respondents staying in hotels or private accommodation have been used. Thus, a total of 984 questionnaires were used for the analyses. Descriptive analysis was used for sample profiling, and one-way analysis of variance, ANOVA, was conducted to determine significant differences between hotel and private accommodation guests in terms of their socio-demographic and trip characteristics as well in terms of their expenditure. Finally, multiple regression analyses were conducted to identify the expenditure determinants for both groups of respondents.

A stratified random sampling method was applied in selecting a sample using the period of the visit (month), the destination where respondents were staying (Rijeka or Opatija), the respondents' origin, and the type of accommodation. According to the Croatian Bureau of Statistics (2017)[3], the majority of tourist arrivals in Rijeka and the Opatija Riviera in 2015 occurred in the period between early June and late September (59%). Given the evident seasonality of tourism demand, arrivals from June to September were considered as being high-season flows. Hence, almost 53% of the total sample relates to those respondents staying in the destination during the season (Table 1). On the other hand, arrivals occurring in the period from January to May and those occurring at the end of the year (from October to December) accounted for 27% and 20%, respectively, of the total sample.

As far as tourist origin is considered, foreign tourists accounted for 84% of total arrivals in Rijeka and Opatija (Croatian Bureau of Statistics, 2017)[4]. In this survey, foreign tourists accounted for 82.4% of the total sample (Table 1). In addition, as Opatija recorded a higher number of arrivals in 2016 in comparison with Rijeka (Croatian Bureau of Statistics, 2017)[5], the majority of the respondents stayed in Opatija (70.7% of the total sample) (Table 1).

Table 1 Sample characteristics (N= 984)

Characteristic	No. of respondents	%	Characteristic	No. of respondents	%
Season			**Accommodation**		
January - May	*267*	*27.1*	*Hotel*	*699*	*71.0*
June - September	*515*	*52.4*	*Private accommodation*	*285*	*29.0*
October – December	*202*	*20.5*			
Origin			**Destination**		
Domestic	*173*	*17.6*	*Opatija*	*696*	*70.7*
Foreign	*811*	*82.4*	*Rijeka*	*288*	*29.3*

Source: Authors

For the purpose of this paper, the sample was divided into two groups of respondents, those staying in private accommodation (29% of the total sample) and those staying in hotels (71% of the total sample) (Table 1).

Table 2 Sociodemographic profiles of respondents and characteristics of their stay in the destination

Characteristic	Hotel N=699	Private* N=285	F Sig.	Characteristic	Hotel N=699	Private* N=285	F Sig.
	%				%		
Gender			*F=0.148*	**Season**			*F=0.814*
Male	*43.9*	*45.3*	*0.701*	*January - May*	*26.9*	*27.7*	*0.367*
Female	*56.1*	*54.7*		*June - September*	*54.1*	*48.1*	
Age			*F=13.022*	*October - December*	*19.0*	*24.2*	
18 - 25	*7.2*	*13.7*	*0.000*	**Number of visit**			*F=0.016*
26-35	*24.2*	*28.5*		*First visit*	*3.0*	*3.2*	*0.899*
36-45	*25.6*	*23.9*		*Repeat visit*	*97.0*	*96.8*	
46-55	*22.9*	*19.4*		**Mode of transportation**			*F=2.460*
56-65	*14.2*	*10.2*		*Car*	*54.6*	*69.8*	*0.117*
66 and more	*5.9*	*4.2*		*Bus*	*33.8*	*18.2*	
Educational level			*F=0.899*	*Train*	*2.3*	*2.8*	
Elementary school	*1.0*	*.7*	*0.343*	*Boat*	*0.4*	*0.7*	
High school	*34.1*	*42.8*		*Plane*	*8.2*	*8.1*	
College	*35.4*	*25.3*		*Motorbike*	*0.7*	*0.4*	
University degree	*29.2*	*30.2*		**Trip organisation**			*F=100.971*
Other	*0.3*	*1.1*		*Individually*	*61.1*	*91.9*	*0.000*
Monthly family income			*F=2.614*	*Package tour*	*38.9*	*8.1*	
Up to 500 €	*2.3*	*3.9*	*0.106*	**Traveling group type**			*F=14.778*
501 – 1.000 €	*10.2*	*13.7*		*alone*	*15.7*	*8.8*	*0.000*
1,001 – 1,500 €	*20.6*	*17.9*		*with partner*	*42.1*	*31.2*	
1,501 – 2,000 €	*20.0*	*19.6*		*with family members*	*27.2*	*37.9*	
2,001 – 2,500 €	*14.4*	*18.6*		*with friends/acquaintances*	*11.2*	*21.4*	
2,501 – 3,000 €	*13.3*	*11.2*		*with associates*	*3.9*	*0.7*	
3,001 – 3,500 €	*11.3*	*7.0*		**Intention to return**			*F=3.426*
3,500 € and more	*7.9*	*8.1*		*No*	*8.3*	*4.9*	*0.064*
Origin			*F=5.688*	*Yes*	*91.7*	*95.1*	
Domestic	*15.7*	*22.1*	*0.017*	**Intention to recommend**			*F=0.155*
Foreign	*84.3*	*77.9*		*No*	*3.3*	*2.8*	*0.694*
Destination			*F=4.414*	*Yes*	*96.7*	*97.2*	
Opatija	*72.7*	*66.0*	*0.036*				
Rijeka	*27.3*	*34.0*					

*Note: *private accommodation guests.*
Source: Authors

The results of one-way analyses of variance (ANOVA) indicate that age, tourist origin (domestic or foreign), destination (Opatija or Rijeka), type of trip organisation (individual or package trip) and traveling group type differed significantly across the two segments. However, no statistical significance at the 0.05 level was found for the rest of the respondents' characteristics (Table 2).

As shown in Table 2, the sample of hotel guests and private accommodation guests is balanced in terms of gender and number of visits. The results indicate that there is a significant difference in age between the two groups of respondents. The average age of hotel and private accommodation guests is 43 and 40, respectively. Fully 43% of hotel guests and 33% of private accommodation guests are older than 45. In terms of education level, there is no statistically significant difference between samples. As far as hotel guests are concerned, the majority of them (35.4%) hold a college degree while the majority of private accommodation guests (42.8%) hold a high school degree.

Results indicate that the majority of respondents (in both samples) have a family monthly income of 1001 - 2000€, although 19.2% of hotel guests and 18.1% of private accommodation guests have a family monthly income higher than 3001€. As expected, both samples (hotel guests and private accommodation guests) comprise a considerable number of foreign tourists, (84.3% and 77.9%, respectively). However, there is a statistically significant difference in terms of respondent origin between the groups. As far as destination is concerned, the majority of hotel guests chose to stay in Opatija (72.7%), while only 66.0% of private accommodation guests stayed in Opatija. In both cases, the majority of respondents stayed in the destination during the peak season (54.1% and 48.1% of hotel guests and private accommodation guests, respectively).

As Table 2 also indicates, 54.6% of hotel guests and 69.8% of private accommodation guests came to the destination by car. However, when it comes to type of organisation there is a statistically significant difference between the two groups. The vast majority of private accommodation guests (91.9%) and only 61.1% of hotel guests have individually organised their trips. As far as travelling group type is considered, the majority of hotel guests are traveling with a partner (42.1%), while the majority of private accommodation guests are traveling with family members (37.9%).

In both cases (hotel and private accommodation guests), respondents stated that they have an intention to return (91.75% and 95.1%, respectively) as well as to recommend the destination to others (96.7% and 97.2%, respectively) (Table 2).

Results also showed that there is a statistically significant difference between hotel and private accommodation guests in terms of their length of stay ($F=11.367$, $p=0.001$). Hotel guests spend less days in the destination since their average length of stay is 5.3 days in comparison with private accommodation guests who spend 6.6 days. In addition, results show that for both hotel and private accommodation guests, the main reasons for visiting Rijeka and Opatija are rest and recreation (indicated by 23.5% and 22.9% of hotel and private accommodation guests, respectively) or fun and new experiences (27.7% and 29.1%, respectively).

Table 3 summarises the expenditures of hotel guests and private accommodation guests. It has to be noted that respondents were asked to express only the expenditure that occurred in the destination. Accordingly, the total expenditure per stay per person does not comprise the traveling costs to and from the destination. It should also be noted that there are cases where respondents reported zero expenditure for one or more expenditure categories because of not spending money on the specific category. Thus, as suggested by Stynes and White (2006), blank responses were treated as zero spending in this study if the respondent reported positive spending in at least one other category.

Table 3 The expenditure structure of hotel and private accommodation guests (€)

Expenditure categories per person per stay (€)	Hotel guests N=695	Private accommodation guests N=285	F Sig.
Accommodation	*338.9*	*147.4*	*F=53.128 0.000*
Food and beverages	*72.0*	*107.2*	*F=17.141 0.000*
Entertainment and culture	*21.8*	*34.2*	*F=16.681 0.000*
Sport and recreation	*5.4*	*7.6*	*F=3.183 0.075*
Shopping	*41.9*	*57.0*	*F=9.573 0.002*
Excursions	*13.5*	*19.5*	*F=6.691 0.010*
Other products and services	*11.2*	*15.4*	*F=2.036 0.154*
Total expenditure	*504.7*	*388.0*	*F=13.265 0.000*

Source: Authors

As Table 3 indicates, hotel guests on average spent more during their stay in the destination per person (504.7€) in comparison with private accommodation guests (388.0€). Besides the total expenditure per person per stay, a statistically significant difference between the groups was also found in five out of seven expenditure categories (expenditure on accommodation, food and beverages, entertainment and culture, shopping and excursions). On the other hand, there is no statistically significant difference in terms of the respondents' expenditures on sport and recreation and other services between the groups.

In terms of expenditure structure, in both groups (hotel and private accommodation guests), the largest portion of expenditure refers to expenditure on accommodation (67.2% and 38.0%, respectively) and expenditure on food and beverages outside the accommodation facilities (14.3% and 27.6%, respectively). In both cases, the smallest amount of money is spent on sport and recreation, only 1.1% of the budget of the hotel guests and only 1.9% of the private accommodation guests' budget (Table 3). Due to the fact that a statistically significant difference in the total expenditure per stay per person between the hotel and private accommodation guests was found, further analyses were conducted to find the expenditure determinants of both groups of respondents.

4. Regression models

For the purpose of finding out what factors influence the expenditure of hotel and private accommodation guests, multivariate regression analyses were performed. In keeping with recommended econometric practice (Disegna, Osti, 2016; Downward, Lumsdon, 2003; Thrane, 2014; 2016), in this study the expenditures were logarithmically transformed.

As Marcussen (2011) recommended, the length of stay, type of accommodation, travel party size, type of destination, packaging, transportation mode, household income, nationality, activities, and respondents' age should be part of the set of relevant predictors of tourist expenditure. Thrane (2014) underlined that a regression model aimed at explaining variance in tourist expenditures should incorporate most of these variables and perhaps add a few extra. Thus, following the recommendations of Marcussen (2011) and later of Thrane (2014), both models in this study include educational level, average monthly household income, trip organisation (individually organised or not), length of stay, past behaviour (first visit or not), age, origin (domestic or foreign), period when tourists spent their time in the destination (season or offseason), destination (Opatija Riviera or Rijeka), traveling group type (traveling single/pair or in group) and transportation mode as explanatory variables.

Table 4 Regression model 1: Factors affecting the hotel guests' expenditures

Variables	Unstandardized Coefficients		Collinearity Statistics	
	B	Std. Error	Tolerance	VIF
(Constant)	5.056	.171		
Educational level	-.087**	.028	.799	1.251
Average monthly household income	.089***	.013	.758	1.319
Trip organisation (0 – individually; 1- organised)	.094*	.050	.740	1.352
Length of stay	.097***	.005	.968	1.033
Past behaviour (0 – first, 1 – repeat visitor)	.341**	.125	.966	1.035
Age	-.044**	.017	.849	1.178
Origin (0 – domestic, 1 – foreign)	.122**	.061	.886	1.129
Season (0 – season; 1 – offseason)	.028	.044	.926	1.080
Destination (0 – Opatija Riviera, 1 – Rijeka)	-.076	.048	.956	1.046
Traveling group type (0 - single and pair, 1 - group)	-.083*	.043	.972	1.029
Transportation mode (0 – car, 1 – other)	-.134**	.049	.723	1.384

*Note: R2 = 0.423; F(11, 685) = 45.596; p < 0.001; Dependent variable: log tourist expenditure of hotel guests per person, per stay; VIF - variance inflation factors; *Significant at 10%; **Significant at 5%; ***Significant at 1%*
Source: Authors

Tables 4 and 5 summarise the results of the OLS regression analysis in which the natural logarithms of the hotel guests' (Table 4) and private accommodation guests' (Table 5) total expenditure serve as the dependent variables. Davidson (2010a) pointed out that many studies reported low R^2 or adjusted R^2 value, and that in some cases independent variables included in the analyses accounted for no more than 20% of the variance in expenditures. However, Thrane (2014) underlined that when it comes to R^2 values, a model that explains less than 30% of the variance in expenditures will most likely yield unreliable results due to the omission of one or several relevant independent variables.

Table 5 Regression model 2: Factors affecting the private accommodation guests' expenditures

Variables	Unstandardized Coefficients		Collinearity Statistics	
	B	Std. Error	Tolerance	VIF
(Constant)	5.152	.230	.862	1.160
Educational level	-.005	.034	.699	1.430
Average monthly household income	.058***	.018	.961	1.041
Trip organisation (0 – individually; 1- organised)	.212**	.103	.861	1.161
Length of stay	.044***	.004	.938	1.066
Past behaviour (0 – first, 1 – repeat visitor)	.047	.163	.792	1.263
Age	.030	.023	.797	1.255
Origin (0 – domestic, 1 – foreign)	-.027	.075	.796	1.256
Season (0 – season; 1 – offseason)	.083	.062	.923	1.084
Destination (0 – Opatija Riviera, 1 – Rijeka)	-.208***	.061	.957	1.045
Traveling group type (0 - single and pair, 1 - group)	-.100*	.058	.844	1.185
Transportation mode (0 – car, 1 – other)	.054	.066	.862	1.160

*Note: R2 = 0.423; F(11, 685) = 45.596; p < 0.001; Dependent variable: log tourist expenditure of hotel guests per person, per stay; VIF - variance inflation factors; *Significant at 10%; **Significant at 5%; ***Significant at 1%*
Source: Authors

As seen in Table 4, the first model in this study explains 42.3% of total hotel guests' expenditure in the destination (R^2 = 0.423; F(11, 685) = 45.596; p < 0.001). The second model also has high explanatory power since the variables in the model explain 44.9% of the variance in private accommodation guests' expenditures (R^2= 0.449; F(11, 272) =20.123; p < 0.001) (Table 5).

In the case of hotel guests, the OLS results showed that nine out of eleven variables turned out to be significant predictors of their expenditure in the destination (Table 4). On the other hand, in the case of private accommodation guests, only six independent variables are found to be significant predictors of their total expenditure in the destination (Table 5).

As many authors previously reported (e.g. Brida, Scuderi, 2013; García-Sánchez et al., 2013; Marrocu et al., 2015; Thrane, 2014; 2016), the results in this study also confirm that monthly household income significantly contributes to the variance in expenditures in the case of hotel guests and private accommodation guests. As expected, length of stay has also been confirmed as a significant predictor of both hotel guests' and private accommodation guests' total expenditure in the destination, indicating that the longer the stay, the higher the total expenditure in the destination. In support of the results, many other studies have also demonstrated the positive relation between length of stay and tourist expenditure (e.g. Chen, Chang, 2012; Downward, Lumsdon, 2003; Fredman, 2008; Kim et al., 2008; Laesser, Crouch, 2006; Wang et al., 2006).

Furthermore, in both models, it was found that respondents who individually organised their trip tended to spend less in comparison with those who organised their trip through a travel agency. This could be explained by the fact that the respondents who used package tours paid for part of the products and services in advance and thus had more money in hand for spending in the destination. A similar result was reported by Lehto et al. (2004) who found that package tourists outspent independent travellers in shopping.

In the case of hotel guests and private accommodation guests, those respondents traveling solo or with a partner tend to spend more in the destination than those traveling with family members, friends or associates (Tables 4 and 5). These results are similar to those of Barquet et al. (2011) and Kruger et al. (2009) who reported that those who travel in small groups tend to spend more in comparison with those who are traveling in a larger group. The results of this study provide information that could be useful for destination management and marketers in their activities connected to the planning of future destination products that should be more directed to, and tailored for, singles and couples, due to the fact that they spend more in both cases, as hotel guests and private accommodation guests.

In addition to the four previously mentioned explanatory variables, five more variables have been proved to be statistically significant predictors of hotel guests' expenditure in the destination (educational level, past behaviour, age, origin and transportation mode) (Table 5). The results show that hotel guests with a lower educational level tend to spend more in the destination in comparison with those who have a higher level of education, as reported earlier by Legoherel and Wong (2006). When it comes to the origin of the respondents, the results indicate that foreign hotel guests tend to spend more than domestic ones. Several authors have reported that the nationality variable affects tourist expenditures (Marrocu et al., 2015; Serra et al., 2015; Thrane, Farstad, 2012). It was also found that younger hotel guests spend more than older ones. This is in line with the existing literature and was found earlier by Mundambi and Baum (1997) and Wang et al. (2006). In addition, results indicate that the hotel guests who come by car spend more in the destination in comparison with others who use some other transportation mode. Similar results were reported by Kim et al. (2008) and Svensson et al. (2011). In the case of hotel guests, it was found that repeaters spend more in the destination than first-time visitors. This result was also found earlier by Marcussen (2011) and Saayman and Saayman (2009).

Results also indicate that private accommodation guests staying in the Opatija Riviera tend to spend more than those staying in Rijeka (Table 4), but on the other hand the destination was not found to be a statistically significant predictor of hotel guests' expenditure (Table 5).

An interesting finding was the one referring to the season of visit. In both cases (hotel and private accommodation guests), the season was not found to be a significant predictor of expenditure. These results confirm that the destinations are offering quality tourism products during the whole year and that the destination managements' efforts in enhancing the quality and diversity of the tourism offering of these destinations are recognised.

5. *Conclusions and further research*

The results of this study support the notion that tourist expenditure level is highly relevant for tour-

ism destination development (Craggs, Schofield, 2009; Fredman, 2008; Legohérel, Wong, 2006). In line with other studies and as seen from the results of this study as well, tourists staying in hotels spend more in the destination than other tourists. Because of the large portion of private accommodation guests, it is important to investigate the determinants of their expenditure in order to find ways of increasing it. The main findings indicate that there is a statistically significant difference in expenditure levels between hotel guests (504.70€ per person per stay) and guests staying in private accommodation (388.00€ per person per stay). Moreover, income, length of stay, trip organisation and traveling group have proven to be significant predictors of expenditure in the destination for both groups. However, it was found that the two groups differ with regard to other expenditure predictors. When it comes to private accommodation guests, it was found that their expenditure levels were influenced by the destination where they were staying (Opatija or Rijeka). In the case of hotel guests, the results revealed that educational level, age, origin, transportation mode and loyalty to the destination turned out to be statistically significant predictors of their total expenditure in the destination. It has to be underlined that, in this study, hotel guests stayed in the destination significantly shorter while their expenditure level was significantly higher in comparison with private accommodation guests. This is a clear sign to the management of these two destinations that when planning future accommodation facilities it is essential to take into consideration the fact that private accommodation accounts for a large portion of the current accommodation structure.

This study covers some gaps in the research on tourism demand in Mediterranean destinations. Although the attitudes and expenditures of tourists during summer months are well researched, very little attention has been given to the study of all-year-round tourism demand despite the ever-present seasonality issue. Thus, this research especially contributes to filling this gap in terms of sociodemographic tourist profile, tourist behaviour during their stay and tourist expenditures during the whole year. Moreover, the study separately assesses the level and structure of tourist expenditures of hotel guests and private guests. In addition, it reveals the determinants of their expenditure in the destination and identifies those guests who may be considered as having the highest economic value for the destination. Thus, the results of this survey are highly important for destination managers and marketers and can help them to maximize the economic and social benefits of tourism by focusing their resources more efficiently on those tourists who are likely to bring the most benefits to the local community and economy. The results should be used by management and marketers in terms of tailoring tourism products for the singles and couples, due to the fact that they are spending more, as hotel guests and private accommodation guests. Furthermore, destination products should be more appealing to the younger hotel guests since they tend to spend more in the destination than others. In addition, in the expenditure structure of both, hotel and private accommodation guests, the largest portion of expenditure refers to expenditure on accommodation and on food and beverages. However, expenditures on other products and services (i.e. shopping, entertainment, excursions, culture, sport and recreation) are moderate. Thus, in order to increase the expenditure levels, other segments of tourism offering need to be enhanced, they need to be more innovative, authentic and with the greater possibilities of tourists' active participation. This could stimulate both, hotel and private accommodation guests' expenditures.

The main limitation of this study is the fact that it was restricted to Rijeka and the Opatija Riviera. Thus, for generalization purposes, future research should be enhanced by including different destinations and comparing the level, structure and determinants of tourists' expenditures between destinations. For a more complete picture, more variables could be included in the OLS models, especially those referring to the tourists' psychological characteristics (i.e. motivations, activities undertaken in the destination, tourists' attitudes, etc.) because of their scarce use in the literature (Brida and Scuderi, 2013). Despite the limitations, the study results have implications for decision-makers in tourism in terms of future effective resource allocation and market segmentation and in terms of better understanding tourist expenditure patterns.

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UVID U POTROŠNJU HOTELSKIH GOSTIJU I GOSTIJU KOJI BORAVE PRIVATNOM SMJEŠTAJU

Sažetak

Svrha je ovog rada analiza visine i strukture turističke potrošnje hotelskih gostiju i gostiju koji borave u privatnom smještaju. Pored navedenoga, cilj je bio utvrditi čimbenike koji utječu na njihovu razinu turističke potrošnje. Rezultati se temelje na istraživanju provedenom u Opatiji i Rijeci, dvjema susjednim hrvatskim destinacijama, u razdoblju od siječnja do prosinca 2016. godine. Uzorak čini 984 ispitanika podijeljenih u dvije skupine. Prvu skupinu čine oni koji borave u privatnom smještaju, a drugu oni koji borave u hotelima. Za profiliranje uzorka korištena je deskriptivna analiza, dok je analiza varijance (ANOVA) provedena kako bi se utvrdila eventualna postojanost značajnih razlika između hotelskih gostiju i onih koji borave u privatnom smještaju u smislu njihovih socio-demografskih obilježja, obilježja putovanja i boravka, kao i njihove razine i strukture turističke potrošnje. Naposljetku su provedene dvije višestruke regresijske analize kako bi se identificirale determinante turističke potrošnje za obje skupine ispitanika.

Rezultati ukazuju na postojanost statistički značajne razlike u razinama potrošnje između hotelskih gostiju i onih gostiju koji borave u privatnom smještaju. Nadalje, prihodi, duljina boravka, organizacija putovanja i tip grupe koja putuje zajedno pokazali su se kao značajni prediktori potrošnje u destinaciji kod obiju skupina. Istovremeno je utvrđeno da se dvije skupine razlikuju s obzirom na niz drugih prediktora turističke potrošnje.

Ključne riječi: turistička potrošnja, odrednice potrošnje, privatni smještaj, hotelski gosti

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THE IMPORTANCE OF CORPORATE BRANDS FOR DECISION MAKING IN THE BUSINESS-TO-BUSINESS CONTEXT

Abstract

The purpose of this paper is to provide a deeper understanding of the importance of the corporate brand for the business-to-business (B2B) context, specifically concerning the buyer and supplier decision-making processes. The paper provides a literature review on tangible and intangible brand attributes, as well as their influence on perceived risks and emotions in decision making. The findings imply that business decision making is not solely rational, and that emotions matter a great deal. The conceptual framework thus presents the process of business decision making in which brand attributes play a focal role for both the buyer and supplier. Research implications include three aspects: the importance of corporate brands and their attributes for reducing a buyer´s perceived risks when choosing a new supplier, the role of corporate brands for strategies that suppliers are using when attracting potential buyers, and the effect of emotions on the mentioned processes. The paper offers a new comprehensive framework for studying decision-making in the B2B context and contributes to corporate branding and decision-making theory development.

Keywords: Corporate brands, tangible brand attributes, intangible brand attributes, business decision-making, emotions

1. Introduction

Business decision making is a complex and multi objective process. However, it is still often defined by microeconomic theorists as solely rational, assuming that in a competitive environment rational decision making is the best way of survival (Koporčić et al., 2015). The reason for this could be, for instance, the complexity of studying and conceptualizing human behaviour as simple and easy as that of the classical rational economic man (Simon, 1959). As the Nobel Prize winner in Economics from 1978, Dr. Herbert Simon argues: "The sketchiness and incompleteness of the newer proposals has been urged as a compelling reason for clinging to the older theories, however inadequate they are admitted to be" (Simon, 1959: 280).

The purpose of this paper is to study the decision-making processes in a business context, when companies are choosing new business partners. Starting with decision makers, we define them here as individuals or groups of individuals that represent companies and make business decisions on their behalf. Considering that individuals are humans that are dealing with millions of fragmented pieces of information at each moment, they have to select certain problem-solving paths in order to make a decision (Simon, 1959). One path that leads towards minimizing risks and dealing with uncertainty when choosing a new business partner is choosing companies with strong corporate brands (Webster, Keller, 2004), i.e. brands with superior brand attributes.

Although corporate brands have been widely researched and accepted in consumer markets, their importance for business studies are still insufficiently researched (Mudambi, 2002; Bengtsson, Servais, 2005; Sevedghorban et al., 2016). One of the reasons can be a belief that brand attributes and features of corporate brands are closely connected to emotional decision making and consumer purchasing (Bengtsson, Servais, 2005). However, recent studies in psychology, economics and sociology have indicated a growing interest in the connection between risks and emotions in business decision making, and raised the question whether any business action is even possible without addressing emotions (Zinn, 2006). Therefore, the paper furthermore aims to analyse both the buyers' and suppliers' perspectives on decision making, and answer the following: How can suppliers reduce the buyer´s perceived risks and trigger emotions through brand attributes? How can emotions influence the buyers´ decision-making?

The paper firstly presents a literature review on corporate brands and their significance in a business-to-business context. Secondly, it presents tangible and intangible brand attributes, their components and importance for the decision-making process. As a third section, the supplier´s perspective on brand attributes is elaborated, where perceived risks affect emotions from a buyer's side. Accordingly, the next section focuses on buyers and their perspective on brand attributes. The fifth section goes deeper into the understanding of perceived risks and emotions in decision making. The conceptual framework is furthermore developed and presented in section six as a new perspective on understanding decision making in a business context where emotions play an important role. Conclusions follow, together with implications for practitioners and academics. Limitations and future research suggestions are listed in the last section.

2. *The importance of corporate brands for the business world*

The corporate brand and its value for a company and related business actors have not received much attention from academics and practitioners in the past (Lynch, de Chernatony, 2007; Van Riel, de Mortanges, Streukens, 2005). Brands have mainly been studied in the business-to-consumer (B2C) context, with a focus on the product level and the end goal of creating momentous images in consumers' minds (Keller, 1993), with the purpose to influence consumer buying behaviour (Aaker, 1991; Mudambi, 2002). However, by moving from the product to the corporate brand level, brands started to be discussed in industrial markets as well. Corporate branding is thus defined as a set of different activities with a goal to coordinate and adjust various elements of an organization, instead of being focused on individual product offerings (Aaker, 2004; Hatch, Schultz, 2001). In other words, the aim of corporate branding is to brand the whole company, not just its individual products or services. The simplicity of having one brand provides cost control, which leads towards more financial benefits. Corporate branding can also be described as a: "systematically planned and implemented process of creating and maintaining a favourable reputation of the company with its constituent elements, by sending signals to stakeholders using the corporate brand" (Van Riel, 2001: 12). Constituent elements of a corporate brand can furthermore be understood as tangible and intangible brand attributes, which altogether present organizational values that other business actors can relate to (Balmer, 2001).

Suppliers use the corporate brand as a valuable resource of the company that provides a specific reputation in the network and attracts potential business partners (Balmer, Gray, 2003). As Balmer (2005) highlighted, a supplier`s attractiveness on the market is increasing through its corporate brand and specific brand-related offers, such as special product support, unique public profile, visual recognition and successful communication of core values. For buyers, the corporate brand can act as a risk reduction mechanism, especially in decision-making

situations of higher risks, such as choosing a new business partner (Kotler, Pfoertsch, 2006; Lynch, de Chernatony, 2007). In these situations, choosing a well-respected supplier can provide legitimacy and improve the buyer's reputation in the market in which he operates, as well as reduce the risk of engaging in a business relationship with the wrong partner (Mudambi, 2002). In order to understand corporate brands as multidimensional entities of a business environment, it is important to understand that their success in a business network also depends on a combination of tangible and intangible brand attributes (Mudambi, 2002; Mudambi et al., 1997). These combinations then have an influence on customer buying behaviour, i.e. the decision-making process, and at the same time on the supplier's reputation in the network of business actors (Harris, de Chernatony, 2001).

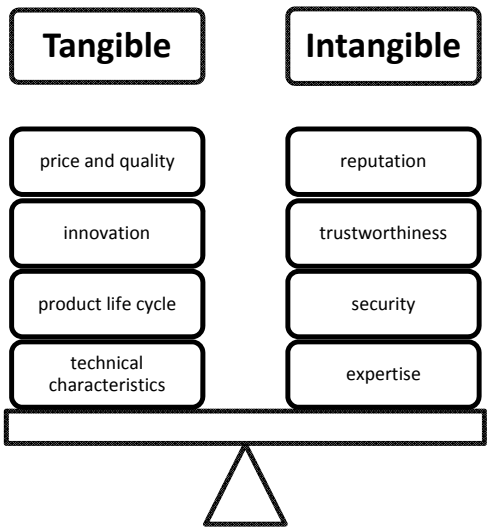
2.1 Tangible and intangible brand attributes

A lot of research has been done regarding tangible and intangible brand attributes, but their focus had been mostly on product and service branding (Bendixen, et al., 2004; Mudambi et al., 1997). This article focuses on a different, broader area, by analysing those attributes from the corporate brand perspective, which includes products and services, but also the corporation itself.

Academic literature is defining tangible attributes as brand offers that are physically presented and touchable, that can be measured, experienced and seen (Aaker, 1991; Bengtson, Servais, 2005; Mudambi et al., 1997). Tangible attributes include, among others, technical characteristics (Lehmann, O'Shaughnessy, 1974), price and quality (Aaker, 1991; Bengtson, Servais, 2005), reliability (Bendixen et al., 2004; Feldwick, 2002), product life cycle (Bendixen et al., 2004), innovation (Feldwick, 2002) and stability (Bendixen et al., 2004; Mudambi et al., 1997). In simple terms, these tangible elements are physically presented values of a corporate brand (Mudambi et al., 1997). However, in today's market where competition is higher than ever, products and services are constantly being improved. In these situations, tangible attributes of products, such as e.g. product technical specifications can easily be copied by competitors, and alone are no longer sufficient for winning competitive advantage (Lynch, de Chernatony, 2004).

Intangible brand attributes are therefore introduced, as more "elusive or visionary" (Oxford Reference Dictionary, cited in Mudambi et al., 1997: 438). They often hold an emotional element, even in a situation of "rational and systematic decision making" (Mudambi et al., 1997: 438). Components of intangible brand attributes, among others, include reputation (Bendixen et al., 2004; Keller, 1993; Lehmann, O'Shaughnessy, 1974; Low, Blois, 2002), non-product characteristics (Mudambi et al., 1997), ease of ordering, country of origin, pleasantness of personnel, emergency responses (Bendixen et al., 2004), expertise (Mudambi, 2002; Webster, Keller, 2004), security, empowerment (Feldwick, 2002), and trust and trustworthiness (Bendixen et al., 2004; Bengtson et al., 2005; Mudambi, 2002; Webster, Keller, 2004). These intangible attributes are difficult or almost impossible to imitate, and therefore offer a specific competitive advantage on the market.

Figure 1 Corporate brand attributes



Source: Authors

In order for a supplier to achieve competitiveness on the market, a balance, or a "perfect fit" of tangible and intangible brand attributes should be found (see Figure 1). In that way, the supplier will attract buyers, while investing an adequate amount of financial assets into brand attributes, which will then bring a positive return on investment. At the same time, a buyer will be attracted to a company that provides the best combination of brand attributes

that will satisfy the company´s needs. However, it is important to note the interconnections of these attributes. Taking the reputation of a company, as an example of intangible attributes, it has been perceived as an outcome of product quality, which is a tangible attribute (Mudambi et al., 1997). Trustworthiness is furthermore directly connected with the capabilities of a company and its innovations, and so on. To summarize, in order to attract loyal buyers and influence their decision making, a combination of tangible and intangible brand attributes is crucial. However, it is important to note that decision-making processes often embody certain risks, both for buyers and suppliers.

3. Perceived risk and emotions in decision making

The perceived risk can be defined as a subjective assumption or expectation of a loss (Stone, Gronhaug, 1993). It can occur both at the organizational and personal level, together with different types of risk for each level (Brooker, 1983). The organizational or non-personal level of perceived risk is divided into financial, performance, physical and time risks (Brooker, 1983). These risks are likely to occur when:

i) the company needs a completely new product whose characteristics have not been tested in its environment by now;

ii) the quality of a service is unknown, or the product's performance is uncertain;

iii) the technology of a new product is complex;

iv) the price is higher than the competitors';

v) the importance of a single purchase is high.

From these examples, as well as from research on business decision-making, it has been demonstrated that risks are directly connected with tangible and intangible brand attributes. For instance, a loss of the company's financial assets appears if the tangible characteristics of a product are non-functional, or the product gets broken and needs to be replaced, repaired or refunded. A loss can also occur when a product is not performing as expected or when intangible brand attributes did not fulfil the buyer's expectations (ibid.).

A personal level of perceived risk consists of psychological and social risks (Brooker, 1983). They are likely to appear when the buyer has little or no experience with product brands, or corporate brand in general, and can result in the risk of losing a job; the risk of getting a poor personal reputation in and outside of a company; or the risk of losing business network connections. For a supplier, similar personal risks appear that are related to the risk of losing a job if inadequate sales have been made, or the risk of a poor reputation, among others.

No matter how formal systems of companies are, or how hard individuals try to act in a rational way, buyers and suppliers will be influenced both by organizational and personal values, as well as perceived risks while making decisions or influencing them (Anderson, Narus, 1999). Furthermore, emotions will shape, handle, improve, defend or dismiss processes and procedures inside of a company (Fineman, 2003). Considering that the future is often times uncertain and unpredictable, it has been argued that business expectations are better defined as the hopes and imagination of the next flow of business events, rather than completely rational calculations (Zinn, 2006). Throughout this, emotions are coming deeper into focus, as an outcome of rational and non-rational brand strategies. Tähtinen and Blois (2011: 907) in their article conclude the same: "… human decision making and actions are embedded in emotions and therefore cannot be meaningfully separated". In fact, recent studies in psychology, economics and sociology have indicated a growing concern in connection between risks and emotions, and raised the question whether any business action is even possible without addressing emotions (Zinn, 2006). Even though emotions in the decision-making process are widely researched in consumer marketing, they have been less accepted in business markets (Lynch, de Chernatony, 2004). One of the reasons lies in the portrait of the rational economic man, illustrated by Bengtsson and Servais (2005: 709): "Oftentimes industrial purchasers are portrayed as rational and profit maximizing who do not let themselves to be seduced by something as fuzzy and un-rational as brand images" (Bengtsson, Servais, 2005: 709). In general, rationality in the decision-making process has often been defined as something positive, while emotions as something completely negative (Zinn, 2006).

Furthermore, emotions are hard to define and even more difficult to study (Plutchik, 2001). There are more than 90 different definitions and many different theoretical perspectives of emotions suggested, but still little understanding of the concept and

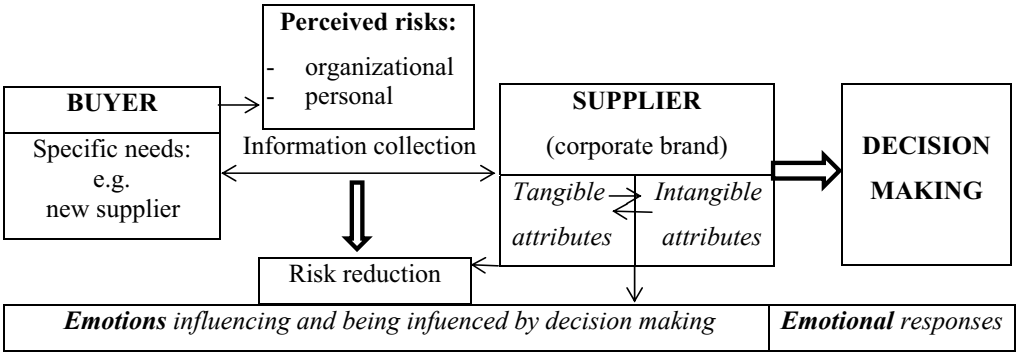
its meaning for specific situations (ibid.). Various theories of emotions have emerged over the years (e.g. Stewart et al., 2007): physiological theories of emotion where emotions appear as involuntary biochemical processes (James, 1884); dimensional theories where emotions are simplified and categorised in common dimensions (e.g. Mehrabian, Russel, 1974); theory of facial expressions (Darwin, 1998); attribution theory in which causal factors provoke emotions (e.g. Weiner, 1986); appraisal theory where the focus is on individuals and their reactions on environment (Ekman, Davidson, 1994); and theories of basic emotions, which are focused on discrete emotions natural to all people and expressed subjectively (Plutchik, 1980).

Based on the scope and focus of this article, theories of basic emotions (e.g. Plutchik, 2001) are found as most appropriate for providing a substantial explanation of the phenomenon under investigation. Business literature (e.g. Bagozzi, 2006) however, is using the same set of discrete emotions, namely: joy, anger, fear and sadness, but supplementing them with goal-directed emotions, such as pride, anxiety, frustration, guilt, shame and disappointment. These emotions together present the outcome of achieving or failing to achieve a specific business goal. They are present both before and after a decision has been made. These emotions are natural to all people, but experienced individually based on subjective response patterns (Stewart et al., 2007). As Plutchik (2001: 347) stated: "Emotions are not simply linear events, but rather are feedback processes. The function of emotion is to restore the individual to a state of equilibrium when unexpected or unusual events create disequilibrium." Once again, it is important to be reminded that emotions in business decision-making are results of individual actions, in which human actors are evaluating business events based on their position and role in companies, as well as on personal thoughts and experiences (Bagozzi, 2006; Lynch, de Chernatony, 2004; 2007). In other words, individuals are led by their personal needs and emotions, while at the same time trying to fulfil their company's goals (Webster, Keller, 2004).

4. Conceptualizing decision making in the business-to-business context

Decision makers are only human, and will continue to act as such even during working hours (McPhee, 2002). The decision-making process (see Figure 2) is therefore a complex situation for both buyers and suppliers. When a buyer has the need for a new supplier, with whom he or she has no previous experience, perceived risks will occur. In order to reduce those risks, decision makers can evaluate potential suppliers based on their tangible and intangible brand attributes. It is important to note that companies which are operating in different industries or markets have different combinations of brand attributes. However, collected information on a specific supplier can serve as a risk and uncertainty reduction mechanism.

Figure 2 Process of business decision making



Source: Authors

Moreover, while making a decision, buyers will not only be concerned about organizational benefits and the future performance of a company, but they will also focus on their personal reputation and psychological security (Davis et al., 2008; Gomes et al., 2016). "In this sense, industrial buying decisions

may be both rational and emotional, as they serve both the organization and the individual´s needs, even if the former takes precedence over the later" (Gomes et al., 2016: 195). We partly agree with Gomes et al. (2016), but would like to highlight that organizational and individual needs are not strictly divided as rational vs. emotional, but instead they are mutually interconnected and influence each other through the decision-making processes.

Additionally, research on business decision making demonstrated the influence of corporate brands and their attributes on emotions (Bengtsson, Servais, 2005). This leads toward the conclusion that in supposedly rational business decisions, emotions are valuable factors which can sometimes play the biggest role in the process (Bennet et al., 2005). Even when a decision is made by organizational buying centres, it is never solely rational, because of different motivation, expectations and levels of experience between individual decision makers (Riezebos, 2003). In a situation where perceived risks are high, emotions such as fear and anxiety will arise, based on consequences both on the company and individual level. However, after a decision has been made, emotions appear as well, such as pride, guilt, shame or anger, as a response to a good or bad business deal. Pride, for example, can be described as a key positive emotion of decision making, and a result of a good business deal. However, if it grows too high, it can have some negative consequences for the working environment. Negative emotions, such as anxiety or shame, on the other hand, can sometimes have a positive influence on the decision maker, in terms of adapting to changing environments and trying harder (Bagozzi, 2006). Guilt furthermore appears after a bad business deal caused by e.g. the wrong evaluation of a business partner, or the lack of suitable information for decision making. Also, anger is often triggered as a result of blaming others for certain negative outcomes. These emotional responses are the outcome of decision-making processes, and at the same time the results of a certain combination of brand attributes. Therefore, it can be concluded that emotions are embedded in and are results of every decision-making process, no matter if it is on a business or consumer level.

4.1 The buyers' perspective on decision making

Literature on industrial buyers and their purchases often indicated that the decision-making process is done by the rational economic man (Doyle, 1998: 1), i.e. rational and objective, well trained professionals. A completely rational process is defined as:

However, it is seldom possible to achieve full rationality, based on the fact that buyers often have access only to limited information, especially in a situation of selecting a new supplier (Glynn, 2012). Other than that, reviewing all possible alternatives is also far from reality, because it would take a lot of time, which often decision makers do not have. Limited resources will therefore allow tangible and intangible brand attributes to function as a substitute. In other words, corporate brands through their attributes will function as a mechanism for reducing an information overload and will lead towards easier decision making (Zablah et al., 2010). Being associated with a respected supplier can furthermore increase the confidence of a buyer, and influence the decision-making process (Low, Blois, 2002; Mudambi, 2002).

A corporate reputation, as an intangible attribute can for instance guarantee against poor product or service performance and reduce a business risk and time that would be spent in selecting alternatives (Balmer, Gray, 2003; Glynn, 2012). Ease of ordering, pleasantness of personnel and emergency responses will have an impact on decision making by providing an additional value, above technical specifications. Even though the price, quality and product life can influence a decision, these tangible attributes are often not enough without the added value of intangible attributes, especially in the situation of a new business task. The new task is defined as the need for a completely new product or service, or a new supplier (De Boer et al., 2001). Considering that there are no previous interactions or experience between the buyer and supplier, the decision-making process comes with a higher level of risks and uncertainty (Wu, Barnes, 2011). Risk is even higher when there is a large financial investment in a product or a new relationship, when the buyer is uncertain of their requirements and when the decision is complex and/or vital to the company's further production. Therefore, when choosing a new business partner, buyers can do certain activities for lowering the risks. Some of the examples include examination of:

a) External information about a supplier. The official web pages of a company and leaflet ads provide tangible brand information, such as the market share of a company, its

profitability, capabilities, price and quality of its products and services, as well as technical specifications. Blogs can be included in external information, by providing a mix of tangible and intangible attributes. Certain stories about buyers' experiences can provide insight into corporate and product characteristics and therefore lower risks in decision-making.

b) Third party sources. Financial data, business demographics, social and economic information provide a tangible description of a company. The focus here is on a corporate level, which can make decision making less risky.

c) The supplier's marketing communications. Suppliers are using various strategies to approach buyers from different industries and countries, but the focus is always on a balance between tangible and intangible attributes. They are for instance promoting the quality of their product in connection with their expertise and country of origin specifics. As a result, companies are affecting business buyers on both the rational and emotional level.

d) Word-of-mouth. In a business environment, word-of-mouth comes from companies that are already working with the supplier. These business references are important, especially while choosing a new business partner, because they vouch for the company's characteristics, provide trustworthiness and therefore act as a risk reduction mechanism.

e) Reputation and brand identity. These intangible brand attributes are results of the supplier´s good business relationships and general success on the market. This is associated with the buyer's image of the company, formed through e.g. meetings with company representatives and external tangible information. In other words, the reputation often gives a sign that the company has managed to find a balanced mix of brand attributes and earned its proxy for quality.

After all, it is important to note that the role of intangible attributes is far from being based on irrational behaviour connected with impulsive decision making, as was previously being thought. Instead, in a new task situation, where tangible attributes are mostly unknown based on lack of experience with a supplier, buyers are relying on intangible attributes (Malaval, 2001).

4.2 The supplier's perspective on decision making

Tangible and intangible brand attributes are an important part of the suppliers' business and corporate branding strategies. Having in mind that these attributes play a crucial role in the buyer's decision-making processes, suppliers need to find a way to manage them successfully and position themselves as attractive business partners on the markets where these firms operate (Mudambi et al., 1997). While buyers are using brand attributes to lower the perceived risk of a bad business decision, suppliers are using a mix of these attributes to provide them a very much needed risk reduction mechanism. Therefore, some of the following strategies are used by suppliers (Akaah, Korgaonkar, 1988):

a) Building and constantly rebuilding a reputation of the company in its market. Reputation, as an intangible attribute can be improved by constantly improving tangible brand attributes, such as technical specifications of products, quality of services, and by being an innovative and reliable supplier. Reputation can be found in the top four most important factors of business decision making, especially while choosing a new business partner (Roberts, Merrilees, 2007). Therefore, it can be concluded that business decision makers are more focused on the corporate brand reputation while making a decision, than on a single product reputation.

b) Providing product newness. This can be achieved by being innovative and continually improving tangible brand attributes, such as the quality and specifications of products and services. However, intangible attributes also play a role in this process, through the company's expertise, ambition, or emergency responses to buyers' requests. If a company is innovative and constantly improving its products and services, it gives an impression of a reliable and attractive supplier.

c) Promising a money-back guarantee and free samples for its buyers. Every company can experience problems with tangible brand offers at a certain point in time, but to avoid uncertainty and provide security, companies can offer a money-back guarantee and other related services to its customers.

d) Managing lower product costs. A constant improvement of tangible attributes such as production and product quality, capability and technical specifications can result in lowering product costs over time. Specializing in a certain area of production, providing better expertise or ease of ordering will therefore attract more buyers and provide a higher competitive advantage.

e) Seeking endorsement from a trusted person. As a risk reduction mechanism, a company can use the recommendation or endorsement from a close business partner, with whom it worked for a longer period of time. Endorsement is simultaneously based on the person's business and individual brand experience with a certain company.

f) Building and rebuilding a brand experience. In a business market, building a brand experience and providing a risk reduction mechanism for a buyer can only be successfully achieved by a combination of tangible and intangible brand attributes that are listed and discussed above. Without brand attributes, a company cannot provide a total brand experience, and without brand experience, suppliers will not be attractive on the market.

These strategies present possible business actions that suppliers are using to reduce buyers' perceived risk and to achieve a corporate and product brand loyalty, positive reputation, word-of-mouth, and repeated purchases (Roselius, 1971). As Lynch and de Chernatony (2004: 409) highlighted: "Competitors can match functions and features [tangible brand attributes of a company] but they just cannot easily match the promise and delivery of a personal, emotional and special experience [intangible brand attributes]". We furthermore believe that the right combination of tangible and intangible attributes will finally lead towards the supplier´s superior competitive advantage on the market.

5. Conclusions

Business decision-making is a complex process in which buyers are trying to make business decisions which will best influence their companies and them as individuals. Suppliers are trying to affect those decisions by constantly improving the combination of tangible and intangible attributes of their corporate brands. A strong corporate brand will bring a price premium, attract buyers and generate demand, enhance the corporate reputation on the market, and create brand loyalty (Low, Blois, 2002; Glynn, 2012; Gomes et al., 2016). For buyers, brand attributes will serve as a risk reduction mechanism and provide confidence in the decision-making process (Mudambi, 2002; Glynn, 2012; Lynch, de Chernatony, 2004). The more complex the decision making is and the more organizational and personal risks there are, the stronger the influence of the brand attributes.

Business decisions should lead towards beneficial and valuable results for a buying company, but at the same time provide personal growth and success for a decision maker. Therefore, this process is influenced by both basic and goal directed emotions. As Kotler and Pfoertsch (2006: 58) highlight: "While reason does lead us to conclusions, emotions are the ones that lead to action". By analysing the influence of tangible and intangible brand attributes on emotions in decision making and by providing a conceptual framework, this paper contributes to corporate branding and decision-making theory development. Besides that, most research on business brands have been focusing only on the suppliers´ perspective, with a limited number of studies looking at the buyers' side (Gomes, 2016). By conceptually analysing both perspectives, the paper provides a complete picture and broader view on the process at hand.

In managerial terms, the paper provides tools for buyers and suppliers to deal with the complexity of business decision making. It contributes to understanding how and why brand attributes are important for choosing a new supplier, or being chosen as such. Also, the paper provides a novel perspective on emotions, in which they are not conceptualized and understood as impulsive responses based on personal thoughts and feelings. Instead, emotions are a natural part of the business world and they do not need to be avoided or restricted, but understood and managed accordingly.

5.1 Future research suggestions

The paper has a number of future research suggestions. First, it is important to acknowledge that corporate brands and brand attributes are not equally important for all buyers and in all decision-making situations (Mudambi, 2002). Therefore, empirical research is needed in order to identify the influence of brand attributes on different decision-making situations, based on the types of buyer and supplier companies, as well as different industries in which they operate. This furthermore relates to the size of a company. Based on the research of Zablah et al. (2010), small and medium-sized enterprises (SMEs) often rely more on brand attributes for overcoming their liabilities, such as the lack of resources or business contacts.

Second, it is important to highlight the influence of perceived risks on the decision-making processes. The relevance of brand attributes and emotions is the most expressed and influential in situations of high risks, where for instance no previous experience with the products or the company existed in the past. The opposite situation is presented through a re-buy situation, which then leads towards lower perceived risks, considering that companies are using the same supplier and products that have been previously tested. That usually means that companies are already engaged in a business relationship, in which emotions are interrelated with corporate brands but also with personal bonds and connections between individuals. Therefore, as future research it would be interesting to study re-buy situations and possible correlations as well as transitions of emotions from brand attributes towards personal bonds.

As third, the concept of time and phases of decision making should be mentioned. As discussed by Blomäck and Axelsson (2007), the relevance of brand attributes is different in each phase of decision making. In the study of Gomes et al. (2016) about the brand relevance in a business service purchasing context, the focus was on the last phase of the decision-making process, where delivery and price (tangible attributes) were of the greatest importance. However, opposing results can be found in the study of Huang et al. (2004), where in the last stage of the partner selection process intangible attributes were identified as crucial for decision making. Thus, more research is needed to make a clear contribution on the importance of brand attributes for different phases of decision making.

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VAŽNOST KORPORACIJSKIH BRENDOVA ZA DONOŠENJE ODLUKA U POSLOVNOM OKRUŽENJU

Sažetak

Svrha je ovoga rada doprinijeti razumijevanju važnosti korporacijskoga brenda u poslovnome kontekstu, posebno obraćajući pažnju na donošenje odluka od strane kupaca i dobavljača. Rad nudi pregled literature o materijalnim i nematerijalnim atributima brenda, kao i o njihovom utjecaju na potencijalne rizike i emocije vezane uz poslovno odlučivanje. Rezultati istraživanja upućuju na to da poslovni proces donošenja odluka nije u potpunosti racionalan, već su i uključene emocije od iznimne važnosti. Sukladno tome, konceptualni okvir predstavlja proces poslovnoga odlučivanja u kojemu presudnu ulogu i za kupca i dobavljača igraju upravo atributi brendova. Teorijske implikacije ovoga istraživanja upućuju na slijedeća tri gledišta: važnost korporacijskih brendova i njihovih atributa za smanjenje rizika s kojim se suočava kupac prilikom odabira novoga dobavljača, uloga korporacijskih brendova u strategijama koje dobavljači koriste za privlačenje potencijalnih kupaca te utjecaj emocija na spomenute procese. Iznad svega, rad nudi novi sveobuhvatni okvir za proučavanje donošenja odluka u poslovnom kontekstu te doprinosi literaturi o korporacijskom brendingu, kao i razvoju teorija o poslovnom odlučivanju.

Ključne riječi: korporacijski brendovi, materijalni atributi brenda, nematerijalni atributi brenda, poslovno odlučivanje, emocije

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CONSUMERS` WILLINGNESS TO PAY MORE FOR ORGANIC FOOD IN CROATIA

Abstract

Taking into consideration growing concerns about conventional agricultural practices, food safety, human health, animal welfare and the environment, the main goal of this paper is to identify the predictors of consumers' willingness to buy organic food and to pay a premium price for it. The research was conducted on a representative sample of respondents in the Republic of Croatia, a growing organic food market, using a highly structured questionnaire. Research results indicate that respondents in Croatia perceive organic food as more expensive, healthier and tastier than conventional food; also, they believe that the origin of organic food is strictly controlled. The results of hierarchical regression analysis indicate that higher monthly household income predicts a greater willingness to pay (WTP) a higher price for organic food compared to conventional food. Also, perception of organic food as healthier and tastier than conventional food predicts a greater WTP a higher price for organic food compared to conventional products. It is expected that research results will be useful for food retailers in their market communication strategies towards further development and overall growth of the organic food market in Croatia. This research is one of its kind as it captures WTP a premium price for organic food and identifies the main factors influencing WTP a premium price for organic food on the growing Croatian market.

Keywords: Organic food, willingness to pay, premium price, consumer behaviour, survey research, Croatia

1. *Introduction*

There is the claim that organically grown food is healthier than conventional food (Krissoff, 1998). As the term and identification sign „Organics" for most users are associated with the issues in both social and environmental aspects (Browne et al., 2000), consumers perceive organic food to be safer than conventional food (i.e. they perceive organic food to have less synthetic chemical contaminants) and to contain more nutrients, including vitamins and minerals, than conventionally produced food (Hoefkens et al., 2009). *'Organic food is the product of a farming system which avoids the use of man-made fertilisers, pesticides; growth regulators and livestock feed additives"*[1]. Besides human health and food safety, Makatouni (2002) and Bonti-Ankomah

and Yiridoe (2006) add product characteristics such as taste, freshness, appearance, and other sensory characteristics to influence consumer preferences towards organic produce. Growing interest for organic food emerged mainly out of health and environmental concerns (Gil et al., 2000; Tsakiridou et al., 2008; Yiridoe et al., 2005), and organic farming has become one of the fastest growing sectors in agriculture (Willer, Youssefi, 2007). However, as Roininen et al. (2006) noticed, its growth has declined since the start of the financial crisis in 2008. This may be explained by higher prices for organic food, which means they are no longer affordable to some consumers.

The main purpose of this paper is to address the question: is the perception of organic food such that it results in the willingness of consumers to pay a higher price for it.

Laroche et al. (2001) and Mohamad et al. (2014) note that an increase in consumer awareness of their health and the nutritional values of food have contributed to increased demand for functional food, organic food, green food and natural food; thus increasing consumer WTP more for organic food. This is in line with Bhavsar et al. (2016) who state that consumers are willing to pay more for food they believe will prevent them from getting sick. However, a number of works (De Pelsmacker et al., 2005; Govindasamy et al., 2006; Govindasamy, Italia, 1999; Maguire et al., 2004) point out that although consumers are concerned about their health and prefer to consume health foods and functional foods, they are willing to pay more for organic food only to a certain degree. In other words, consumers may be concerned about quality characteristics of organic food products, but the reality shows that these general concerns are often not translated into actual behaviour when it comes to spending their own money (Hughner, 2007; Padel, Foster, 2005). Krystallis and Chryssohoidis (2005) identified several direct purchase barriers towards the consumption of organic food such as relatively higher prices, lack of availability, lack of awareness of the organic concept and uncertainty over the truthfulness of organic food claims.

In order to provide theoretical insight into consumers' willingness to pay a premium price for organic food the paper begins with a literature review on the current status of knowledge about the investigated topic. The aim of the paper is to identify the predictors of consumers' buying behaviour related to organic food. Methodology includes primary research conducted through face-to-face interviews on a sample of Croatian citizens, with the research instrument consisting of questions aimed to examine the perception of the respondents about organic food, the reasons for not buying organic food, the willingness to pay the higher prices of organic over conventional food, and the factors that influence consumers to pay higher prices of organic food over conventional food. The methodology section also includes the characteristics of respondents. Next comes the presentation of research results, which are related to respondents' familiarity with organic food, their perception of organic food in relation to conventional food, organic food purchase and predictors of organic food purchase, followed by research limitations and recommendations for future research. The paper ends with concluding remarks.

2. Literature review

The question of the price of organic food, that is WTP the higher price of organic food is often a topic of discussion in international scientific community (Akaichi et al., 2012; Aryal et al., 2009; Batte et al., 2007; Gil, Soler, 2006; Gil et al., 2000). Several studies evaluate consumers' willingness to pay, most often based on interviews (Wier, Calverley, 2002). Researchers often emphasize the existence of the partial information about the price of organic food (Canavari et al., 2011). Such higher prices of organic food are often stated as the greatest obstacle for further development of organic food market and are among main motives for non-purchase of organic food (Xie et al., 2015; Żakowska-Biemans, 2011; Magnusson et al., 2001; Fotopoulos, Krystallis, 2002; Chinnici et al., 2002).

The premium price consumers are ready to pay for organic food when compared to conventional food depends on many factors, primarily on market supply and market demand. In terms of balanced supply and demand of organic food, prices of organic food are on average more than 50% higher than the prices of conventional food. However, prices of organic food vary significantly with respect to the country of production of organic food, the type of organic product, as well as the length of the supply chain. According to notions from Wier and Calverley (2002), a price reduction of organic food encourages its purchase, and the authors believe that the significant fall in prices would increase the demand for organic food. So far, researchers mainly investi-

gated the willingness of consumers to pay a higher price for organic food, as well as WTP for a particular product category or a particular organic food product. This is in line with Krystallis and Chryssohoidis (2005) who conclude that the premiums that consumers are willing to pay vary regarding specific food product categories.

Overall, there have been many attempts to identify consumers' WTP for premium organic food. Bonti-Ankomah and Yiridoe (2006) suggest that most consumers are not willing to pay a price premium higher than *10-20%.* Turco (2002) reported organic price premiums ranging from *10%* to as high as *100%* depending on the country. For example, price premiums in Turkey range from *43%* for pickled vine leaf, to as high as *468%* for mixed dried fruits (Kenanoğlu, Karahan, 2002). Fotopoulos and Krystallis (2002) identified the relevant premiums paid by consumers: *+50-100%* for vegetables, *+30-50%* for cereals, *+25-50%* for fruits, *+25-50%* for olives/olive oil and *+20-60%* for wine.

There is a body of research in international and domestic literature regarding consumers' WTP higher prices for food products that are considered safer, of higher quality and more environmentally friendly (Fu et al., 1999; Gil et al., 2000; Corsi, Novelli, 2003; Angulo et al., 2003; etc.). For example, Fu et al. (1999) estimated the price premium associated with organic baby food and parents' preferences regarding the reduction of their baby's exposure to health risks. Angulo et al. (2003) and Corsi and Novelli (2003) discussed the price consumers are willing to pay for organic meat and pointed out the importance of consumer confidence in and use of food labels, and the experience with the product. Aryal et al. (2009) consider awareness and knowledge about organically produced foods critical in the consumer WTP more for the product. Namely, consumers feel that the price of organic food becomes the cost of investment in "good health" (Aryal, 2008; Aryal et al., 2009; Menon, 2008; Sandalidou et al., 2002).

There is some evidence that heavy organic food consumers are on average willing to pay higher price premiums for organic food than medium and light users but the relationship is not so unambiguous and seems to be dependent on specific intrinsic product qualities (Wier et al., 2008). Regarding the socio-demographic profile of the organic food consumer, a slight difference between men and women is observed, women being those who would pay more compared to men. The age factor does not seem to play an important role either, with younger consumers slightly more willing to buy (more expensive products) due to the greater environmental consciousness, which, however, does not translate into the demand due to the lower purchasing power of young consumers (Fotopoulos, Krystallis, 2002). Also, Ureňa et al. (2008) suggest that the willingness to accept higher prices for organic food depends on the frequency of purchase and the gender of consumers. However, research results indicate that regular consumers and men would pay a higher price for organic foods but the margins are product dependent. With the respect of the county data, Dutch and German studies are the most optimistic in their evaluation of the tendency to buy at premiums over 30%. On the other hand, the Scandinavian and British studies are more pessimistic, expecting only 5-15% of all consumers to buy organic food at these premiums (Wier, Calverley, 2002).

Govindasamy and Italia (1999) constructed a profile of the households most likely to purchase organically grown produce at a premium price. They found out that smaller, higher-earning households, particularly, younger households in which women do the majority of food purchasing, are more likely to pay a premium for organic produce. Wier and Smed (2000) apply the data for actual organic food purchases. Their research results indicate that the demand for organic foods is more sensitive to price changes than the demand for conventional foods. With respect to their and previous research, it appears that lower price premiums induce a considerable proportion of consumers to buy organic products. '*In this light the development of market for organic products is extremely interesting, since a significant fall of prices would increase demand*' (Wier, Calverley, 2002: 50-51).

The reasons for the higher price of organic food over conventional food can be explained with respect to different points of view. Some experts state that organic food is not too expensive, but that conventional food is too cheap because the price of the product does not include indirect ecological, social and other costs. Furthermore, experts believe that for the reduction in price of organic food the supply chain should be better organised. The spatial distance of organic producers and the limited amount of available products cause additional costs in the supply chain, primarily the transportation costs, which significantly burden the final price of organic food.

With respect to all the above-mentioned points, it is evident that the WTP the price premium is a well-established research field. Previous empirical organic food research in Croatia mostly focused

on consumer consumption and buying behaviour (Brčić-Stipčević, Petljak, 2011; Radman, 2005), analyses of development of organic food market from organic producer perspective (Petljak, 2011; Renko, Bošnjak, 2009), analysis of organic food category availability among leading Croatian food retailers (Petljak, 2010) and analysis of distribution channels of organic food in Croatia (Petljak, 2013). Overall, domestic literature (Radman, 2005; Štefanić et al., 2001; Znaor, 1996) confirmed Croatian consumers` perception of organic food as more healthy and safe, but more expensive than conventional food. Znaor (1996) points out the general view that an ordinary citizens cannot afford the price premiums for organic food.

3. Research methodology

In order to investigate consumers' willingness to buy organic products and to pay the premium price for them, as part of the scientific project "Distribution Channel Modelling for Organic Food and Consumer Protection in Croatia" (2009-2011), primary research was conducted. The research was conducted through personal interviews in households using a highly structured questionnaire, with individuals in charge of food purchases in the household. Croatian organic food market is underdeveloped (Petljak, 2013), but the number of organic farms is growing rapidly as consumers are becoming more concerned about their nutrition and health, following consumer behaviour in other EU countries. According to the latest available data from the Ministry of Agriculture, there is 50 054 ha under organic production in Croatia, which represents only 4.03% of overall agriculture area.[2]

Primary research was conducted through face-to-face interviews in households, on a sample of Croatian citizens older than 15 years. Sources of the data for defining the framework for a sample selection were the results of the Croatian census. Respondents were selected according to a randomised proportionate stratified sampling method. The stratification was two-dimensional and was conducted according to the following stratification variables: *(1) six traditional regions defined as a set of existing counties* (Table 1) and *(2) four settlement sizes* (Table 2). Altogether, 24 stratums were created.

Table 1 Respondent representation by region

Region	number of respondents	% of respondents
Zagreb and surroundings	249	24.9
Northern Croatia	180	18.0
Slavonia	174	17.4
Lika, Kordun and Banovina	88	8.8
Istra, Primorje and Gorski Kotar	119	11.9
Dalmatia	190	19.0
TOTAL	**1 000**	**100.0**

Source: Authors' research

Table 2 Respondent representation by settlement size

Settlement size	number of respondents	% of respondents
up to 2,000 inhabitants	400	40.0
from 2,001 to 10,000 inhabitants	153	15.3
from 10,001 to 100,000 inhabitants	212	21.2
more than 100,001 inhabitants	235	23.5
TOTAL	**1 000**	**100.0**

Source: Authors' research

Professional market research agency's network of field operatives was used only for survey dissemination. Research results were analysed with methods of descriptive and inferential statistics in statistical package for social sciences (SPSS). Afterwards, regression analysis was conducted, which helped in defining predictors of consumers' WTP a higher price of organic food over conventional food in the Republic of Croatia.

3.1 Sample

Table 3 shows socio-demographic characteristics of the sample – gender, age, education, employment status, profession, marital status, place of residence, household status, number of household members, number of children up to 18 years old, personal monthly income of the respondent, monthly household income and source of income of respondent. 52.9% of the sample were women, which comes as no surprise, as they are still the main food purchase decision-makers in Croatian households.

Table 3 Respondent characteristics

	n	%
Gender		
male	471	47.1
female	529	52.9
Age		
15-17	28	2.8
18-24	136	13.6
25-34	158	15.8
35-44	178	17.8
45-54	170	17.0
55-64	135	13.5
more than 65	195	19.5
Education level		
no elementary school	63	6.3
elementary school	163	16.3
high school (3 years)	196	19.6
high school (4 years)	442	44.2
college or higher education	136	13.6
Employment status		
full-time employment	384	38.4
temporary employment	53	5.3
part-time employment	25	2.5
not registered	9	0.9
self-employment	16	1.6
Occupation		
senior manager	60	6.0
manager	26	2.6
officer	152	15.2
skilled worker	167	16.7
non-skilled worker	28	2.8
farmer	0	0.0
entrepreneur	35	3.5
other paid occupation	5	0.5
unemployed	93	9.3

	n	%
retired person	274	27.4
housewife	61	6.1
student	100	10.0
Source of income		
non-agricultural activities	907	90.7
agriculture & non-agricultural activities	83	8.3
agriculture	11	1.1
Marital status		
single	297	29.7
married	531	53.1
divorced/widowed	172	17.2
Place of residence		
house	650	65.0
flat	350	35.0
Number of household members		
1 member	192	19.2
2 members	278	27.8
3 members	224	22.4
4 members	195	19.5
5 members and more	111	11.1
Number of children under the age of 18		
children under the age of 6	127	12.7
children between 7 and 14	156	15.6
children between 15 and 18	102	10.2
no children under the age of 18	615	61.5
Personal monthly income		
less than 150 €	73	7.3
from 151 to 250 €	142	14.2
from 251 to 450 €	215	21.5
from 451 to 750 €	197	19.7
from 751 to 1,000 €	51	5.1
from 1,000 to 1,200 €	15	1.5
more than 1,200 €	15	1.5
no monthly personal income	173	17.3
no answer	119	11.9
Monthly household income		
less than 250 €	78	7.8
from 251 to 500 €	169	16.9
from 501 to 750 €	137	13.7
from 751 to 1,100 €	171	17.1
from 1,100 to 1,500 €	135	13.5
more than 1,500 €	89	8.9
no answer	221	22.1
Household status		
worse than average	90	9.0
below average	149	14.9

	n	%
on average	673	67.3
better than average	80	8.0
much better than average	8	0.8

Source: Authors' research

3.2 Research instrument

Research instrument was a highly structured questionnaire, which was designed based on the previous research already mentioned in the literature review, which offered a valuable insight for its development (Yiridoe et al., 2005; Bonti-Ankomah, Yiridoe, 2006; Gracia, de Magistris, 2007). The aims of the conducted empirical research were to examine the perception of the respondents about the organic food (measured with five-point Likert agreement scale) with the statements about the origin of the product, product labelling, taste, price, impact of organic food on health and the protection of consumer rights; examine whether respondents buy organic food, and the reasons for not buying organic food; examine the willingness of consumers to pay the higher price of organic food over conventional food and identify the factors that influence the willingness of consumers to pay the higher price of organic food over conventional food in the Republic of Croatia.

4. Results

4.1 Respondents' perceptions about organic food

Most respondents (n=766) are familiar with the definition of organic food. Respondents' perceptions of organic food were measured using the Likert scale that measures the degree of agreement with the statement, with 1 signifying 'strongly disagree' and 5 'strongly agree' with the statement. Research results of the respondents' perceptions (n=766) showed that the majority of respondents (53.2%) partially or completely agreed with the statement that conventional food is the food without the 'organic origin' label, whereas 21.7% of respondents partially or fully disagreed with the same statement.

Most respondents (46.2%) partially or completely agreed with the statement that organic food tastes better than conventional food, while with this statement partially or completely disagreed 28.8% of respondents. The vast majority of respondents (83.1%) partially or completely agreed with the statement that organic food is more expensive than conventional food, while with this statement partially or completely disagreed only 6.7% of respondents. With the claim that organic food is healthier for them and their families than conventional food partly or fully agreed 72.1% of respondents, whereas 8.4% of respondents partially or completely disagreed with this statement. Most respondents (56.0%) partially or completely agreed with the statement that organic food with the eco-label is safer to consume than the food without it, whereas 15.3% of respondents partially or completely disagreed with this statement. Furthermore, 53.1% of the respondents partially or completely agreed with the statement that certification, implementation, monitoring and control of organic food producers protect consumer rights, whereas 15.9% of respondents partially or completely disagreed with this statement. With the claim that organic food is food of strictly controlled origin, unlike conventional food, partly or fully agreed 52.6% of respondents, while 19.1% of respondents partially of completely disagreed with that statement.

Table 4 shows descriptive indicators (mean and standard deviation) of research results for the variables related to the perception of organic food.

Table 4 Descriptive indicators of research results for the variables related to the perception of organic food

Statement	M	sd
Conventional food is the food without the ‚organic origin' label.	3.44	1.145
Organic food is tastier than conventional food.	3.26	1.177
Organic food is more expensive than conventional food.	4.24	0.939
Organic food is healthier for me and my family than conventional food.	3.94	0.992

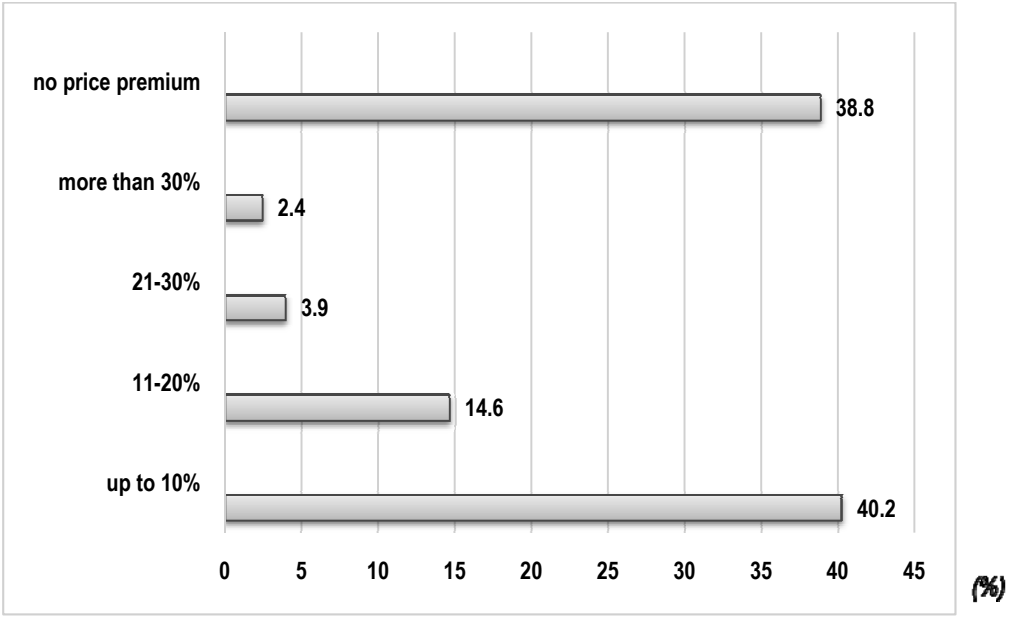
Statement	M	sd
Organic food with the eco-label is safer for consumption than the food without it.	3.58	1.027
Certification, implementation, monitoring and control of producers of organic food protects my consumer rights.	3.49	1.007
Organic food is food of strictly controlled origin, unlike conventional food.	3.47	1.030

Note: M – mean, sd – standard deviation
Source: Authors' research

4.2 Willingness-to-pay a higher price for organic food compared to conventional food

In order to test the willingness of consumers to pay the higher price of organic food over conventional food, respondents were asked to answer how much more they are willing to pay for organic food over conventional food (similarly to Radman (2005)). Research results showed that 40.2% of respondents would be willing to pay a 10% higher price for organic food over conventional food, 14.6% of respondents would be willing to pay 11-20% higher price for organic food, 3.9% of respondents would be willing to pay 21-30% higher price for organic food and the smallest number of respondents (2.4%) would pay more than 30% higher price for organic food in relation to conventional food. As many as 38.8% of respondents are not prepared to pay more for organic food as compared to conventional food (Figure 1). These research results are not consistent with previous research by Radman (2005) conducted in Croatia, where most of the consumers (46%) stated they were willing to pay the 11-20% premium for organic food. However, we should take into consideration that previous research was conducted only on consumers living in the city of Zagreb and due to that, the results of the present study give better representation of WTP a higher price for organic food compared to conventional food.

Figure 1 Willingness to pay an extra price for organic food



Source: Authors' research

For the analysis of the WTP, only respondents who stated they buy organic food were analysed, regardless of the frequency (regularly, often, rarely) of organic food purchase (n=420). Table 5 shows correlations between variables related to the perception of organic food and socio-demographic variables with the willingness of consumers to pay a higher price of organic food compared to conventionally food.

The willingness of consumers to pay the higher price of organic food compared to conventional food is significantly positively associated with the following socio-demographic variables: *personal monthly income* (r = 0.102, p<0.05), *monthly household income* (r=0.151, p<0.01) and *household size* (r=0.087, p<0.01). *Respondents with larger personal monthly income, higher monthly household income and a bigger number of household members are willing to pay the higher price for organic food over conventional food.*

The willingness of consumers to pay the higher price for organic food compared to conventional food is significantly positively associated with all the variables related to the perception of organic food: *organic food is the food identified by the ecological origin* (r=0.135, p<0.01), *organic food is tastier than conventional food* (r=0.292, p<0.01), *organic food is more expensive than conventional food* (r=0.092, p<0.05), *organic food is healthier for me and my family than conventional food* (r=0.368, p<0.01), *organic food with the eco-label is safer for consumption* (r=0.252, p<0.01), *organic food is the food under controlled production* (r=0.201, p<0.01) and *organic food is the food of strictly controlled origin* (r=0.210, p<0.01). *Respondents who believe that organic food is the food which can be identified by the ecological origin, more expensive than conventional food, better than conventional food, healthier than conventional food, safer for consumption than conventional food, of controlled production and of strictly controlled origin, are willing to pay the higher price for organic food compared to conventional food.*

In order to determine the factors that affect the willingness of consumers to pay the higher price for organic food over conventional food, a hierarchical regression analysis was conducted. The criterion (dependent) variable was the willingness of consumers to pay the higher price of organic food over conventional food. Hierarchical regression analysis was conducted based on the inclusion of a new single variable or set of variables in the regression equation according to a predetermined order. After each step, a new percentage of explained variance tests the unique contribution of a variable or set of variables listed in a specific step by testing the significance of changes in the percentage of explained variance criteria (ΔR2). In the first step of the analysis as predictors (independent variables) were included socio-demographic variables (gender, age, education, personal monthly income, monthly household income, household size, whether there are children up to age 18 in the household), and in the second step, variables related to the perception of organic food. Results of hierarchical regression analysis for prediction of WTP higher price for organic food compared to conventional food are shown in Table 5.

Table 5 Results of hierarchical regression analysis for prediction of WTP higher price for organic food compared to conventional food

	WTP higher price for organic food compared to conventional food				
PREDICTORS	**β**	**t**	**β**	**t**	**r**
gender	0.001	0.016	-0.002	-0.045	-0.017
age	0.159	2.727**	0.107	1.970*	0.039
education	0.063	1.031	0.076	1.346	0.080
personal monthly income	-0.023	-0.308	-0.029	-0.423	0.102*
household monthly income	0.182	2.277*	0.204	2.723**	0.151**
number of household members	-0.005	-0.062	0.018	0.262	0.087*
children up to 18 years of age	0.076	1.152	0.041	0.677	0.071

	WTP higher price for organic food compared to conventional food				
PREDICTORS	**β**	**t**	**β**	**t**	**r**
Conventional food is the food without the ‚organic origin' label.			0.077	1.606	0.135**
Organic food is tastier than conventional food.			0.168	3.111**	0.292**
Organic food is more expensive than conventional food.			0.009	0.193	0.092*
Organic food is healthier for me and my family than conventional food.			0.259	4.478**	0.368**
Organic food with the eco-label is safer for consumption than the food without it.			-0.015	-0.232	0.252**
Certification, implementation, monitoring and control of producers of organic food protects my consumer rights.			0.010	0.165	0.201**
The origin of organic food is strictly controlled, unlike the origin of conventional food.			0.043	0.730	0.210**
ΔR2	ΔR2=0.025*		ΔR2=0.144**		
Total R Total R2	R=0.453 R2=0.205**				

*Legend:** p<0.01, * p<0.05*
Note: r – correlation coefficient, β – standardized partial regression coefficient, R – multiple correlation coefficient, R2 – coefficient of determination, ΔR2 – change of coefficient of determination
Source: Authors' research

Socio-demographic variables and variables related to the perception of organic food can explain 20.5% of the variance of willingness of consumers to pay the higher price for organic food over conventional food (R2=0.205, p<0.01). As statistically significant predictors of consumers' WTP higher price for organic food over conventional food (final solution) among socio-demographic variables appear monthly household income (β=0.204, p<0.01) and age (β=0.107, p<0.05), and among the variables related to the perception of organic food significant are: healthier than conventional food (β=0.259, p<0.01) and tastier than conventional food (β=0.168, p<0.01). Due to the fact that variable age is not significantly correlated (Table 5) with criteria variable (paying higher prices of organic food), in regression analysis it appears as a suppressor variable (a variable that is not correlated with the criterion, but in the correlation with the predictors contributing prediction). As the results of the hierarchical regression analysis indicate, all investigated characteristics have a statistically significant contribution to explaining the variance of willingness of consumers to pay higher prices of organic food over conventional food. The socio-demographic variables involved can explain 2.5% of the variance, and variables related to the perception of organic food 14.4% of the variance of willingness of consumers to pay higher prices of organic food over conventional food. Thus, *the higher monthly household income predicts a greater willingness of consumers to pay higher prices of organic food over conventional food. The perception of organic food as healthier than conventional food and tastier than conventional food predicts a greater willingness of consumers to pay the higher price of organic food over conventional food.*

5. Conclusion

This paper attempts to identify the willingness-to-pay premium prices for organic food and offers more insights on the factors that predict such buying behaviour on the Croatian market, where WTP has not been addressed so far in previous research.

In this sense, the paper contributes to domestic and international literature about consumer preferences and their WTP for several organic food products on the growing organic food market. The findings of the study among Croatian customers propose some suggestions that food retailers can use as references while creating their communication strategies towards further development and overall growth of the organic food market in Croatia. Firstly, the study shows that Croatian consumers are not prepared to pay substantially higher price mark-ups, which is not fully consistent with the existing studies on consumer WTP for organic food, especially for various food groups (Bonti-Ankomah, Yiridoe, 2006). Secondly, the research results imply that Croatian citizens with larger personal monthly income, higher monthly household income and a larger number of household members are willing to pay higher prices for organic food over conventional food. This is not completely in line with empirical literature on consumer surveys which reveal that consumers' socioeconomic characteristics such as age, gender, level of education, income level, household size as well as the level of consumers' awareness and perceptions, product price, taste, size, freshness and cleanness tend to influence consumers' WTP for organic food products (Owusu, Anifori, 2013). Thirdly, consumers who place a higher value on organic food attributes (such as that organic food is the food which can be identified by the ecological origin, more expensive than conventional food, better than conventional food, healthier than conventional food, safer for consumption than conventional food, of controlled production and of strictly controlled origin), are willing to pay higher prices for organic food compared to conventional food. Price premiums paid for the characteristics of organic foods suggest that consumers place a higher value on the attributes compared to conventionally-produced alternatives and can signal differences in food product characteristics in favour of organic food. Lastly, the results show that although consumers are concerned about their health and safety and quality characteristics of their food, there is a maximum price level they are willing to pay for organic food.

In analysing the results of this research it is important to note that it has certain limitations, such as the methods of assessing the perception of organic food as well as the assessment of the prices consumers would be willing to pay for organic food over conventional food, which are based on the subjective assessment of respondents. Comparison of results of the price premiums consumers are willing to pay with other studies carried internationally is difficult because respondents were asked to indicate a general estimate of how much they would be willing to pay for organic food over conventional food. When compared to research conducted in Croatia, in other studies respondents were asked to state their WTP higher prices for a particular product category or specific organic product. Admittedly, earlier studies have demonstrated that respondents often overestimate how much they are willing to pay for organic food, therefore, future empirical researches should examine the actual willingness of consumers to pay a higher price for a particular product category or specific organic product. The authors would also recommend conducting longitudinal research which would follow the development of organic food market in Croatia.

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SPREMNOST POTROŠAČA NA PLAĆANJE VIŠE CIJENE ZA EKOLOŠKE PREHRAMBENE PROIZVODE U HRVATSKOJ

Sažetak

Uzimajući u obzir sve veću zabrinutost potrošača zbog konvencionalnih poljoprivrednih praksi, sigurnosti hrane, ljudskog zdravlja, dobrobiti životinja i okoliša, cilj je ovog rada utvrditi prediktore spremnosti plaćanja više cijene za kupovinu ekoloških prehrambenih proizvoda. Istraživanje je provedeno na reprezentativnom uzorku ispitanika u Republici Hrvatskoj, rastućem tržištu ekoloških prehrambenih proizvoda, korištenjem visoko strukturiranoga upitnika. Rezultati istraživanja ukazuju na to da ispitanici u Republici Hrvatskoj percipiraju ekološke prehrambene proizvode kao skuplje, zdravije i ukusnije od konvencionalnih proizvoda, a vjeruju da je podrijetlo ekoloških prehrambenih proizvoda strogo kontrolirano. Rezultati hijerarhijske regresijske analize pokazuju da veći mjesečni prihod kućanstva predviđa veću spremnost plaćanja više cijene za ekološke prehrambene proizvode u usporedbi s konvencionalnim proizvodima. Također, percepcija ekoloških prehrambenih proizvoda kao zdravijih i ukusnijih od konvencionalnih prehrambenih proizvoda predviđa veću spremnost plaćanja više cijene za ekološke prehrambene proizvode, u usporedbi s konvencionalnim proizvodima. Očekuje se da će rezultati istraživanja biti korisni za trgovce hranom, posebice za njihove marketinške strategije s ciljem daljnjega razvoja i rasta tržišta ekoloških prehrambenih proizvoda. Provedeno je istraživanje jedinstveno istraživanje takve vrste jer se njime istražuje spremnost plaćanja više cijene za ekološke prehrambene proizvode te se utvrđuju prediktori koji utječu na njih na rastućem hrvatskome tržištu.

Ključne riječi: ekološki prehrambeni proizvodi, spremnost plaćanja, premijska cijena, ponašanje potrošača, anketno ispitivanje, Republika Hrvatska

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PREREQUISITES FOR CREATING A COMPETITIVE ADVANTAGE IN NATURE PARKS THROUGH DIFFERENTIATION

Abstract

Differentiation is a way for gaining a sustainable competitive advantage or achieving a market position which enables companies to satisfy customers' needs better than the competition. Differentiation can manifest itself through four dimensions: product, services, personnel and image.

Nature parks, national parks, strict reserves and special reserves are categories of protected areas of national importance. Nature parks and national parks have exceptional potential for visiting system development, but are also *responsible* for the *management* of these activities. There are numerous nature protection restrictions arising from legislation and management documents. The principal task is to protect and preserve the natural and landscape values and ecological characteristics.

Creating and realizing visiting activities as a part of tourist services supplied trough Public institutions are also specific. These services must be differentiated on the market in relation to the competition. Income generated from tourist services in the income structure of nature parks, will be even more important in the future, because of self-financing development and central budget dependency reduction. It must be emphasized that nature parks help the larger community through development of complementary economic activities.

This paper is based on market research conducted in the period from 16 May to 10 June 2016 in Nature Park Kopački rit, which is one of the most visited nature parks in the Republic of Croatia. A poll survey was carried out among 300 randomly selected visitors. The research results may be used for policy suggestions for how to create adequate products, services and promotional activities, ensure quality education for visitors about natural, historical and cultural protected area values and minimize visitors' impact on natural resources.

Keywords: Competitive advantage, nature parks, differentiation, positioning

1. Introduction

A competitive advantage is when a "company possess abilities and capabilities to satisfy consumers' needs better than the competition" (Renko, 2009: 99). Ansoff is regarded as the first author who introduced the term competitive advantage. Porter (1985) introduces competitive advantage which is characterized as long-term achievement of above

average profits and uniqueness that can be very difficult to imitate and overtake. Two basic ways of achieving a competitive advantage are low product price with acceptable quality and product differentiation based on creation of additional product values such as higher price followed by higher quality and protected by a strong brand.

Usually, there is only one company on the market capable of establishing and holding low cost strategy. Therefore, other companies must differentiate their product by adding to the product dimensions attractive to customers. According to Porter (1990), the generic business strategies concept is based on the fact that selection of the way to achieve a competitive advantage for each strategic business unit or part of the company is the essence of business strategy. Buble et al. (1997) claim that it is possible to achieve a competitive advantage through lower costs than the competitors or through differentiation on the market. If these two dimensions are combined with the companies' market width, three basic business strategies originate. They are cost keeping strategy, differentiation strategy and focusing strategy. Sources of competitive advantage are high efficiency in addition to unique differentiated value for the customer.

There are three new ways of achieving a competitive advantage. The first includes excellence in operating activities in a way where a company, by focusing on operating activities' efficiency, aims to cut production cost and reduce product price. The second is product leadership by which a company focuses on technology and product development. The last one is being close to the consumer, which demands better knowledge of consumers' needs than the competition and adapting to the specific consumer needs which results in a close relationship with consumers (Renko, 2009: 190). Basically, a competitive advantage is gained through asset management, specific skills and abilities and information regarding consumers and competition. When implementing a differentiation strategy, a company must create and add to its product or service, features which consumers regard as useful and important but different from the ones offered by competitors. The most common mistakes in the implementation of this strategy are uniqueness that is not evaluated, excessive differentiation, a too high purchase price, focus on product instead of whole value chain and oversight in market segmentation. Basic differentiation types are product differentiation, service differentiation, personnel differentiation and image differentiation. Differentiation through services is lately becoming one of the main trends because of significant growth in this sector (Kotler et al., 2006: 624).

According to Angelkova et al. (2012), a competitive advantage of a tourist destination is the ability to increase tourist consumption and attract visitors by supplying them with an experience which satisfies them, is remembered and is improving the wellbeing of people in the destination and preserving the natural heritage for future generations. Sustainable development of the tourist product offer in protected areas is imperative according to present legislation. Nevertheless, the Republic of Croatia has numerous protected areas of national importance. According to the official Protected Areas Register kept by the Nature Protection Directorate of the Ministry of Environmental and Nature Protection, "a total of 409 areas have been protected in the Republic of Croatia in various categories". Today, protected areas account for 8.56% of the total area of the Republic of Croatia, which makes 12.24% of the terrestrial territory and 1.94% of the territorial sea. Nature parks account for the largest share of all protected areas (4.56% of the total national territory)"[1]. The Republic of Croatia has to the present time declared eight national parks and eleven nature parks, which are regarded as protected areas of national significance together with strict and special reserves.

The Kopački rit area is classified as a nature park, and it represents one of the most valuable and preserved alluvial wetland plains in Europe. It is distinguished by its ecological values, rich biodiversity and impressive landscape esthetics. It was formed through history by the work of the Danube and Drava rivers as well as their flood waters. The distinctive look of Kopački rit is conditioned by the specific layout of the ponds, canals and so-called "grede" (beams), and its territory is especially famous for its phenomenon of the inner delta created by the Danube River with the assistance of the Drava River. "A phenomenon like this is not notable for other European rivers in this form and therewith gives this area a global significance"[2].

A tourist destination is dictated by the wishes, inclinations and the needs of the tourists (Vukonić, Čavlek, 2001). Each "tourist destination has to combine various resources and create a specific tourist product that will be recognizable and competitive on the tourist market" (Bosnić et al., 2014). Kopački

rit Nature Park is a specific tourist destination according to its nature prerequisites. Each protected area is specific and attracts visitors, but our aim was to point out the main factors by which each protected area may differentiate itself among similar locations. The aim of this paper is to point out possibilities coming out from an active approach in the process of creating services and contents offered in nature parks. Our intention was to emphasize a more active role of self-financing in the future through these activities using Kopački rit as an example. Through differentiation in the segment of services, personnel and image, nature parks such as Kopački rit, can achieve a competitive advantage among similar destinations.

2. Methodology

Information used in this paper are primary and secondary data. Secondary data include statistical data from publications of the State Bureau of Statistics, legal acts, international agreements and conventions (UNESCO MaB, RAMSAR and GGN), regulation and EU directives regarding nature protection and Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia (Official Gazette 143/08)[3]. Based on this data, by using the method of analysis, specificity of creating offers and differentiation of nature parks was studied.

Primary data are collected through market research conducted in Kopački rit Nature Park, which is one of the most visited nature parks in the Republic of Croatia. A poll survey was carried out among 300 randomly selected visitors in the period from 16 May to 10 June 2016. The research was conducted through a structured survey questionnaire that comprised a total of 38 closed and open questions. Visitors were asked to participate in the research after they finished a selected program in Kopački rit Nature Park.

Themes covered by the research were the respondents' motive for visiting Kopački rit Nature Park, activities selected and performed during their stay in the Nature Park, length of the respondents' stay, image of the Nature Park, price and quality ratio, source of information about the Nature Park, etc. Respondents were asked to grade on a scale from one to five the availability of information materials about the Kopački rit Nature Park, personnel professionalism, arrangement of infrastructure for visitors and quality of selected program.

The majority of respondents (95.6%) were from the Republic of Croatia. The following table shows the respondents' structure according to the counties they are coming from.

Table 1 Respondents' structure according to the counties they are coming from

County	Respondents
Zagreb County	43
City of Zagreb	47
County of Osijek-Baranya	40
County of Vukovar-Srijem	24
Varaždin County	68
County of Slavonski Brod-Posavina	11
Međimurje County	7
County of Primorje-Gorski Kotar	10
Other	50
Total	300

Source: Authors

The share of female respondents is higher (67.2%) than the share of male respondents (32.8%). The majority have a college education (68.3%) and mostly are not members of associations for nature protection or associations involved in recreation activities in nature. The respondents' age structure is represented in Table 2. Almost half of the respondents are between ages 25 to 44.

Table 2 Respondents' age structure

Age	Respondents
18 – 24	8
25 – 44	143
45 – 64	110
65 and more	39

Source: Authors

3. Nature parks as protected areas of national importance

The Republic of Croatia's national wealth, among other indices also presents particularly attractive and preserved nature, which constitutes one of the fundamental values of the country and enjoys protection. Although it stretches over merely 88,073 km² (Croatian Bureau of Statistics, 2015: 46)[4] of surface, because of its geographical location and specific biogeographical impact, the territory of the Republic of Croatia is distinguished by exceptional biological and landscape diversity. There are numerous protected areas of national importance on its territory, which demonstrates a preserved natural heritage and its potential. The Republic of Croatia preserves its nature and this is mentioned even in the Constitution where it is stated that "*The sea, seashore, islands, waters, air space, mineral resources, and other natural assets, as well as land, forests, flora and fauna, other components of the natural environment, real estate and items of particular cultural, historical, economic or ecological significance which are specified by law to be of interest to the Republic of Croatia shall enjoy its special protection" (Official Gazette 85/10)*[5]*. Nature protection of the Republic of Croatia is carried out based on the national legislative framework as well as the implementation of numerous international treaties, conventions, regulations and guidelines of the EU in the field of nature protection. The basic document of nature protection in accordance with the Nature Protection Act* (Official Gazette 80/13)[6] is the Strategy and Action Plan for the Protection of Nature of the Republic of Croatia which determines the long-term objectives and guidelines for the conservation of biodiversity and geodiversity and implementation methods. The document is made based on the Nature Status Report of the Republic of Croatia. The main legislation regulating the issues of protection of nature is the Nature Protection Act, which defines the protected area as "clearly defined geographical space that is intended to protect nature and which is operated for long-term conservation of nature and associated ecosystem services" (Official Gazette 80/13). According to the International Union for Conservation of Nature (IUCN), a protected area is "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN Definition 2008)[7]. The Nature Protection Act (Official Gazette 80/13) stipulates nine different protected areas: strict reserve, national park, special reserve, nature park, regional park, nature monument, significant landscape, park forest and horticultural monument. The stated protected areas are distributed in classes of state or local importance, in which the strict reserve, national park, special reserve and nature park are areas of state importance, while the rest of the protected areas are of local importance. Some of those areas protected under national legislation are also protected in accordance with International Conventions and Agreements. Based on the Nature Protection Act, protected areas are managed by public institutions. Each national park and nature park is managed by a separate public institution established by the Government of the Republic of Croatia. The primary activities of public institutions concern the protection, maintenance and promotion of the protected area with the aim of protecting and preserving the authenticity of nature, ensuring an undisturbed course of natural processes and sustainable use of natural resources. Public institutions in the administered area are obliged to supervise and implement the conditions and measures for the protection of nature and to participate in collection of data for monitoring the state of conservation of nature. Based on the Nature Protection Act, the protected areas are also intended for visitation. Those activities should be implemented in such way

that they do not jeopardize their fundamental values, nor nature protection. Visiting protected areas is permitted to everyone under the same conditions, but it can be limited of even forbidden if the visitation can jeopardize nature conservation as well as visitor safety.

Table 3 The total amount of funds allocated for the protection of nature in the state budget in the currency kuna (the expenses for the employees of the competent ministry are not included)

Year	Nature protection Total	Financing source		
		State budget funds	Subventions and grants	Loans
2008	82,690,770.35	62,503,541.57	20,187,228.78	0.00
2009	76,537,586.18	59,356,487.74	17,181,098.44	0.00
2010	63,763,946.86	58,878,489.18	4,885,457.68	0.00
2011	62,272,807.97	56,907,990.36	0.00	5,364,817.61
2012	67,607,295.00	46,272,882.54	3,160,935.52	18,173,476.94

Source: State Institute for Nature Protection (2014), "Analysis of the state of nature in the Republic of Croatia for the period 2008-2012", p. 417, available at: https://www.dropbox.com/sh/1gktiq2c7r3n4mz/AADOGmz4-eAes5xex9Xnbb_-a?dl=0 (Accessed on: June 27, 2016)[8]

Financial assets for the work of public institutions are provided from the state budget, budgets of local and regional governments, revenues from the use of protected natural areas, as well as income from fees and other sources identified by the Nature Protection Act and special regulations. Financing nature protection in the Republic of Croatia is largely reliant on the State budget funds. A smaller portion of funding for nature protection comes from subventions and grants and loans as well as the budgets of regional and local governments. In the previous period, the protection of nature was actively funded by instruments of pre-accession funds and other international sources of funding, which were granted for the implementation of various program activities and projects. As can be seen from Table 3, the total funds for the protection of nature, which are separate from the state budget, have a declining trend in the period from 2008 to 2012. The decreasing trend was related to the proceeds of donations and financial assistance while the financing of nature protection increased only in the segment of financial loans. This trend indicates the increasing importance of the share of self-financing through visits to protected areas and the development of ancillary services while performing basic activities relating to the protection, maintenance and promotion of the protected area with the aim of protecting and preserving natural origin, ensuring the smooth running of the natural processes and sustainable use of natural resources.

3.1 Visiting of the protected area

Protected areas with their rich nature and beauty of the landscape, usually attract many visitors and can be categorized as important tourist attractors which affect the overall tourism potential of a country. Table 4 shows the number of tickets sold in National Parks and Nature Parks in the period from 2008 to 2012.

Table 4 Number of tickets sold/registered visitors in National Parks and Nature Parks in period from 2008 to 2012

Protected area	Year					Total
	2008	2009	2010	2011	2012	
NP Brijuni	180,276	162,644	145,152	156,549	150,943	795,584
NP Krka	694,785	650,423	668,027	683,739	732,999	3,429,973
NP Mljet	91,788	88,475	96,391	95,498	97,148	469,300

Protected area	Year					Total
	2008	2009	2010	2011	2012	
NP Plitvička jezera	948,891	939,747	962,322	1,083,451	1,157,019	5,091,430
NP Risnjak	18,308	17,846	13,356	15,864	16,359	81,733
NP Sjeverni Velebit	13,739	15,920	15,416	19,336	16,620	81,031
NP Paklenica	115,943	110,350	112,665	118,288	114,321	571,567
NP Kornati*	10,811*	12,550*	13,622*	14,096*	13,641*	64,720*
Total NP	**2,063,730**	**1,985,425**	**2,013,329**	**2,172,725**	**2,285,409**	**10,520,618**
PP Biokovo	37,803	36,984	40,773	44,299	42,350	202,209
PP Kopački rit	36,814	34,850	30,195	32,599	28,756	163,214
PP Lastovsko otočje	20,694	26,346	28,130	32,730	31,196	139,096
PP Lonjsko polje	17,500	15,500	14,650	14,700	15,600	77,950
PP Papuk	7,166	6,615	6,244	5,627	6,508	32,160
PP Telaščica	107,959	97,149	97,277	105,497	97,565	505,447
PP Učka	1,913	1,435	1,563	2,654	2,173	9,738
PP Velebit	30,831	27,451	27,743	29,820	33,471	149,316
PP Vransko jezero	5,504	5,671	12,882	14,507	11,347	49,911
PP Žumberak-Samoborsko gorje	2,356	2,231	1,037	2,696	3,016	11,336
PP Medvednica	14,252	11,308	17,124	21,806	21,620	86,110
Total PP	**282,792**	**265,540**	**277,618**	**306,935**	**293,602**	**1,426,487**
** The visit is charged per boat/tourist vessel, not per person.*						

Source: State Institute for Nature Protection (2014), "Analysis of the state of nature in the Republic of Croatia for the period 2008-2012", p. 328, available at: https://www.dropbox.com/sh/1gktiq2c7r3n4mz/AADOGmz4-eAes5xex9Xnbb_-a?dl=0 (Accessed on: June 27, 2016)

Usually linked terminology to protected areas are nature base tourism and ecotourism.

Ceballos-Lascuråin (1987) was the first to define ecotourism as travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations found in these areas (Weaver, 2001: 5). According to the dictionary of tourism, "ecotourism is tourism in which the emphasis is placed on the stay of tourists in a natural and unpolluted environment, especially in areas with a certain degree of environment protection" (Vukonić, Čavlek, 2006: 84). The concept of ecotourism is environmentally healthy tourism based on conserved nature with an educational aspect that arises from the need of raising ecological awareness of the tourism offer and demand with emphasis on the interaction between local residents and tourists with a minimal negative impact on the visited area (Bosnić, Bakan, 2012). According to the World Tourism Organization (UNWTO) definition, ecotourism has some specific characteristics. Trips that are included under the term ecotourism are motivated by the desire for observation and enjoyment of nature, and traditional and cultural values of a particular area of nature. Eco-tourist services usually provide specialized tour operators who prefer to work with smaller groups of visitors, while their partners at the destination are mostly local businesses and small entrepreneurs. An important feature of ecotourism is that it supports the maintenance of nature areas because it consciously generates benefits to local residents through employment

and the creation of new revenue. Ecotourism supports organizations and managers of areas with the primary intention of supporting the protection of nature and its values, as well as enabling economic benefits to local communities. Ecotourism strongly contributes to increasing awareness of the need to preserve natural and cultural assets, both among locals and tourists. It also minimizes the negative impact on the natural, social and cultural environment (The British Ecotourism Market, UNWTO 2002)[9]. The main characteristics of ecotourism are preserved nature, plain accommodation, strict nature protection and limited number of visitors which altogether gives a unique experience (Carić, Marković, 2011). Wetlands are part of the unique tourism experience. They represent one of the most productive world's ecosystems, providing various "ecosystem services", as well as important opportunities for tourism and recreation. People are usually attracted to wetlands because of their unique ecological values, aesthetic appeal and specific beauty of nature. One of the most significant wetland areas in the Republic of Croatia is Kopački rit Nature Park, which is characterized by unique beauty and exceptional ecological values. The area of Kopački rit "also called the European Amazon, is situated in the central part of the Danube floodplain, between two important European rivers, the Drava and the Danube"[10]. Many populations of endangered and rare species inhabit its territory, and in national and international circles it is known for its rich ornithofauna. It is also seen as the most important fish hatchery in the middle Danube. Due to exceptional natural values, in 1993 Kopački rit was included on the List of Wetlands of International Importance, under the Convention on Wetlands (Ramsar)[11]. Also, due to the importance as a wetland habitat and habitat of many birds, in 1986 it was included in the inventory of Important Bird and Biodiversity Areas (IBA)[12] in Europe. The number of visitors in the Kopački rit Nature Park had a decreasing tendency that was recently stopped. It is important to note that the attendance by months is satisfactory because visitors come to the park in the period from April to October, which can provide a continuous source of income for most of the year.

Table 5 Number of visitors to Kopački rit Nature Park from 2009 to 2015 by quarters

Year	I quarter	II quarter	III quarter	IV quarter	Total year
2009	524	20,587	8,231	5,508	34,850
2010	875	16,293	7,785	5,242	30,195
2011	964	18,007	9,103	4,525	32,599
2012	703	15,540	8,660	3,853	28,756
2013	543	12,294	9,819	3,938	26,594
2014	1,443	14,488	6,153	2,903	24,987
2015	947	14,836	9,202	4,851	29,836
Total	5,999	112,045	58,953	30,820	207,817

Source: Archive of the Public Institution "Kopački rit Nature Park" – data for 2016.[13]

4. Research results

4.1 Services differentiation

The range of services offered in Kopački rit Nature Park consists of several combinations of different services such as panoramic view of Kopački rit, video presentation, multimedia exhibition, walk over the new boardwalk, transfer with the tourist train from the Visitor Centre to the quay, guided boat tour through the wetland, transfer with the tourist train back to the Visitor Centre and individual visits to the Tikveš Castle Complex. It is also possible to take a train tour, amphibian tour or walks on the bridges of Kopački rit. There are also several canoe tours, the bird watching program, the photo safari program and the junior ranger program. The most quoted motive for visiting Kopački rit Nature Park given by the respondents was enjoyment in

its landscape beauty and nature richness. They are slightly less interested in education about the protected areas. Recreation in nature is mainly not a motive for visiting. The following table presents the respondents' motive for visiting Kopački rit Nature Park. Respondents had the opportunity to choose several answers.

Table 6 Respondents motive for visiting Kopački rit Nature Park

Respondents motive for visiting	Respondents
Enjoyment in landscape beauty and nature richness	255
Education about protected areas	91
Recreation in nature	29
Something else	45

Source: Authors

Performed activities during the respondents' stay in Kopački rit Nature Park are mostly in accordance with visiting motives. Respondents have an interest in taking a boat tour, walk over boardwalks and photographing nature, plants and animals.

Table 7 Respondents' activities during their stay in Kopački rit Nature Park

Respondents' activities during their stay	Respondents
Boat tour	269
Walk over boardwalks	249
Visiting reception center Mali Sakadaš	143
Visiting castle Tikveš	90
Photographing nature, plants and animals	156
Recreation in nature (walking, running, riding bicycles)	41
Consumption in restaurants and café bars	112
Souvenir shopping	117

Source: Authors

Accordingly, the creation of services offered in the Nature Park should be focused on contents which will enable visitors to enjoy in the beauty of nature and observe the landscape from water, air and land. That would enable visitors to experience the beauty of the special and unique environment that can be seen only in a wetland such as Kopački rit which distinguishes this nature park from the majority of other protected areas in the Republic of Croatia. The respondents gave high grades to the quality of selected and performed programs during they stay in Kopački rit Nature Park (average 4.39).

Table 8 Respondents' grade regarding the quality of the selected program in Kopački rit Nature Park

Grade	Respondents
5	149
4	96
3	29
2	2
1	2
Without answer	22
Average grade: 4.39	

Source: Authors

The price and quality ratio is mostly satisfactory for majority of respondents. Nevertheless, 17.6% (53 respondents) regards that the price and quality ratio is not adequate which should not be neglected, and we suggest additional research regarding this subject.

Table 9 The price and quality ratio of the selected program in Kopački rit Nature Park

Price and quality ratio	Respondents
Optimal	221
Price is too high for that program quality	41
Price is not adequate for that program quality	12
Without answer	26
Total	**300**

Source: Authors

The majority of respondents stay in Kopački rit Nature Park half a day (54.4%) or one day (34.6%) which points out a lack of content for a longer stay and visitor's perception of this nature park as a destination for short excursions. This problem should be a part of research which would emphasize it because that is market potential for developing a new range of services. The arrangement of infrastructure for visitors (boardwalks, info center, parking etc.) respondents rated with a rather high grade which is on average 4.62.

Table 10 Respondents grade for the infrastructure arrangement for visitors in Kopački rit Nature Park

Grade	Respondents
5	200
4	74
3	12
2	2
1	1
Without answer	11
Average grade: 4.62	

Source: Authors

Objections regarding the range of services stated by respondents in open questions are the lack of translation for foreigners, length of boat tour, differences in range of services offered in Kopački rit Nature Park during the week and on weekends, lack of mobile applications which can be used as a tour guide in the nature park and insufficiency of public transportation signs for directions on the highway and in the city of Osijek for directing visitors towards Kopački rit.

4.2 Personnel differentiation

Personnel differentiation means that companies can gain a strong competitive advantage through having better-trained people. Kotler et al. (2006: 427) state that personnel differentiation demands a careful personnel selection process and high-quality education, especially for personnel which is in direct contact with customers.

Respondents rated personnel professionalism with high grades (average 4.73). Nonetheless, in the open questions there are suggestions for improving several job positions, especially in the reception center.

Table 11 Personnel professionalism in Kopački rit Nature Park

Grade	Respondents
5	231
4	45
3	12
2	0
1	2
Without answer	10
Average grade: 4.73	

Source: Authors

4.3 Image differentiation

Kotler et al. (2006: 428) define image differentiation as the buyers' different responses to company and brand images. Identity comprises the ways that a company aims to identify or position itself or its product, whereas image is the way the public perceives the company or its products. The image is affected by many factors beyond the company's control. An effective image establishes the product's character and value proposition; it conveys this character in a distinctive way; and it delivers emotional power beyond a mental image. The company's image cannot be established trough one campaign within a short period of time. It is long term process which demands commitment and consistence in all communication vehicles.

Table 12 Source of information about Kopački rit Nature Park

Source of information	Respondents
Internet	139
Print media	76
Radio or TV	90
Brochures	70
Friends' recommendations	167

Source: Authors

The Internet and recommendations from friends were mostly stated by respondents as the information source about Kopački rit Nature Park. They had the possibility to choose several offered answers. We can conclude from respondents' answers that it is crucial to have satisfied visitors because they are one of the major information sources for potential visitors in the future. The Internet is the second important source of information, so the web page must be accurate, precise and if possible, interactive. Availability of information materials is rated with high grades so we may conclude that it is at an adequate level.

Table 13 Availability of information materials about the Kopački rit Nature Park

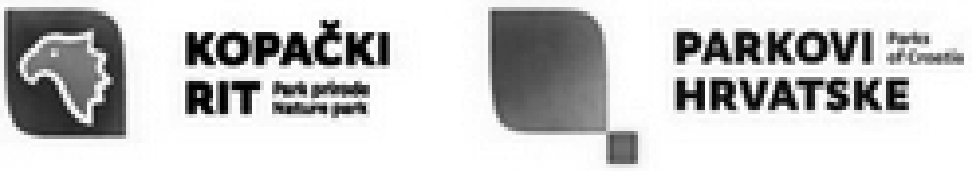
Grade	Respondents
5	162
4	80
3	29
2	6
1	1
Without answer	22
Average grade: 4.42	

Source: Authors

Respondents also answered the question about the respondents' intentions to put their impressions on one of the social networks. Almost half of them (48.5%) answered positively to that question and stated that it will be on Facebook. This is valuable information because a friend's recommendation is an information source for potential visitors in the future.

According to Kotler et al. (2006: 428), a difference selected for communication to the public is worth establishing if it satisfies several important criteria. It must be important, which means that the difference delivers a highly valued benefit to a sufficient number of buyers, that it is distinctive, superior, preemptive, which means that the difference cannot be copied easily by competitors, and that it is affordable and profitable.

Figure 1 Kopački rit Nature Park logo



Source: Kopački rit Nature Park, available at: http://pp-kopacki-rit.hr/mediaen.html (Accessed on: July 19, 2016)[14]

Kopački rit Nature Park has an image of the white-tailed eagle on its logo which is the trademark and symbol. The same motive is on promotional materials which ensures consistency in image application through which Kopački rit Nature Park is building its image.

During the whole calendar year, numerous events are being organized, especially on important dates related to nature protection. Nevertheless, except on Open day for visitors, there are no noteworthy events which attract a higher number of visitors in Kopački rit Nature Park. The number of visitors in Kopački rit Nature Park has no significant seasonal oscillations, except during the winter period. The visiting season is rather long compared to destinations on the cost. Therefore, more events should be organized and adequately promoted during the entire year in Kopački rit Nature Park which would position this nature park as an attractive destination with a wide range of services offered to visitors.

5. Discussion and conclusion

Tourism as an economic activity and its income, significantly contribute to the economy of the Republic of Croatia as a whole. Therefore, it is important to understand that all participants in the process of creation of tourist services should act in a way which will preserve and increase achieved tourism results. Global trends indicate that tourism, despite problems and recession, manages to find ways of keeping growth figures. Today tourists are looking for new destinations and spend more time outside exploring different and beautiful landscapes. Tourists' habits and expectations are changing, so that tourist services providers should redesign their range of services and constantly coordinate business policies according to actual changes in touristic demand. Protected areas may contribute in that process with specific programs and offer using the concept of ecotourism. Each protected area should develop a tourist offer which will distinguish it from similar locations. Differentiation as a way of achieving a competitive advantage is already present in all protected areas which are tourist destinations. Nature parks are differentiated by elements and specific landscape that characterize each nature park and make it different from similar tourist destinations. Creating a range of services according to specific features of the Nature Park and visitors' motives and expectations is important. The range of services offered in the Nature Park must be adequately promoted and communicated to gain recognizability and an appropriate image. Kopački rit Nature Park has an image of a specific wetland area. In the continental part of the Republic Croatia, Lonjsko polje Nature Park and Papuk Nature Park are potential competitive destinations. Over the past several years these two destinations have not had a considerable number of visitors.

Basic elements of the differentiation strategy for Kopački rit Nature Park should include further

investments in boardwalks, boat tours and canoe tours. That will differentiate this nature park from nearby protected areas as a tourist destination with a complete range of services provided according to visitors' motives and expectations. It can also have a positive impact on the price and quality ratio by offering more for the same price.

Current interaction with the local community is insufficient for further ecotourism development. Local people should be involved in the entire process of ecotourism, especially those involved in contact with visitors. Only through mutual and coordinated activities of all participants, including local authorities and private entrepreneurs, can the prerequisites for differentiation be achieved. Educational activities and programs should be made not only for visitors but also for the local population. There is also huge potential in the usage of modern communication technologies for creating a way to inform visitors about events and news from the nature park. A significant number of visitors that are coming to Kopački rit Nature Park for a second time or several times should have certain benefits through the customer relationship management.

We can conclude that there are several ways to improve the actual position on the tourist market and that the emphasis should be on further implementation of the concept of ecotourism and usage of modern technologies.

There is one critical issue that should be pointed out as a potential problem. Kopački rit Nature Park is perceived as a destination for half a day or one day excursions so we recommend further research regarding that issue.

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Vesna Vučemilović
Biserka Vištica

PREDUVJETI ZA KREIRANJE KONKURENTSKE PREDNOSTI U PARKOVIMA PRIRODE KROZ DIFERENCIJACIJU

Sažetak

Diferencijacija je jedan od načina stjecanja održive konkurentske prednosti, odnosno ostvarivanja tržišne pozicije koja gospodarskom subjektu omogućava zadovoljiti potrebe potrošača bolje od konkurencije. Diferencijacija može biti kroz proizvod, usluge, osoblje i imidž.

Parkovi prirode su, uz nacionalne parkove, stroge rezervate i posebne rezervate, kategorije zaštićenih područja od državnoga značenja. Parkovi prirode i nacionalni parkovi imaju izraziti potencijal u razvoju sustava posjećivanja, ali imaju i obvezu održivoga upravljanja ovim aktivnostima. Brojna ograničenja proizlaze iz zakonskih propisa i dokumenata upravljanja vezanih za zaštitu prirode. Osnovna zadaća je ipak zaštita i očuvanje prirodnih i krajobraznih vrijednosti te ekoloških obilježja.

Oblikovanje i provođenje aktivnosti posjećivanja koje kao dio turističkih usluga na tržištu pružaju Javne ustanove koje upravljaju zaštićenim područjima, također je specifično te se ove usluge mogu i moraju diferencirati na tržištu u odnosu na konkurenciju. Prihodi od turizma u strukturi prihoda parkova prirode u budućnosti će imati sve veći značaj kroz razvoj samofinanciranja i smanjenje ovisnosti o proračunskim sredstvima. Treba naglasiti da parkovi prirode pomažu i široj društvenoj zajednici kroz razvoj komplementarnih gospodarskih aktivnosti.

Ovaj se rad temelji na istraživanju provedenom u razdoblju od 16. svibnja do 10. lipnja 2016. u Parku prirode Kopački rit koji je jedan od posjećenijih parkova prirode u Republici Hrvatskoj. U anketnom istraživanju među posjetiteljima je slučajnim odabirom anketirano 300 ispitanika. Rezultati istraživanja mogu biti korišteni kao prijedlog pri oblikovanju odgovarajućih proizvoda, usluga i promotivnih aktivnosti, osiguranja kvalitetne edukacije posjetitelja o prirodnim, povijesnim i kulturnim vrijednostima zaštićenoga područja te minimiziranju utjecaja posjetitelja na prirodne potencijale.

Ključne riječi: konkurentska prednost, parkovi prirode, diferencijacija, pozicioniranje

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SYNERGY OF INFORMATION COMMUNICATION TECHNOLOGIES AND THE BANKING SYSTEM IN THE FUNCTIONING OF SUCCESSFUL BANKING OPERATIONS

Abstract

Nowadays, modern banking cannot function without information and communications technology; hence banks heavily invest in the implementation of technology currently present on the market. Every aspect of the banking business includes information and communications technology, which points to the necessity of building an infrastructure for modern banking. Investing in development and implementation of new technologies simplifies everyday business activities and security, in addition to creating a competitive edge over rival businesses. It ensures fast and efficient customer service delivery by providing support to the distribution channels, as well as supporting bankers with making crucial decisions.

The aim of this paper is to analyse trends in the use of information and communications technologies in the banking system, using publicly available business data, documentation and online bank information, as well as previously published findings of other researchers. Using the example of one of the largest banks in the Republic of Croatia, the possibilities provided by information and communications technology in the banking business sector are illustrated. Additionally, better economic efficiency and effectiveness, as well as the means of contemporary bank functioning are presented. Special attention is devoted to the security of ICT systems used in Internet Banking and the protection of banking service users' data.

Keywords: Information and communications technology, banking system, banking business

1. Introduction

With the increasing development of information communication technology and the service segment of banking, banks have introduced new distribution channels in their banking systems, and today modern banking cannot be imagined any longer without an implemented ICT system. Using ICT technology enables faster and simpler transactions to be performed and more cost-effective and faster communication with banks at a more affordable fee for performing their services. "Home Banking" provides benefits, like avoiding queues at a bank by simply logging into an application on your account, which in fact represents the user's bank account via PC, tablet or smartphone. It enables everyday checking of account balances, an overview of operations (view and print traffic conditions, statements, payment orders, review of approved loans, cards and turnover per card account), payment (payment in national and international payment transactions, internal payments, etc.), time deposits (contracting domestic and foreign currency time deposits, and view of the archive of all time deposits), control of resources in the investment funds, trading in financial instruments on the stock exchange and others.

Human resources can be optimized using technology, but banks are very cautious because the quality relationship between a client's trust and the bank has to be maintained and it has to be continually developed for the purpose of retaining clients (Ibok, Ikoh, 2013: 181). Banks are increasingly aware that the "people to people" mode of business cannot be bypassed, and that an important link in this relationship is the banker. Using the latest technology, a bank can optimize costs, reducing the number of bank branch offices, since clients can be counselled in a remote way through video conferencing with a personal banker, but also, on the client's behalf, based on his instructions, the banker can remotely do all the work and transitions, once the client has given authentication and authorization via a card, password, cell phone or other authentication device. Part of the client's and personal-banker's communication has become virtual due to the information communication technologies, but in order to maintain the quality of banking sector performance, progressive removal of banking officers is considered as an ill suggestion.

Monitoring of business activities in the banking sector through ICT technology is important at all times, in order to know the direction of the bank's business, and whether business plans are fulfilled as planned. Daily and segmented measurements of the effects are necessary for the continuous monitoring, in order to have an overview of the business plan implementation on the market; therefore, it is necessary to automatize monitoring that allows the authorities to be alerted if something goes wrong. One more segment in which ICT technology is essentially used and its application is becoming increasingly important, is the control of the service quality (Kunac, 2012: 69). Online monitoring in bank branch offices controls the waiting of an individual customer and the occurrence of work breaks, enabling timely intervention and results in improved business. It also collects data about the transactions the client has performed and gives directions how to organize the work in each branch bank office. Such implemented systems allow banks to become familiar with the clients' structure, their needs and to get adjusted to their needs; sometimes give a correction in real-time work. The use of information and communication technology in the bank office is important, but also in the work of companies in another sector, as it enables the optimization and improvement of operations through easier control and increases the efficiency of the steps taken in business processes. It is of great importance to convert all business documents from paper format to electronic format to enable archiving, stacking in databases and later searching if necessary. Also, e-form documentation is easier to monitor. Particular attention should be given to the continuous and comprehensive reporting of employees responsible for particular segments of business, for example by email, internal web or via web portal. The aim of this paper was to analyse the use of information communication technology in banking, such as: Information System, Automated Teller Machine (ATM), Electronic Banking, Internet Banking, and Mobile Banking (m-banking). Some services, production technologies and their implementation at work are presented in the example of Privredna Banka Zagreb, the leading bank on the Croatian market, and one of the first banks that introduced the Internet into their business. Apart from examining the benefit of information technology in today's banking business, the architecture of information systems and its functioning have been explored, using examples of the application of information technologies in everyday operation of banking systems, and describing their advantages and disad-

vantages. Knowing the risk of ICT use in all forms of business, including banking, a part of this paper discusses the protection measures against possible user data attacks. Also, it has been pointed out how important the continuous monitoring of the security of Internet Banking is and the paper presents the application of various security mechanisms for data protection.

2. Research methodology

The research for this paper started with a comprehensive interdisciplinary research study and its final result was written by a computer science undergraduate student and defended at the Josip Juraj Strossmayer University of Osijek, Faculty of Electrical Engineering, Computer Science and Information Technology Osijek.

The paper was titled "Application of Information Technology in Banking"[1] and its goal was to give an overlook of IT past and present, but also to suggest future projection of ICT implementation in banking systems.

The research presented in this paper was mainly based on secondary sources of information and collected data. The significance of information technology communications which support the banking system has been described using publicly available business information, documentation and available Internet information about banks, as well as previously found experiences of other researchers. The benefits of ICT in the banking sector have been demonstrated in this example and the trends of using advanced technologies in the modern bank have been shown. Part of the paper research was focused on the security of the ICT systems used and the protection of client data. Methods of analysis, synthesis, induction, deduction, comparison, and other scientific methods were used in this research.

3. Development of the application of information technology in banking in the Republic of Croatia and the world

The idea of Internet Banking was developed in the 1980s, including the development of the World Wide Web parallel Internet Banking. Programmers working on database development had come up with the idea to offer online banking transactions. The following table shows several significant years that marked the development of Internet Banking.

Table 1 Significant years in the development of Internet Banking

YEAR	CHARACTERISTICS OF INTERNET BANKING
1983	**Nottingham Building Society** (NBS) – The first Internet Banking service in the UK
1994	**Stanton Federal Credit Union** – The first Internet Banking in the USA
1995	**Security First Network Bank (Pineville, USA)** – The first Internet-only bank
2007	**Apple** – The first smartphone iPhone that introduced Internet Banking

Source: Created by authors

As can be seen in Table 1, in year 2007, by launching the first smartphone iPhone, Apple made a turning point - Internet Banking became more mobile and the waiting time was shorter, reducing the crowds in bank branches. From the 1990s to the present time, there has been an increase in the fast development of the technology required for Internet Banking and the increasing number of users who understand the benefits of this type of banking. According to the data of the Online Banking Report, in April 1996 there were a million users of Internet Banking in the United States. In 1997 there were already 4.2 million Internet Banking users. Research shows that in 2001, 19 million US households used some form of Internet Banking[2].

The influence of modern technologies on the development of Internet Banking in Panian's book (Panian, 2013: 173) is analysed through several phases: initiation, interactivity, personalization, virtualization and mobility. The phase of virtualization occurred in the 21st century when there was a strong expansion of mobile and mobile technologies and devices. Due to the globalization, clients have become more mobile at work, and in private life, putting pressure on the banks and other financial

services to offer time-saving mobile services and to enable the globalization of their business.

With the development of the Internet and Internet technologies, banks in the Republic of Croatia also began to implement the Internet in their business, but at the beginning its role was considerably smaller than it is today. At the beginning, banks used the Internet as a marketing medium for advertising and bidding. Internet Banking in the Republic of Croatia, as we know it today, formed gradually and with several years of lagging behind the United States and Europe. Varaždin Bank can be considered as the "architect" of Internet Banking in the Republic of Croatia, since it introduced the option to inspect the account balance in 1997. It was a very simple option, helping users of this bank to access their accounts from their computer without going to a branch office and losing time waiting in queues. Two years later, Međimurska Bank decided to introduce the same option. The first pioneers in "modern Internet Banking" were a few banks, while today's leaders in the banking world were slower in introducing these changes. Thus, Raiffeisen Bank and Privredna Banka Zagreb introduced Internet Banking in 2000 and Hypo Alpe Adria Bank in 2001.

The reason why Croatia lagged behind the United States and Europe for a few years was the lack of legal regulations in the country and a low percentage of Internet users. The Law on Payment Transactions in the Country enabled the rapid development of Internet Banking. Following the adoption of the Law on Payment Transactions, Internet use increased and banks used these circumstances to attract users to Internet Banking. Table 2 shows the number of Internet users today in the Republic of Croatia according to the latest available data from the Croatian National Bank, dated 20 Feb 2017 (Table 2).

Table 2 The number of users by payment instrument – year 2016

	As at 31 January		As at 30 June		As at 31 December	
	Transaction account	Another payment account	Transaction account	Another payment account	Transaction account	Another payment account
CONSUMER						
Internet	1,235,222	20,484	1,254,164	21,072	1,277,133	21,327
Telebanking						
Mobile phone	655,550	9,566	736,363	11,030	821,114	12,547
E-bill	33,673	964	26,207		42,822	1,165
Standing order	1,083,301	1,029	1,099,647	1,001	1,133,644	941
Direct debit	1,084,559	635	1,068,462	571	1,075,055	523
Other	83,190		80,710		78,264	
NON-CONSUMER						
Internet	308,750	316	315,797	341	252,736	365
Telebanking	5,983		5,793		2,594	
Mobile phone	59,056	11	66,466	24	41,458	36
E-bill	112		108		69	
Standing order	28,421		30,183		11,428	
Direct debit	1,531		1,502		1,562	
Other	26,977	47	26,469	41	2,012	45

Source: Created by the authors on the basis of the source "Number of users by payment instrument for 2016, the Croatian National Bank"[3]

4. Advantages and disadvantages of using Internet Banking

As a global computer network, the Internet makes it easy for its users to do a lot of business. The specific characteristics of Internet Banking, which are primarily reflected in time and money savings, as well as speed and effectiveness and a significant channel of distribution, have been recognized by the banks as well. The advantages and disadvantages of using Internet Banking can be viewed from the standpoint of the bank and from the client's point of view as the main stakeholders of the business.

In his paper, Rončević (2006: 765) points out the following advantages of Internet Banking from the bank's standpoint: improved market reputation, reduced transaction costs, faster and better responses to changes in the environment, greater market penetration, and the use of the Internet to advertise and sell new financial products. Using the service of Internet Banking, banks have been able to manage customer relations better, since they offer a wide range of services available 24 hours a day. The services offered are standardized, enabling banks to create services at a lower cost. However, standardized services can be seen as an advantage, but also as a disadvantage for banks because they have no personal contact and might find it difficult to respond to the wishes and needs of more demanding clients. Talking about the disadvantage, it can be

said that the transaction may cause a mistake in the software, and thus the loss of data on the executed transaction. The bank may not provide a 100% guarantee for the security of Internet banking services. One of the biggest obstacles to wider application of Internet Banking is low IT knowledge (Milanović, Ćibarić, 2015: 70).

Table 3 shows the percentage of individuals using the Internet for Internet Banking of individuals aged 16 to 74 in 2011 and 2016 in European countries.

Table 3 Individuals using the Internet for Internet Banking

COUNTRY	% 2011	% 2016	COUNTRY	% 2011	% 2016
EU (28 countries)	36	49			
Belgium	54	64	Lithuania	40	54
Bulgaria	3	4	Luxembourg	59	71
Czech Republic	30	51	Hungary	21	35
Denmark	75	88	Malta	42	46
Germany	45	53	Netherlands	79	85
Estonia	68	79	Austria	44	53
Ireland	33	52	Poland	27	39
Greece	9	19	Portugal	22	29
Spain	27	43	Romania	4	5
France	51	59	Slovenia	31	35
Croatia	**20**	**38**	Slovakia	34	45
Italy	20	29	Finland	79	86
Cyprus	20	28	Sweden	78	83
Latvia	53	62	United Kingdom	_	64

Source: Created by authors on the basis of source "Individuals using the Internet for Internet banking in 2011 and 2016 in European countries"[1]

Table 3 shows an increase of 13% in the total number of users of Internet Banking at the EU level in 2016 compared to 2011. A significant number of Internet Banking users were recorded in Denmark, Finland and the Netherlands. In these countries, Internet Banking was used by 85% to 88% of citizens in 2016.

In the European Union, in 2016, the smallest share of Internet Banking users was recorded in Bulgaria, Romania and Greece. The number of Internet Banking users in these countries ranged from 4% to 19%.

In accordance with this criterion, the Republic of Croatia is below the EU average. In 2011, Internet Banking in the Republic of Croatia was used by 20% of citizens, and five years later, in 2016, 38% of Croatian citizens used the services of Internet Banking.

Forrester Research estimates that in 2013, there were 51 million mobile banking users in Europe, or 42 million that used m-banking services via a mobile phone and 19 million through tablets. They also predicted that these numbers would grow in 2018 up to a total of 214 million, of which 99 million refer to mobile phone access and 115 with tablets (Ružić et al., 2014: 220).

Comparing Internet Banking to traditional banking, it can be seen that Internet Banking offers the following advantages to customers (Vidović, 2015: 18):

- Unlimited time and space;
- Increased customer satisfaction due to time savings and transaction speeds;
- Cost reduction for the citizens because they use minimum bank fees using Internet Banking;

- Controlled access to information;
- The client has continuous access to information;
- Lower bank fees than in traditional banking;
- Complete financial control;
- Working with Multiple Owners (Companies) Computers;
- Access to services by using tokens, mToken.

Looking at the above, it is evident that the benefits of Internet Banking are numerous, and that its popularity and global representation will promote it even more. However, it should be stressed that the main disadvantage of using Internet Banking from the client's point of view is the lack of security while performing transactions. Clients are extremely sensitive when it comes to their money and are not ready to risk having their data stolen or misused. Therefore, banks today invest significant amounts of money, time and human resources in order to raise and maintain information security.

5. Functionality and technological background of ICT application in the banking system

In a modern bank, ICT technology now covers every part of the business with clients of banking services, but also supports the banker's decisions in his work.

Services that users of banking services use in this way, can be roughly divided into basic services (performing financial transactions, transferring money to other banks' accounts, exchanging currencies, reviewing bank account balances, using currency exchange rates and currency calculators, paying bills, depositing funds, etc.) and additional services (email notification, SMS support, alarms and reminders on actions such as bill payment and overrun of account minus allowed, purchase of shares in investment funds, purchase of shares etc.). Information technology used in banks includes information systems of bank generally, e-banking, Automated Teller Machine (ATMs), Internet Banking and mobile banking (m-banking).

5.1 Information systems (IS)

The term information system (IS) describes the comprehensiveness of infrastructure, organization, people and procedures for collecting, processing, generating, storing, transferring, displaying, information distribution and how available they are.

Since the use of information technology in all aspects of the banking business has created great dependence on information technology, it is of great importance how to manage the information system as an integral part of bank management as a whole. According to the decision on appropriate management of the information system (Croatian National Bank, 2010), the components of the bank's information system are presented in Table 4.

Table 4 The components of the bank's information system

Software components	Hardware components	Information assets
Application Software	Computers and computer equipment	Data in databases
System Software	Communication equipment	Data files
Databases	Media for data storage	Program code
Software development tools	Other technical equipment that supports work of the Information System	System and application documentation
Utilities and other software		

Source: Created by authors on the basis of source "Decision on Appropriate Management of the Information System" (NN, 37/2010)[5]

5.1.1 Architecture of the Information System software

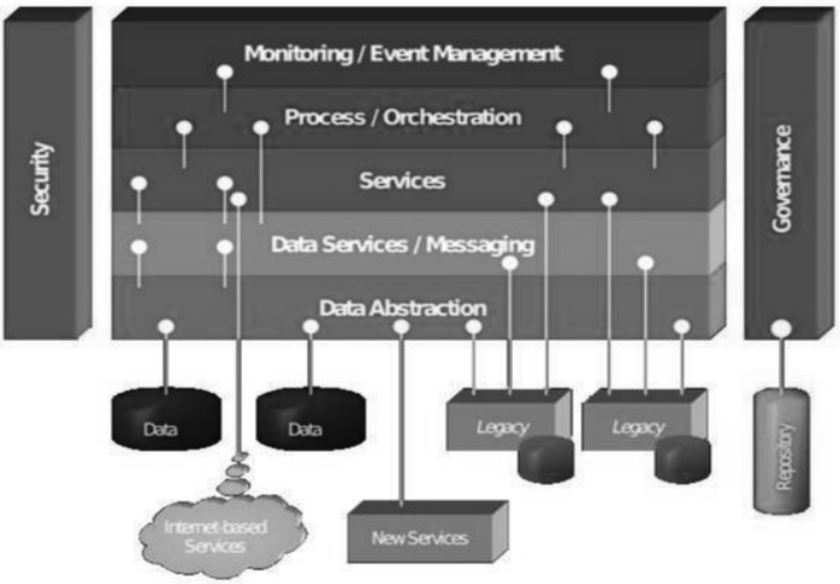
Architecture of the Information System software is comprised of three main parts, and it has the so-called "Three-layer architecture":

1. The User Interface (Front-End) is the part that customers see and use when authenticating and using the services the bank offers to them in this way. Nowadays, special attention is paid to attractive visual appearance when the interface is created and

some guidelines are followed to customize applications for all age groups of users in order to make them easier to use, enabling good user navigation through applications, as well as referring users to the use of security protocols for data protection. Service providers try to provide clients with constant information about changes in their account balances and preferred transactions via mobile applications. The user interface is most often programmed using mobile web technology and operating systems (IOS) by Android, Windows, etc. The technologies which are used in creating user systems are most commonly HTML, CSS, XHTML, JavaScript and PHP.

2. The Central part of the system (Middleware) contains programs that act as a mediator between multiple applications, between applications and databases, or between several databases. The applications interact with each other through a messaging system (messaging - GET and PUT) that serves to load data that the user enters to transfer between applications. Technology that has proven to be effective in connecting large and independent parts of an application to establish efficient system functionality is the Service Oriented Architecture (SOA). This technology has proven to be effective in connecting front-end and back-end systems. It can be used for interactive applications on the Internet, but also for interactions from one workstation to another (using the PPP protocol and the EDI (Electronic Data Interchange) network). It consists of software services that are independent of each other and sometimes they run on different platforms (most commonly are .NET or Java). Program services can manage memory, create links between programs components, and create data mapping (organizing data so that applications can be processed). SOA can be used on different platforms: Windows, Linux / Unix and other operating systems[6]. The Internet Banking application is like a black box, helping the user only to see the data he or she enters and the end result of the query. Communication between front-end and back-end systems is an asynchronous type, meaning they do not have to work at the same time (e.g. if the front-end connection does not work, the back-end continues to work, and vice versa). The back-end looks at the front end as a series of services with a high granularity, enabling integration of different applications through SOA protocols. Two parts of the back-end system provide the message flow in the system (Back-end connector and Back-end handler of messages in the message queue). The SOA model is shown in Figure 1.

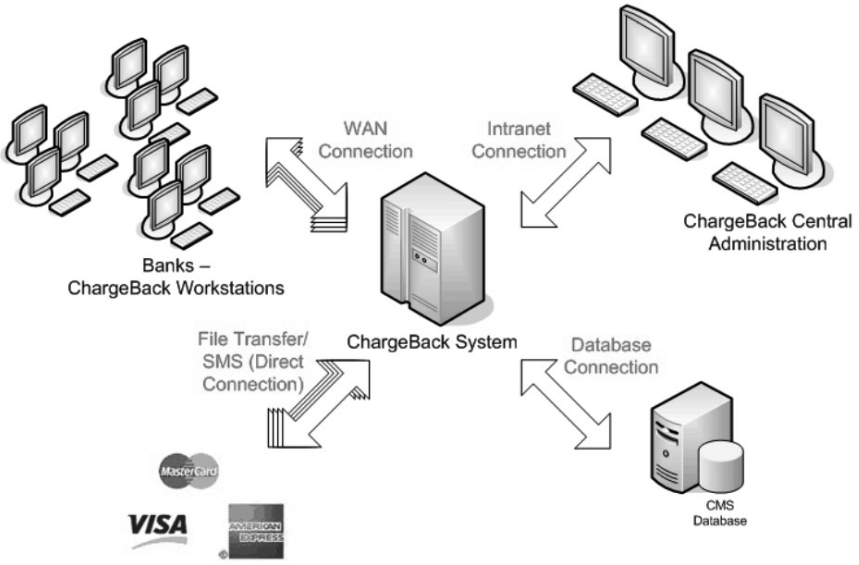
Figure 1 The SOA model and its components



Source: David S. Linthicum, "Leveraging EA Concepts to Make Your SOA a Guaranteed Success"[7]

3. The back-end system (where centralized data processing is done) collects transactions in various forms and then the requirements are translated into the form the machine understands and executes. This part requires great computing power, additional security measures, and advanced programming techniques. The core of the back-end system creates a database. Centralized data processing in the background of the system (Back-end system) is shown in the Figure 2.

Figure 2 Back-end system - credit card payment module



Source: Al-Khatib (2012: 16)

Important elements of Internet Banking that enable its functions are SSL (Secure Socket Layer), Firewall, Application Server, LAN (Local Area Network), and Middleware. Where the SSL (Secure Socket Layer) is a standard security technology for establishing encrypted connections between a server and a client, usually a web server and an Internet site. It represents a security protocol that defines the connection encryption variables and data that are transmitted over that link. Firewall is a network security system that prevents unauthorized access to or from unauthorized private networks and may be implemented by hardware, software, or a combination of both. A Web server is a program that uses HTTP (Hypertext Transfer Protocol) to distribute information which creates users' web sites in response to their requests that are transmitted by the HTTP client from the client computer. An application server is a server type designed to support a web server when it handles dynamic content. An application server is listening to the web server work and automatically intercepts all user requirements for dynamic content. The Web server still sends static web pages and graphics files, and can also create dynamic content with the application server by mixing data with templates, it can run applications, or access databases.

LAN (Local Area Network) is a computer network within a certain area, like business premises. It consists of interconnected computers, databases, and other devices. Middleware is a software layer that connects two different separate applications. For example, there are a number of layers linking the database system to a web server. It allows users to search database data using forms displayed on the Internet browser and enables the web server to restore the dynamic page based on user requests.

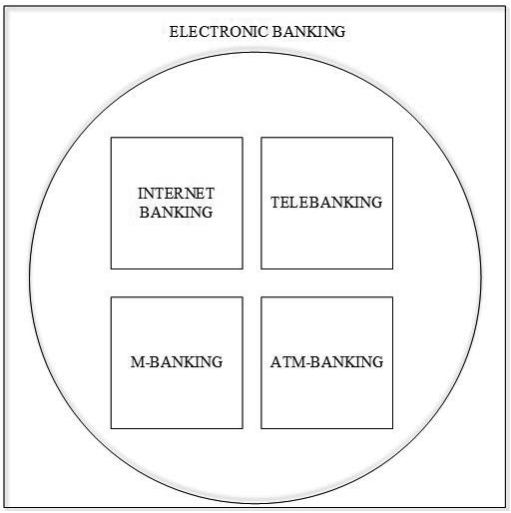
5.2 Electronic banking

Electronic banking (e-banking) is the most widely used form of access to bank accounts and making

transactions using information technology that does not necessarily use Internet access. E-banking is the automatic delivery of new and traditional banking products and services directly to the customers via electronic interactive communication channels (FFIEC, 2003)[8].

E-banking encompasses Internet Banking, telecommunications, m-banking, and banking through ATMs (Automated Teller Machine). Clients can access e-banking services via an electronic device, such as a Personal Computer, ATMs, or a smartphone.

Figure 3 The scope of electronic banking



Source: Created by authors

5.2.1 Use of the Automated Teller Machine

The Automated Teller Machine as an electronic telecommunications device enables the customers of a bank to perform financial transactions (from or on current or giro accounts), like cash withdrawal, payments to accounts or to check the account balance. If the currency withdrawn from the ATM is different from that in which the bank account is denominated, the money will be converted at an official exchange rate. All of that optimizes human resources. Using ATMs saves time of clients, reduces the crowds and costs of banks. It allows the banks longer working hours because ATMs can be used 24 hours a day. Within each ATM there is a computer system (in most cases a PC) whose basic function is to connect the ATM network with the bank and enables access to the information of the account for the requested client. The operating systems used for computer work at the ATM, can be Windows, Unix (Linux) or others. The ATM's components are the processor (computer) - the "brain" of the ATM controlling the user interface and the transaction devices, card reader (magnetic and / or chip) – which contains all customer information and serves to identify the client, keyboard, function keys – which are located on the left and right side of the screen and serve to select the offered options on the screen itself, printer – which can print a certificate of a completed or failed transaction, print the account status, cabinets (lower and upper) – which incorporate machine parts and mechanisms for processing the required authorized access, and various sensors and indicators.

Since the protection of the users' data and the bank while using the ATM is of foremost importance, it is very important that the data is protected and that no one else has the opportunity to reach the data in any way. The cash inside the ATM is protected with a dual level of ATM security, such as:

1. Securing User Data through a card reader, equipped with a high-level security crypto processor in order to provide information that the user enters (e.g. a PIN number), while protecting the transfer of messages from the ATM to the financial institution via network (Message Authentication Code (MAC) or Partial MAC). The user is protected if the card reader keeps the card too long in the ATM without any activity or if the wrong pin is repeated consecutively.
2. Physical security of money is guaranteed by using a safe deposit box inside the ATM's cabinet which consists of multiple cassettes with bills which are secured with the containers with colour or smoke in order to disable the bills use if someone attempts to access the safe deposit box violently[9].

Although the ATM is a significant distribution channel and with the help of ICT technology it can support various functions, the banks are cautious about the number of implemented functions, because the focus of the ATM remains the basic cash payment function, with its primary goal to reduce waiting in rows. However, if there were other functions incorporated (like paying bills) into ATM system, we could have crowds waiting again.

5.2.2 Internet Banking (IB)

Internet Banking is a banking service that allows users access to their account and performs financial affairs from anywhere where the clients have access to a computer, but also from any other device which is connected to the Internet. IB is performed with a browser which can access a secure web point of the bank, so that clients can access their account using the security data they have received from the bank. Internet Banking enables the user to inspect the account balance, transfer money between accounts, and execute the deposit on account, buy foreign currency and other activities. The conditions required for the functioning of Internet Banking can be divided into bank prerequisites and prerequisites for clients (Trenkić et al., 2015: 72).

The prerequisites for the bank are: the existence of an Internet connection, server computers and web server programs, the existence of appropriate software web applications (user interface), adhering to the appropriate security protocols and certificates, and the legal regulations on e-documents and e-signatures. Prerequisites for the clients are: a signed contract with the bank with an agreed monthly fee for using Internet Banking. Then the user gets his or her user number and PIN number (or the device that generates the PIN number for security reasons), thus enabling the client to use Internet Banking and the Bank.

Our example of Internet Banking is "Privredna Banka Zagreb". Its IB is intended for all its clients who are the owners or assignees of a current account in kuna, a current account in a foreign currency, a giro account in kuna, a giro account in a foreign currency or a transaction account of craftsmen. The user is given access to bank accounts 24 hours a day for account traffic, payment of financial obligations, transferring funds from one account to another, the possibility of issuing orders in the announcement, review of all executed orders, contracting insurance policies, payment of loan instalments, and etc. In order to use IB services, it is necessary to sign the Agreement on Use, to take the authorization device, to provide minimum technical conditions (including Internet access)[10].

Furthermore, it is necessary to log into the system with the username and PIN number that the user receives from the bank when he or she has signed the contract. Except the login via the mToken application, it is also possible to log in using the card reader. The card reader is an identifier, the size of a human hand, consisting of a small screen and a keyboard with the function keys. It reads the chip on the user's card. When the card is inserted into the reader, the reader recognizes the chip and asks the user to enter their pin on the screen, and generates and prints a user's one-time password on the Internet Banking Web site after the pin entry. When the registration is completed, the main menu appears showing the users' data like name and family name, Barometer Innovations, currency list, active accounts and menus with available functionality.

Under the "Accounts" option, the user has access to all his or her open accounts in that bank, the type of account the user deals with and information about the amount available on each account if there are more. The next option is payment and a currency exchange in which a user can perform all payment transactions. For instance, the user creates a payment order by filling out the required fields in the order and pays bills by simply clicking the mouse. The "Exchange" option offers the user the option of buying and selling the currency without going to the exchange office. Under the card menu, the user has detailed insight into his or her credit cards and can make a payment for the selected card. The user is given an insight into the state of the savings, deposit or investment already made on his or her saving and investment card or the option to open new savings or to change the terms of deposit. In the "Credits" menu, the user can view details concerning transactions, annuity, outstanding debt and total borrowing as well as quick loans if the user has them. It is also possible to review the details of the loans, even those already repaid, and make the payment of funds and the premature final repayment of short-term and long-term loans if the beneficiary has them. Under the insurance option, the user is able to arrange supplemental health insurance, full health insurance, property insurance, and compulsory motor insurance. Upon completing all desired transactions, the user must log out of the Internet Banking application by selecting the logout icon.

5.2.3 Mobile banking

The service offered on mobile devices (smartphone or tablet), provides fast and easy access to information about the services and products the customer has in the bank, with the possibility to execute financial transactions. The services are intended for all bank customers who are the owners or assignees

of a current or giro account, and they can be used via software installed on the mobile device. Within the program support, a token is used to identify the user and authorize the default orders. Usually, applications that use their client interface appearance and client authorization mode are tailored to the dimensions and technology platform offered by the classic, contemporary smart phone. This means that the information, the menus and everything else that the independent banking service consists of, will be on the screen in the most concise form possible, but also that the authorization will be simpler than on the Internet, since the cell phone and the SIM card that is in it - with its unique calling number - is in some way already identified with the owner. If a user wishes to access his or her account via mobile banking, the smartphone must be connected to a particular type of Internet, most often it is wireless (WiFi) or mobile (3G, 4G).

We use the mPBZ as an example and it is a service offered by Privredna Banka Zagreb. Prerequisites for using mPBZ services are: a mobile phone that supports Java2 Mobile Edition (J2ME) versions of MIDP 2.0 and CLDC 1.1, enough memory to store mobile software support (about 300 kB of free storage space for all files that come with the application and its installation on the device, and this includes all the files that are created when programming such applications and when executing them on the device itself) and the user-enabled GPRS Internet access from the mobile device.

When the mPBZ application is started, an identification screen appears on the mobile device display that prompts the users to enter the token PIN, so that the users can access the application itself and their account. Once when the identification is over, which is much simpler than Internet Banking, the user enters the main menu, which consists of several options like entry into accounts, payments, mPBZ investor, savings, cards, loans and adoptions, GSM bills, mutual funds, exchange offices, etc[11]. If the account option is selected, a new screen with a list of all open accounts in the bank appears on the screen. In continuation, for example, under the payment option, we can enter into the part of the account intended for fast and easy payment. By selecting 2D bar code scanning, the smartphone uses a built-in camera that scans a 2D bar code from the account and creates a filled-in payment order on the screen and the user needs only to confirm the payment order by re-enrolling his or her token PIN.

The user has the ability to fill in an order form by selecting a new order option, where an empty order form will be created and which the user fills in, also authentication will be needed by entering the token PIN before the completion. Java Platform, Micro Edition (JME or J2ME) is a platform that provides a flexible environment for applications on mobile and other devices. The Mobile Information Device Profile (MIDP) enables writing of applications and services for network-connection mobile devices and in combination with the CLDC (Connected Limited Device Configuration) makes the Java Mobile Device Environment and enables the launch of Java-oriented applications. The CLDC defines a basic set of interfaces for the application cell phones programming and in combination with the MIDP, provides a strong Java application development platform that will run on devices with limited-memory, processor, and graphics capabilities. The General Packet Radio Services (GPRS) is an older standard of wireless communications available to the second and the third-generation mobile devices that use the GSM (Global System for Mobile Communications). Communication (network) is achieved by merging the packet, which makes it possible to use the network more efficiently because the resources are only occupied when they are really needed. Because of its quality, speed and reliability, it has enabled the development of user-friendly applications of diverse content. SMS (Short Message Service) Banking is another type of mobile banking that allows clients to make limited numbers of services via a mobile phone using the SMS messaging system. SMS is a system for short messaging (up to 160 characters) via mobile and fixed phones by using standard telephone protocols (GSM). SMS banking uses PUSH and PULL messages. PUSH messages are information that the bank sends to the client without the client sending the query like: mobile marketing, bank news, or a one-time password used as a protection against fraud, whereby the user will be given a new one-time passphrase every time he or she accesses SMS banking. The PULL messages are the ones that the client sends to a bank using a mobile device asking for information or doing transactions (e.g. wanting to see his or her account balance, exchange rate, etc.).

5.2.4 Telephone banking

Telephone or tele-banking is a financial institution service, enabling clients to perform financial trans-

actions via a fixed telephone without the need to visit a bank or ATM. If it is necessary to contact a bank clerk by phone, the user can do so during the official working hours of bank, which can be longer than the regular business hours that banks offer to their clients.

The benefit of this service from the client's point of view is that it can reduce costs and save time, since the client does not have to come to the office to perform the transaction, but the disadvantage is the limited time in which the client can use this type of banking, since banks do not work 24 hours a day and they have restrictions for disabling access to all accounts via telecommunications. The procedure for the implementation of telephone banking is as follows:

1. The client should be registered for this service by the bank, obtain the authorization password (the password for telecoms is generally different from that for Internet Banking) and the customer number.
2. The bank has to be able to locate client phone numbers.
3. To access tele-banking, the client needs to call the special telephone number of the bank, which is provided by the bank for that purpose and it is accessible via phone.
4. By using the username and password, the client can access his or her account (current, credit, savings, credit card etc.). Some banks also have additional authorization steps (e.g. using numeric and voice passwords, or answering a number of security questions set by a bank official, etc.)[12].

6. The Security of Internet Banking

The security and protection of Internet Banking is a problem that needs to be seriously taken care of, because it is most important for the user that his or her money in the bank is safe. Today, security concerns are far more than buying a safe to save money. By developing e-banking, security has become more a software problem (Al-Khatib, 2012: 15).

When it comes to Internet Banking and business over the Internet, there are risks and some security breaches might occur. Internet banking is mostly conducted through the Internet. The Internet is a public medium, with open communication and there are no formal control mechanisms. The risks of using Internet Banking are usually related to fraud attempts by third parties or various errors while processing information. The level of security while performing transactions through Internet Banking affects the Internet Banking system that the bank uses.

In Internet Banking, banks use various algorithms for secure data flow across the Internet. Banks operating in the Republic of Croatia use the SSL algorithm (Secure Socket Layer).

Network hardware and software equipment are two main areas used to protect bank data. Attacks on the bank's communications network are most common in the form of hacker attacks and theft of data in their network transmission, and strong encryption systems are being used as pre-emptive measures for those data transmitted over the network. While attacks on the hardware and software of banks are mainly aimed at disabling their functionality (so called Denial of Service – DoS attacks), there are attempts of intruder logging in order to perform an illegal transaction or to set up a virus to collapse the system. Preventive measures for these types of attacks are firewalls at points where the bank equipment connects to the network.

The risks of security breach are great, but the banks invest a lot of resources into different types of protection to reduce these risks as much as possible. There is a need to create a security management strategy, a document in which the bank elaborates in detail the procedures for safeguarding security. The goal of this strategy is to provide unmatched and safe operations for all parts of the business.

In order to develop such a strategy, it is necessary to look at details, such as to plan security systems for each part of the business, since all parts of the business are important and it is necessary to constantly invest in new security systems, which include not only financial investments in the technical part of the system, but also professional training of the staff responsible for system maintenance.

Some of the ways that business security could be jeopardized are thefts of digital content or software hardware, intense attacks on vulnerable areas (server crashes with irrelevant requests that cause system crashes), launch of viruses or malicious programs that attack software or hardware, and unauthorized access (Hiding IP addresses, punctuation of passwords).

Some of the more important mechanisms and protection techniques that prevent such and similar attempts to attack the system are: identification, authentication and authorization. The identification is a procedure by which a user is required to enter a name, surname, identification number or username obtained from a bank, authentication - an identification procedure that proves whether a person trying to enter a site is actually that person It represents the most common way (something that only the user knows (password, PIN etc.); or has (smart card, TAN table, stick etc.) or something that the user is (biometrics - fingerprint, eye cornea, manuscripts, etc.) and authorization - a procedure to check if a person who is presented to the system, has the authority to access the system itself (checking and matching with pre-stored data within the system).

Authentication and identification can be done in two ways. The first is applying physical measures, meaning that only the user owns some object, most often it is an identification card, a smart card, a token device, and the other is a password-related logic that only the user knows.

The second mechanism concerns the protection of secrecy when transmitting data to computer networks for which encryption methods (cryptography and cryptanalysis) are used. Cryptography causes the original message to be incomprehensible to persons who are not communication participants, and then cryptanalysis is used to reverse the procedure, so that the recipient of the message with the help of the secret key (encrypted message) finds its contents, that is, the original message.

The virus protection often includes the protection measures against viruses, such as preventive measures, and measures for damage already incurred. For preventive protection measures, the user is encouraged to avoid using suspicious programs, to open messages of unknown origin, to regularly back up his or her files and programs, and to use antivirus programs to detect viruses. If the users are already trying to do so, they should try to save data and business programs using antivirus cleaning and to eradicate infected files and their contents. The most used antivirus programs that can perform the above tasks are: AVG, McAfee Antivirus, Esset NOD32, Bit Defender, F-prot, and House Call. If virus infection occurs, there is the possibility of uncontrolled sending of spam messages, a large number of messages are sent to a large number of users in a very brief period of time. The user is not even aware of the operations that happen because the virus keeps sending spam messages. To prevent sending spam messages, users should use anti-spam programs such as Add Aware, StopZilla, Panda Titanium Antivirus + Antispam, etc.

6.1 The Security of Internet Banking in the Republic of Croatia

Data published by Eurostat in 2015 indicate a very high level of security problems in using the Internet in the Republic of Croatia. At EU level in 2015, 25 percent of the Internet users experienced certain security issues (viruses, personal data misuse, financial losses, or inability to block inappropriate online content).

Countries with the highest incidence of security problems are: Croatia (41 percent), Hungary (39 percent), Portugal (36 percent), Malta (34 percent), France (33 percent). The least problems are incurred by the Czechs (10 percent), the Dutch (11 percent), the Slovaks (13 percent) and the Irish (14 percent).

On the other hand, Croatian citizens are not among the first when it comes to avoiding certain Internet services for security reasons. Internet Banking services are mostly avoided by the Germans (27 percent), the Portuguese (26 percent) and Italians (24 percent), and only six percent of the Croats use this service for security reasons[13].

Despite all protective measures, however, there are security breaches, so we have newer examples, such as the hacking of the bank pages of the Karlovac bank or the Samberg bank in 2012. In mid-2014, the Croatian National Bank warned citizens about attacks by hackers who had stolen large amounts of money from the bank funds and the accounts of citizens and business entities.

The most common forms of fraud that may be encountered in our area are the use of malicious programs (viruses, Trojans and the like) that are sent to users' email addresses. The content of these emails refers mostly to links that redirect users to the fraudulent Web site of their banks and seek authorizations from users on pages that look like authentic source pages. Counterfeiters are able to make identical pages because pages are written with HTML (descriptive language for website creation) and its code is available to everyone. The main goal of the fraud is to use the information that the users have

unconsciously forwarded to the misappropriation of the cash funds of the user. Such methods are specifically targeted at business users who use the Internet most to authorize card transactions or some other methods mentioned in this paper. Users are continuously informed that if they notice any irregularities they must immediately notify their banks because a timely reaction can significantly reduce the damage or completely prevent it.

7. Conclusion

The development of information and telecommunication technologies directly affects the development of society and globalization, and has a major impact on the advancement of Internet Banking in a relatively short period of time. Since the emergence of information technology in banking, banking has made a major step forward in its business, not only in service but also in the overall system of a modern bank. This paper emphasizes the importance of synergy between information communication technologies and the banking system. The advantages and disadvantages of using information communication technologies in the daily work of banks are analysed, such as optimizing customer time (avoiding long queues in bank branches and providing access to user accounts at all locations where there is Internet access), as well as optimizing the number of employees in the banking sector with sustained quality of services provided. The method of using information communication technologies related to infrastructure, devices (hardware parts) and software components (software components) is presented.

The functionality and the production of some of the technologies used are described, as well as the description of the information system and its main components. Components are displayed using physical devices such as ATMs, card readers, and application apps, including mobile apps and web pages that provide users with quick and easy access to their customer data and bank accounts. Special attention was paid to the security of using technology and Internet Banking. The protection of data and users is very important in modern banking. The banks are also developing new types of customer protection, the best examples of this is the replacement of magnetic strips on chip shortcuts that are very difficult to scan. The access to data over the Internet is carried out through secure channels (SSH tunnelling), introducing multiple single passwords that are generated at the user's request, etc.

The application of technology in banking nowadays penetrates almost all aspects of business, and it is certain that in the coming years there will be tremendously rapid progress. In this respect, the intensification of the importance and use of new technological achievements and informatics is expected to increase, while the role of Internet Banking will be even greater and the global representation broader. Given the continued growth of the number of Internet Banking users, it is to be expected that in the future, IB will become a serious rival to traditional banking. Modernization can be expected in the mode and technology in which banking services, payments and interaction between the client and the bank will be performed, as well as in guaranteeing greater security of new distribution channel services. Furthermore, scientific research is important and can comprise several aspects. Along with the performance of the services themselves, attention needs to be paid to the mechanisms and technology that will be used in the future to implement security and data protection and to maintain trust between banks and banking users.

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SINERGIJA INFORMACIJSKO-KOMUNIKACIJSKIH TEHNOLOGIJA I BANKARSKOGA SUSTAVA U FUNKCIJI USPJEŠNOGA BANKARSKOGA POSLOVANJA

Sažetak

Suvremeno bankarsko poslovanje danas je nezamislivo bez informacijsko-komunikacijske tehnologije i iz toga razloga banke čine velika ulaganja u implementaciju tehnologije prisutne na tržištu. Informacijsko-komunikacijska tehnologija danas pokriva svaki dio poslovanja banaka i nužna je infrastruktura suvremenoga bankarskoga poslovanja kod kojega se sve više uviđa da je ulaganje u razvoj i implementaciju novih tehnologija, ne samo ulog u pojednostavljenje svakodnevnih poslovnih operacija i sigurnost poslovanja, nego i stvaranje strateške prednost pred konkurencijom. Osim osiguranja brzih i učinkovitih pružanja usluga klijentima dajući potporu distribucijskim kanalima, daje potporu bankarima pri odlučivanju, ali i podržava ostale funkcije poslovanja bankarskoga sustava.

Cilj je ovoga rada napraviti analizu trendova u korištenju informacijsko-komunikacijskih tehnologija u bankarskome sustavu koristeći javno objavljene poslovne podatke, dokumentaciju i dostupne internetske informacije banaka, ali i prethodno utvrđene spoznaje drugih istraživača. Na primjeru jedne od najvećih banaka u Republici Hrvatskoj pokazane su mogućnosti koje je informacijsko-komunikacijska tehnologija donijela u sektoru bankarskoga poslovanja te je ukazano na prednosti i nedostatke njezinoga korištenja, ali i načine funkcioniranja suvremene banke. Posebna pozornost pri istraživanju za ovaj rad usmjerena je na sigurnost informacijsko -komunikacijskih sustava koji se koriste prilikom internetskoga bankarstva i na zaštitu podataka korisnika bankarskih usluga.

Ključne riječi: informacijsko-komunikacijska tehnologija, bankarski sustav, bankarsko poslovanje

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Knowledge and skills of professionals in investor relations

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KNOWLEDGE AND SKILLS OF PROFESSIONALS IN INVESTOR RELATIONS

Abstract

Management of investor relations is of utmost importance for a company that raises capital for its operations and projects in the capital market. Investor relations is a function through which the company develops investor confidence in the company and its business operations by establishing a continuous flow of information from the company to the investors on the basis of which investors can make an informed decision about investing in that company, and a flow of information from the investors to the company on the basis of which the company can draw conclusions on the requirements, needs and expectations of investors. Since this is an interdisciplinary function of the company, professionals with a broad range of knowledge and skills work in investor relations. This paper identifies the required knowledge and skills that are minimally required in order for a person in investor relations to be able to fulfil the basic task of this function, the purpose of which is to develop investor confidence in the company and its business operations in order to secure access to investor capital for the company.

Keywords: Investor relations, knowledge and skills in investor relations, investor confidence, information flow, two-way communication

1. Introduction

Each company present in the market manages various relations that it establishes with all relevant stakeholders in these markets; these are primarily suppliers and consumers, creditors, investors, employees, the environment in which the company operates and/or at which it appears, governments and other authorities, the general public and the media (Hašček, 2015: 1207), but also all the other stakeholders who at some point become *interesting* or relevant (sufficiently important, if not crucial!) for the company and its operations.

Management of the investor relations function is of crucial importance for a company that raises capital for its operations in the capital market, since it is through investor relations that the company develops the confidence of investors (both current and potential) in the company and its operations, and this confidence is the key factor for securing access to investors' capital at a reduced cost. Namely, investor confidence, on the one hand, positively reflects on their investments in the company – the shares of the company become more attractive to investors, which then positively reflects on the company's market value and consequently on the investors' return on investment. On the other hand, investor confidence allows the company to correct (irrational) expectations that investors have in relation to the company's performance and to adjust the investors' requirements towards the company with the company's (realistic) capabilities.

Building and maintaining investor confidence is based on open two-way communication between the company and investors, which ensures a timely and continuous flow of information from the company to the investors on the basis of which investors can make an informed decision on investing in that company, and a flow of information from the investors to the company on the basis of which the company draws conclusions on the requirements, needs and expectations of investors.

It can be said that timely provision of necessary information to investors for the purpose of building and maintaining investor confidence in the company and its operations is the key task of investor relations, and that providing the company with access to investor capital is its ultimate goal.

Professionals working in investor relations have a central place in this two-way communication. They determine the company's relationship towards the investors, thus shaping the investors' relationship with the company and affecting their willingness to invest in the company. Therefore, their role in securing capital resources for the company is unquestionable.

In order to be able to quickly and reasonably respond to the investors' demands (pressures!) for information on the one hand, and to protect the company interests on the other, it is indisputable that professionals in investor relations in today's complex capital market need to have a wide range of knowledge and skills. This paper will identify the key knowledge and skills that are minimally required in order for a person in investor relations to be able to fulfil the basic task of this function, which is to acquire and retain investor confidence in the company and its operations. Since the tasks of investor relations are interdisciplinary, the knowledge and skills needed by professionals in investor relations are also interdisciplinary.

2. Definition of investor relations

The US *National Investor Relations Institute – NIRI*[1] defines investor relations as "a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community, and other constituencies, which ultimately contributes to a company's securities achieving fair valuation"[2].

British *Investor Relations Society – IRS*[3] defines investor relations as "communication of information between a company and the investment community", stating that "this process enables a full appreciation of the company's business activities, strategy and prospects and allows the market to make an informed judgement about the fair value and appropriate ownership of a company"[4].

According to the London Stock Exchange (2010: 7)[5], investor relations is "an ongoing activity" through which companies are "interacting with existing shareholders, potential investors, analysts and journalists".

Investor relations could also be defined as a company function whose tasks are determined by establishing relationships with investors (both current and potential), which are aimed at building and maintaining investor confidence in the company and its business operations, with the aim of securing access to capital and determining fair market value of the company's shares (Hašček, 2015: 1210).

Two-way communication between the company and the investor is the fundamental determinant of the above definitions of investor relations, where NIRI went the furthest, defining it as a component of strategic management, thus practically determining it as one of the key functions for the business operations of the company.

Regardless of the precision and/or comprehensiveness of the above or any other definition of investor relations, it is indisputable that its tasks within each company will depend, or be determined depending on the requirements and goals that the company wants to achieve on the one hand, and the investment public on the other.

3. Historical overview of the development of investor relations

The role and importance of investor relations and the need to manage this relationship have evolved with the development of the world's capital market. As the capital market became more complex and more accessible to a greater number of investors and a greater number of different profiles of these investors, and as the investors' demands (pressures) for information about companies and their business operations became more frequent and varied, companies had to be able to appropriately respond to these increased demands in order to develop the

confidence of these investors in the company's business, thus securing sources of funding for their future projects (Hašček, 2015: 1208-1209).

According to Laskin (2008)[6], historical development of investor relations can be divided into three eras: the communication era (1945-1970), the financial era (1970-2000) and the synergy era (after 2000).

3.1 The communication era (1945-1970)

Investor relations as a separate function began to develop in the 50s and 60s of the 20th century in the United States when, as a consequence of strong economic development after World War II, a large number of companies sought sources of funding in the capital market (Laughran, 2014: 35). The origin of the investor relations profession can be dated back to 1953 when General Electric established a position that was in charge of communication with the company's shareholders (Laskin, 2008).

Since, at that time, relations in the capital market were a novelty for the majority of its participants, especially for the investors themselves, quality communication from the company to the investors was the necessary requirement for the knowledge and skills required in investor relations, primarily communication about the company's financial and business results. As most of the communication at that time was conducted through print media, people who came from the journalist profession were in charge of investor relations in the majority of cases (Laughran, 2014: 35), and their main task was to publish the company's name in the newspapers (Laskin, 2008).

The flow of information in this era was one-way: directed from the company to the investors (ibid.).

3.2 The financial era (1970-2000)

With further development of the capital market, financial intermediaries began to appear on the capital market in the 70s and 80s of the 20th century – investment and pension funds, which employed investment advisors, investment bankers and other financial experts who managed investors' investments (Laughran, 2014: 35). This change in the trend of the investors' method of investing (from investors' independent investing in companies towards investing in companies through financial intermediaries) (Laskin, 2008) necessarily led to a change in the trend in requirements for the knowledge and skills required in investor relations. Since people in investor relations now communicated predominantly with professionals employed in the financial industry (primarily analysts), financial knowledge was the most sought after for work in investor relations (Laughran, 2014: 35).

During the 90s of the 20th century the capital market expanded strongly – numerous investors and different types of funds participate in the market, and a large number of different types of complex financial instruments are being developed. Likewise, more and more companies are entering the capital market in search of capital necessary to finance their business and projects (ibid.). It is because of this large number of new companies that competed with each other for investors in the capital market, on the one hand, and a large range of different investment choices available to investors on the other, that the ability to attract and direct investors towards themselves became of crucial importance for companies (Laskin, 2008). In this new environment, in addition to previous financial communications with analysts, investor relations received an additional task in the field of financial marketing, whose main purpose was to build the investment public's awareness of the value and position of the company (Laughran, 2014: 35).

In this era, the communication became two-way; in addition to the companies' communication towards investors, companies started to become aware of the need to collect (feedback) information from investors, and they started to develop open access towards investors. However, in this era, companies still did not use the information collected to change their behaviour; instead, it was used solely for the purpose of better "selling" the company to investors in order to achieve the highest market price of the company's shares (Laskin, 2008).

3.3 The synergy era (after 2000)

In the late 90s of the last century and early 2000s, regulations related to the capital market began to develop strongly, which sought to catch up with the evolution of financial markets in an institutional manner (Laughran, 2014: 35). The regulatory arrangement of financial markets is carried out in order to ensure the equal position of all the participants in those markets, with particular emphasis on the protection of investors in terms of availability of information on the basis of which they make their

informed decisions on investments, and on consumer protection in relation to various and complex financial products and services offered to them on these financial markets. These efforts aimed at the regulatory arrangement of relations in financial markets have received additional confirmation and justification by the occurrence of a series of financial scandals that marked the transition between the 20th and the 21st century[7]. Since regulations related to the capital market started playing a key role, becoming an indispensable factor in creating capital market relations, knowledge of these regulations has become one of the necessary preconditions required in investor relations (ibid.).

The major (unexpected) financial scandals of the early 21st century and the negative consequences that these scandals had on the confidence of investors in the companies they invested in, have made the transformation of investor relations into one of the most important strategic management functions in the company, which now necessarily combines both financial and nonfinancial aspects (Li, 2015: 12). In this period, two-way communication gets its full meaning; companies base their key decisions and strategic planning at the highest organisational levels on information received from investors, and the goal is to achieve fair market value of the company's shares (Laskin, 2008).

3.4 The role and task of investor relations today

Company management today perceives investor relations as a key process for acquiring capital at the lowest cost possible, i.e., a function that is essential for the survival of the company (Laskin, 2008). Attracting and retaining the investors' capital represents a continuous challenge and effort for the company; in these ongoing efforts to secure the required capital, investor relations plays the key (sometimes crucial!) role. Namely, in addition to reducing the valuable time that company management needs to make decisions, investor relations also contributes to fair market valuation of the company, reduces borrowing costs, and provides a shareholder base which will remain "faithful" to the company in bad times (London Stock Exchange, 2010: 5). It is for these reasons that the ability to access capital and the ease with which the company acquires it are often taken as the key indicator of performance of investor relations managers (Laughran, 2014: 35).

In order for investors to make a decision to invest in a company, they have to believe that they have all the information necessary to make an informed investment decision and that this information is credible (Laughran, 2014: 35). The task of investor relations is to ensure this "belief" of investors. Healthy communication of the company towards investors ensures their understanding (and acceptance) of the company's market value regardless of their (current) expectations and needs (Laskin, 2008). A thorough understanding of the company and its business operations ensures long-term involvement of investors in its further operations, through investment of their capital in the company.

It can be concluded that today in investor relations it is necessary to possess and permeate all the knowledge and skills that were individually significant in some of the previously described eras of capital market development, as well as new knowledge and skills which became necessary as a consequence of globalisation, technological progress, the demands of investors, the complexity of the financial system and regulatory frameworks.

4. Knowledge and skills of professionals in investor relations

Since investor relations plays a key strategic role in the company – the one that secures capital for the company's business operations, it is in the company's interest that it is organised in a way that will ensure efficient work of the investor relations department, which will be staffed by professionals who will establish and maintain efficient two-way communication between the company and the investors, analysts, media and other relevant capital market stakeholders, who will acquire and retain the confidence of investors in the company and its business operations, and who will ensure determination of the fair market value of the company's shares.

Since the tasks of investor relations are interdisciplinary, the knowledge and skills needed by good professionals in investor relations are also interdisciplinary. Namely, in today's conditions of globalisation and development of complex financial markets, the existence of different profiles of participants in those financial markets, the increasing demands of capital market regulators and the ever-faster flow of information, professionals in investor relations today must have a wide range of knowledge and skills

and be able to simultaneously perform different tasks with the same ease and workmanship.

Making conclusions about this range of knowledge and skills that professionals in investor relations need to have is based on: 1) analysis of the content of definitions of investor relations of recognised worldwide associations of professionals in investor relations and of the content of educational programmes that they organise, 2) identifying the information that investors require from companies as a basis for making their informed investment decisions and which are prescribed as mandatory by capital market regulations, 3) determining the types of tasks investor relations is responsible for and the types of activities it performs, 4) recognising the goal(s) that companies want to achieve through investor relations and 5) taking into account the situation on global financial markets and technological advances, primarily in terms of ways of communication.

Starting from the above defined criteria, it is concluded that the knowledge and skills that a professional in investor relations must have come from the following six areas: law, finance, nonfinancial information, capital market, marketing and communication. The same knowledge and skills are also considered as crucial by Palizza (2013a)[8].

A concrete description of the content and scope of the identified knowledge and skills is given below, in terms of the tasks for which investor relations is responsible, stating the relevant foundations based on which conclusions were made on the required content and the scope of knowledge and skills in investor relations.

4.1 Law – the legislative and institutional framework

The basic mutual rights and obligations between companies and investors are regulated by laws, primarily those in the fields of company law and the capital market (Hašček, 2015: 1211). Palizza (2013a) states that everything in investor relations is determined by laws. He states that, although regulatory requirements may vary by jurisdiction, the basic requirement in all jurisdictions regulating the capital market relates to the information that a company is (minimally) obligated to communicate to investors on a periodic basis, to the time and place of communication of such information and to the reasons for communicating information, and that therefore understanding the regulatory requirements and the consequences of acting in accordance with these regulatory requirements is critical for managing investor relations properly.

The legal aspect of investor relations can be observed: 1) through the knowledge and skills of the legislative framework (knowledge of relevant laws regulating the capital market, takeover of joint-stock companies, company law, accounting, auditing, branch legislation of the industry the company belongs to, etc.) and 2) through the knowledge and skills of the institutional framework (knowledge of relevant institutions of the capital market: the capital market regulator, stock exchange, depository, other competent authorities, etc.).

4.1.1 Legislative framework (in Croatia)

One of the fundamental principles of shareholders' (investors) rights is the right of all shareholders to, under equal conditions, have an equal position in the company (Companies Act, 2015: Article 211)[9]. This principle is based on the legal right of shareholders (investors) to be informed of all aspects of the company's business, especially if that is necessary to judge issues that are on the agenda of the general assembly (ibid.: Article 287).

Regulation governing the capital market and the conduct of participants on it also applies to the companies that raise capital on the capital market. The basic legal obligation of the company on a regulated market[10] (stock exchange) is to disclose all the information about the company and its business based on which investors make their informed investment decisions. This information is referred to in European law as regulated information[11] (Capital Market Act, 2016: Article 398, paragraph 1, point 4)[12]. When communicating (disclosing) this regulated information to the public (investors), the company must respect the principle of equal position of all investors in the company and ensure that all regulated information is simultaneously available to all investors with the same content, so that investors would not be placed in an unequal position in relation to the information they receive (Hašček, 2015: 1212-1213).

4.1.2 Institutional framework (in Croatia)

Companies present on the capital market enter into different relationships with different stakeholders on that market (institutional investors, deposito-

ries, regulated markets, competent authorities). It is therefore necessary to know the rights and obligations of all the stakeholders on the capital market, so that investor relations is able to regulate its relationship with each of these stakeholders in a way that ensures that all of the company's obligations are fulfilled in the prescribed manner and within the prescribed deadlines.

Since behaviour of companies on the capital market is regulated by laws (especially in the segment of disclosure of regulated information), the influence of the legal aspect on investor relations is particularly pronounced in cases when the company does not fulfil its obligations in the prescribed manner or within the prescribed deadlines. In such situations, companies should be prepared for measures that may be taken against them by the capital market competent authority[13]. One of such measures is disclosure to the investment public that the company does not comply with its legal obligations to disclose regulated information. Although such a measure is used precisely in order to protect investors, because it seeks in a dissuasive manner to ensure that the company discloses legally prescribed information based on which investors make their informed investment decisions, it, on the other hand, negatively reflects on the company's reputation in general and undermines investor confidence, which is the fundamental objective of investor relations (Hašček, 2015: 1213).

4.2 Finance – financial reporting, analysis and communication of financial information

Since the ultimate goal of investor relations is to enable to determine the fair market value of the company's shares, the necessity of financial reporting, based on which investors can make their informed investment decisions, is understandable, but also the necessity of knowledge of financial reporting and analysis by professionals in investor relations in order to be able to provide reasonable responses to investors' requests.

Therefore, the financial aspect of investor relations can be observed: 1) through the knowledge and skills related to financial reporting itself (knowledge of compiling, content, deadlines and places of publication and availability of financial information), 2) through the knowledge and skills of understanding financial reporting (financial analysis), and 3) through the knowledge and skills of communicating financial information to investors and analysts (ways of communication).

4.2.1 Financial reporting (in Croatia)

The importance of financial information for investment decisions is indicated by the fact that the obligation to publish financial information (especially financial statements), and the content, deadlines and manner of publication of such financial information, are prescribed by law (Hašček, 2015: 1211). Companies whose shares are admitted to trading on the regulated market (stock exchange) in Croatia are obliged to prepare and compile annual, semi-annual and quarterly reports (Capital Market Act, 2016: Articles 401 to 410).

A good professional in investor relations should possess the knowledge and skills that enable a thorough understanding of the company's financial statements and how they are compiled, as well as understanding of other financial information that is based and/or derives from these financial statements (Palizza, 2013a).

4.2.2 Financial analysis

In order to be able to communicate on equal terms with financial analysts and to be able to provide a reasonable answer regarding the company's financial position (current or future, expected) at the investors' request, a good professional in investor relations should have knowledge and skills about different indicators and models that are used in assessing the value of the company and its shares.

Such knowledge and skills are particularly pronounced in companies that are exposed to significant shareholders' requests (pressures) for information, and in companies whose shares are characterised by volatility (Stuart, 2016)[14].

4.2.3 Communicating financial information

Companies communicate their financial information through their statements; the best known and most common form of presenting financial information is the annual report. Namely, while sub-annual financial reporting is directed primarily towards short-term investments, annual financial reporting is directed towards a permanent base of shareholders who observe investment in the company on a long-term basis. Therefore, the preparation and presentation of the annual report need to be approached seriously.

Observed from the perspective of investors and analysts, who are the primary audience for the annual report, the basic objectives that need to be met by this annual report are: to inform and educate shareholders (both current and potential), state the strategy and explain how it is implemented, report on the (non)performance of the business in the observed period in the context of the set strategy and market conditions, indicate and explain the risks and factors that may affect the performance of the business, provide direction and clearly indicate the important elements of corporate governance and explain the interconnectedness of decision-making in accordance with corporate governance rules with business performance and strategy, and fulfil the prescribed and other regulatory obligations (Investor Relations Society, 2013a: 2)[15].

It should be noted that the annual report, apart from communicating with investors and analysts, should also be seen as an opportunity to build the corporate reputation of the company in relation to all other relevant stakeholders: consumers, business partners, employees and the local community (ibid.: 3).

4.3 Recognising the importance of other nonfinancial information

In order to ensure fair market value of their shares, companies must also offer other, non-mandatory information to investors (Laskin, 2008).

Nonfinancial information that companies provide to the investment public, apart from the laws and rules of the regulated market (stock exchange), is also governed by corporate governance codes[16] and internal acts of the company. Companies may also additionally disclose other information, either the information companies have estimated to be of particular relevance for investors, or certain information that investors have requested to be made available by the company. Based on the quantity and quality of this additional information, conclusions can be drawn about the company's level of openness towards investors and the quality of work of investor relations in that company (Hašček, 2015: 1213).

A good investor relations professional should have sufficient knowledge and skills to be able to properly and timely assess which of this additional information and in which content needs to be communicated to the investment public. The most requested nonfinancial information communicated by companies to the investment public is information on strategy, top management, corporate governance, social responsibility, ethics and sustainable development.

4.3.1 Strategy

Information on corporate strategy is the most significant and most commonly communicated nonfinancial information. Since it focuses on the future earnings potential of the company, it is extremely valued by investors (Laskin, 2008).

4.3.2 Information about top management

This information represents regular information that is always available to investors. Investors want to know the basic information about the people responsible for managing the company, its operations, setting up strategy and planned projects; they want to have information about their education, experience, results, plans, integrity. Only with this information can investors make comprehensive conclusions about the justification of the achieved business results and the objectivity of the set goals. It is therefore quite understandable that information about top management can be of great importance, if not crucial for investors' perception of the company's operations[17]. In such cases, professionals working in investor relations must have exceptional communication skills in order to successfully deal with the investors' assumptions and expectations, which are then brought into question.

4.3.3 Corporate governance

The positive effects of corporate governance on the company's business, its competitiveness and the ability to access investor capital need not be particularly emphasised. The importance of good corporate governance was particularly emphasised by the outbreak of the global financial crisis in 2008; it is considered that the lack of application of appropriate corporate governance principles contributed to the emergence of the financial crisis (European Commission, 2010: 2)[18]. Looking at corporate governance in the context of investor relations, a good investor relations professional should have knowledge of all aspects of corporate governance and the way in which the company "lives" them, and the ability to communicate about the influence of corporate governance on the company's business.

4.3.4 Social responsibility, ethics, sustainable development

Corporate social responsibility, the companies' ethical behaviour and focus on sustainable development are gaining increasing importance as factors that investors take into account when deciding on investing in a company. In today's conditions of financial instability, inadequate capital resources, risk and uncertainty of doing business and damaged investor confidence in the capital market, these factors may very well decisively tip the scales. A good investor relations professional must have sufficient knowledge and skills to identify those investors to whom this information needs to be communicated and to recognise the right moment to communicate this information to the investment public. This may be particularly challenging for investor relations professionals in companies that *do not nurture* these values; investor relations professionals in those companies will be faced with the need to find explanations (justifications!) to investors for the reasons for failing to act in accordance with the highest socially responsible standards of behaviour and business conduct.

4.4 Knowledge of the capital market

Knowledge of how the capital market functions is crucial for investor relations professionals; understanding market relationships, liquidity, volatility, the auction market and other factors affecting the trading of the company's shares are necessary for everyone working in investor relations; knowledge of the key *players* in the market of the company's shares, the ways in which they exchange information and communicate with each other, and how to obtain information about them in the shortest possible amount of time are necessary for successful work of investor relations (Palizza, 2013a).

The greater the knowledge about the rules of the functioning of the capital market, the faster and more reasonably will investor relations professionals recognise the importance of specific information and its impact on the investor's decision to invest in the company's shares.

4.5 Marketing

When talking about marketing in the context of investor relations, it usually concerns directing the company's marketing activities to seek and attract new investors; the task of investor relations professionals is to create demand for the company's shares by targeting those investors that the company wants as its shareholders (Laughran, 2014: 36).

Identifying and segmenting key investors, understanding what they base their decisions on and managing investor relations from these marketing aspects can enable predicting the impact of strategic decisions on share price shaping, and consequently on the value of share capital (Coyne, Witter, 2002).

Therefore, it is of utmost importance that a good investor relations professional possesses sufficient knowledge and skills of financial marketing, in order to be able to influence investors in the subtlest possible way, i.e., their demand for the company's shares (Laughran, 2014: 35).

4.6 Communication

The primary responsibility of investor relations is to communicate information about the company to investors and to convey information about the investors' mood to the company's management; investor relations listens (and eavesdrops) to questions from investors and gets a sense how investors perceive the company and management performance (Laughran, 2014: 35). By recognising, shaping and timely communicating information to investors, the company ensures the ability to adjust the interests and expectations of investors to its own interests and capabilities (Hašček, 2015: 1217). Therefore, successful communication management is the key to the success of investor relations.

Communication in investor relations can be observed through knowledge and skills in terms of: 1) ways of communication, 2) communication channels and 3) communication participants (Palizza, 2013b)[19].

Regardless of the ways, forms and participants of communication, investor relations must absolutely make sure that the information based on which investors make their investment decisions is communicated simultaneously to all investors (in order to respect the principle of equality of all shareholders and the right to simultaneous access to information) (Hašček, 2015: 1218).

4.6.1 Ways of communication

Investor relations communicates with investors verbally and in writing (including communication by electronic mail) (Palizza, 2013a).

Oral (verbal) communication is conducted from the broadest (appearances on television and radio, interviews and conference calls), over medium (speaking at conferences and seminars) to personal communication (meetings, phone calls) (ibid.).

Written communication includes all forms of traditional communication with investors: disclosing of regulated information, publishing newspaper articles, annual reports. Since this is communication where the disclosed content is under the control of the company, it represents the most useful way of communication towards investors as it enables the company to present detailed and complex information (ibid.).

Electronic communication, besides communication by electronic mail, also includes communication through other electronic means, such as publishing information on websites or social networks controlled by the company. The development of electronic communication has removed the temporal and geographical barriers in communication between the company and the investor, thus placing new challenges before investor relations with regard to the timeliness of responding to investors' requests (ibid.).

4.6.2 Communication channels (places of communication)

The company regularly communicates with its shareholders at the *general assembly;* the organisation and conduct of the general assembly is an extremely responsible and challenging task, since at the general assembly shareholders exercise their fundamental right – the right to vote. With the development of electronic forms of communication, companies today are able to provide electronic voting to their shareholders (*remote voting*); since the need for the physical presence of shareholders at the company's assemblies has been eliminated in this way, this provides the possibility to increase the geographical dispersion of the company's shareholders, which consequentially makes holding of general assemblies an even more challenging and thus also an even more responsible task.

Typical company communication with institutional investors involves *communication at meetings, which are usually held one-on-one*. In such direct communication, the company obtains information about expectations regarding its business of those investors for whom it has assessed (and determined) to be crucial and/or which have a significant ownership share and thus necessarily have to be considered crucial by the company. Investor relations professionals have a key role at such meetings, they take care that information which is not available to other investors and other investment public is not disclosed at these meetings (Laughran, 2014: 36).

Company *websites* are most often the first place that investors visit when searching for information about the company and its business operations (Investor Relations Society, 2013b: 1)[20]. It is therefore in the interest of companies that their websites have a special part intended for investor relations. This part of the website should contain basic information about the company and its management; mission, vision and goals; the company's financial statements and other current news, information about corporate actions (holding the general assembly, dividend payment, recapitalisation), data on corporate governance, corporate social responsibility and sustainable development, and, obligatory, investor relations contact information (Hašček, 2015: 1218). Likewise, companies should view their websites as a means to build a story about the company, its strategy, its position in the industry to which it belongs, and its impact on social trends.

Companies with a responsible approach to communication particularly take into account the existence of *social networks* as well as blogs and forums, which have open company pages, at which, whether they like it or not, companies are being discussed (Investor Relations Society, 2013c: 1)[21]. Involvement in communication on social networks should be viewed from the positive side: it can expand the availability of communication to potential investors, increase the company's involvement with existing investors and analysts, improve the control of data exchange and increase visits to the company's website (ibid.). Namely, by engaging in social media, companies can monitor what is discussed about them, and in case of misinformation they can publish a correction and direct social network users to company websites which are under their control (ibid.: 2).

The importance of social networks is also confirmed by the fact that the US SEC[22] has allowed companies to publish their regulatory and other information via social networks such as *Facebook* and *Twitter* if investors were previously informed on which social networks companies would publish this information[23].

4.6.3 Communication participants

In addition to establishing communication with investors, investor relations must also establish communication with other relevant stakeholders in the capital market, as well as with the relevant organisational units of the company that support investor relations with information about the company's business (Hašček, 2015: 1216).

The communication that the company establishes *outside the company*, besides the basic communication – that with investors (both current and potential), includes communication with other relevant stakeholders in the capital market (capital market competent authority, stock exchange, depository, investment firms, credit institutions, analysts, media), but also with other stakeholders relevant for the company and its business (consumers, local community, etc.).

Communication that investor relations establishes *within the company* includes communication with finance, marketing, production, legal department, public relations and direct communication with the company's management. In order for this communication to be successful, investor relations must understand the role and significance of each of these functions separately and their impact on the overall business of the company, and identify which information from these functions is required (or desirable) to communicate to investors.

5. Conclusion

Investor relations in companies that raise capital on the capital market has a strategic role in securing the company's access to investor capital.

In order to fulfil its basic tasks – building and retaining investor confidence in the company and its business, investor relations is responsible for establishing two-way communication between the company and investors; this responsibility implies the ability to respond to all requests for information placed by investors, both current and potential, and the ability to adjust the interests and expectations of investors to the interests and capabilities of the company. Successful investor relations ensure the ability to determine the fair market value of the company's shares.

In order for investor relations to permanently fulfil its fundamental task, professionals working in investor relations must have a wide range of various knowledge and skills, primarily those in the fields of finance, law and capital market, marketing and communication. The knowledge and skills include, among others, excellent communication abilities, business and crisis communication, understanding financial statements and interpretation of financial indicators, preparing materials for publication (statements, denials), communication with the capital market competent authority and the regulated market (stock exchange), implementing corporate actions, organising the general assembly, corporate governance, business ethics and corporate social responsibility.

Good investor relations professionals should be able to develop confidence of the investment community, but also of its management, which provides them with the necessary information and to whom they convey demands of the market, which they ensure by a wide range of interdisciplinary knowledge and skills identified in this paper.

***Disclaimer**: Andreja Hašček is an employee of the Croatian Financial Services Supervisory Agency. The views expressed in this paper are those of the author and do not necessarily reflect the views of the Croatian Financial Services Supervisory Agency.*

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(Endnotes)

1 NIRI (United States) is the world's leading association of investor relations professionals responsible for communication between companies' management, shareholders, analysts and other financial stakeholders. NIRI was founded in 1969, and today it has more than 3,300 members working for over 1,600 public companies with US$9 trillion in stock market capitalisation (for more information, see: https://www.niri.org/).

2 Available at: http://www.niri.org/FunctionalMenu/About.aspx (Accessed on: June 24, 2016)

3 IRS (United Kingdom) is one of the largest European associations of investor relations professionals, established in 1980. Today, the IRS has around 750 members, including those professionals who come from investor relations of most of the FTSE 100 companies (for more information, see: http://www.irs.org.uk/).

4 Available at: http://www.irs.org.uk/about/definition-of-investor-relations (Accessed on: June 24, 2016).

5 London Stock Exchange (2010), "Investor Relations – A Practical Guide", available at: http://www.londonstockexchange.com/home/ir-apracticalguide.pdf (Accessed on: June 24, 2016)

6 Laskin, A. (2008), "Investor Relations", available at: http://www.instituteforpr.org/investor-relations (Accessed on: July 09, 2016)

7 The most famous financial scandal is probably that of *Enron*, which occurred at the end of 2001 – the US energy company ended up in bankruptcy after it was discovered that for years it has been concealing billions of dollars in losses from various contracts and projects in its financial statements. After the scandal broke out, *Arthur Andersen*, the audit firm that audited *Enron's* financial statements also collapsed; the US SEC revoked its license to audit companies listed on the stock exchange. *Arthur Andersen* was one of the five largest audit firms in the world at the time. As a consequence of the *Enron* scandal, a new regulation was adopted in the United States (the *Sarbanes-Oxley* Act), which increased the requirements for accuracy of financial statements of companies on the stock market and tightened penalties for the destruction, alteration or creation of false data during federal investigations, and for attempts to defraud shareholders; requirements regarding the responsibility of audit firms have also been increased in order to maintain impartiality and independence from clients (see more details in: Laughran, T. (2014), "The Next Generation: Investor Relations. The Evolution of IR. Journal of Integrated Marketing Communications", available at: http://jimc.medill.northwestern.edu/wp-content/uploads/sites/9/2014/02/JIMC_2014_Investor-Relations-2.0.pdf, accessed on: June 24, 2016)

8 Palizza, J. (2013a), "The Five Pillars of Investor Relations", available at: http://www.corporate-eye.com/main/5-pillars-investor-relations/ (Accessed on: May 03, 2016)

9 Companies Act (2015), Articles 211 to 300, Official Gazette of the Republic of Croatia No. 111/1993, 34/1999, 121/1999 – authentic interpretation, 52/2000 – Decision of the Constitutional Court of the Republic of Croatia, 118/2003, 107/2007, 146/2008, 137/2009, 125/2011, 152/2011, 111/2012, 68/2013, available at: http://www.zakon.hr/z/546/Zakon-o-trgova%C4%8Dkim-dru%C5%A1tvima (Accessed on: June 24, 2016)

10 Regulated market within the meaning of Article 3, paragraph 1 point 20 of the Capital Market Act (Official Gazette of the Republic of Croatia No. 88/08, 146/08, 74/09, 54/13, 159/13, 18/15, 110/15 and 123/16) shall mean a multilateral system for trading financial instruments which is operated and/or managed by a market operator (stock exchange). Definition of regulated market is determined by Article 4(1) (21) of MiFID II (*Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU* (recast)).

11 Regulated information within the meaning of Article 395, point 4 of the Capital Market Act (Official Gazette of the Republic of Croatia No. 88/08, 146/08, 74/09, 54/13, 159/13, 18/15, 110/15 and 123/16) include annual, semi-annual and quarterly financial reports, information on the acquisition and disposal of own shares, investors' major holdings notifications and inside information. This definition

of regulated information is an alignment with Article 2(1)(k) of the Transparency directive (*Directive 2004/109/EC of the European Parliament and of the Council of 15 December 2004 on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market and amending Directive 2001/34/EC*).

12 Capital Market Act (2016), Articles 395 to 448, Official Gazette of the Republic of Croatia No. 88/2008, 146/2008, 74/2009, 54/2013, 159/2013, 18/2015, 110/15 and 123/16, available at: http://www.zakon.hr/z/171/Zakon-o-tr%C5%BEi%C5%A1tu-kapitala (Accessed on: June 24, 2016)

13 Croatian Financial Services Supervisory Agency (Hanfa) is the capital market competent authority in the Republic of Croatia. Hanfa was established in 2006 by the Act on the Croatian Financial Services Supervisory Agency (Official Gazette of the Republic of Croatia No. 140/05 and 12/12).

14 Stuart, A. (2016), "New Set of Skills Sought for Investor Relations: More companies are turning to Wall Street analysts and other seasoned financial hands", available at: http://www.wsj.com/articles/new-set-of-skills-sought-for-investor-relations-1456798033#:fC6S9tAFaFFLoA (Accessed on: June 24, 2016)

15 Investor Relations Society (2013a), "Best Practice Guidelines – Annual Report and Accounts: printed and online", available at: http://www.irs.org.uk/files/Annual_Report_and_Accounts_-_printed_and_online.pdf (Accessed on: June 24, 2016)

16 Corporate Governance Code applicable to companies with securities admitted to trading on the Zagreb Stock Exchange (ZSE) was drafted in 2007 by ZSE and Croatian Financial Services Supervisory Agency (Hanfa); the Code was revised in 2010. (available at: http://www.hanfa.hr/getfile/6627/Kodeks%20korporativnog%20upravljanja.pdf (Accessed on: June 24, 2016)

17 Probably the most famous case of key top management information in recent history is the one of the late chief executive officer of Apple, Steve Jobs; it is about his public appearances at which he looked too thin, which immediately prompted speculation about his health, and then consequently led to consideration of the impact of such presumed impaired health status on the future performance of Apple (see more details in: Laskin, 2008: available at: http://www.instituteforpr.org/investor-relations/, accessed on July 09, 2016)

18 European Commission (2010), "Green Paper, Corporate Governance in Financial Institutions and Remuneration Policies", available at: http://ec.europa.eu/internal_market/company/docs/modern/com2010_284_en.pdf (Accessed on: June 24, 2016)

19 Palizza, J. (2013b), "Investor Relations and Communications Channels", available at: http://www.corporate-eye.com/main/investor-relations-channels/ (Accessed on: May 03, 2016)

20 Investor Relations Society (2013b), "Best Practice Guidelines – Corporate websites", available at: http://www.irs.org.uk/files/Corporate_websites.pdf (Accessed on: June 24, 2016)

21 Investor Relations Society (2013c), "Best Practice Guidelines – Using Social Media in an IR context", available at: http://www.irs.org.uk/files/Using_Social_Media_in_an_IR_context.pdf (Accessed on: June 24, 2016)

22 SEC – Securities and Exchange Commission is the US capital market regulator; for more information, see: http://www.sec.gov/.

23 Available at: http://www.sec.gov/News/PressRelease/Detail/PressRelease/1365171513574 (Accessed on: June 23, 2016)

Andreja Hašček

ZNANJA I VJEŠTINE PROFESIONALACA U ODNOSIMA S INVESTITORIMA

Sažetak

Za kompaniju koja kapital za svoje poslovanje i projekte prikuplja na tržištu kapitala od iznimnoga je značaja upravljanje odnosima s investitorima. Odnosi s investitorima su funkcija putem koje kompanija razvija povjerenje investitora u kompaniju i njezino poslovanje uspostavljanjem kontinuiranoga protoka informacija od kompanije prema investitorima na temelju kojih investitori mogu donijeti informiranu odluku o ulaganju u tu kompaniju i protoka informacija od investitora prema kompaniji na temelju kojih kompanija može zaključivati o zahtjevima, potrebama i očekivanjima investitora. Budući da se radi o interdisciplinarnoj funkciji kompanije, u odnosima s investitorima rade profesionalci koji imaju široki spektar znanja i vještina. Ovim radom su identificirana ona znanja i vještine koja su minimalno potrebna kako bi osoba u odnosima s investitorima bila u mogućnosti ispuniti osnovnu zadaću ove funkcije, onu kojoj je svrha razvijanje povjerenja investitora u kompaniju i njezino poslovanje kako bi kompaniji osigurala pristup kapitalu investitora.

Ključne riječi: odnosi s investitorima, znanja i vještine u odnosima s investitorima, povjerenje investitora, protok informacija, dvosmjerna komunikacija

Conference review
Prikaz konferencije

Sofija Turjak:
Prikaz popularizacijskoga simpozija: Kreativna riznica 2017. – Kemija kreativne industrije

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PRIKAZ POPULARIZACIJSKOGA SIMPOZIJA: KREATIVNA RIZNICA 2017. – *KEMIJA KREATIVNE INDUSTRIJE*

Kreativna riznica popularizacijski je simpozij kulturne i kreativne industrije Ekonomskoga fakulteta u Osijeku koji se održava već treću godinu. Popularizacijski simpozij *Kreativna riznica* primjer je velikog događanja koje posjeduje potencijal inovativne znanstveno-istraživačke, obrazovne, kulturne i kreativne prakse, a time i održivosti u budućim razdobljima. Svake godine *Kreativna riznica* privlači sve veći broj zainteresiranih posjetitelja, pa je tako 2015. godine broj sudionika bio 1300, zatim je 2016. godine Kreativnu riznicu posjetilo više od 3000 posjetitelja, dok je 2017. godine *Kreativna riznica* privukla gotovo 5000 posjetitelja. Važnost ovoga simpozija uviđaju brojni nositelji gospodarskih i obrazovnih politika o čemu svjedoče visoka pokroviteljstva koja su, primjerice, *Kreativnoj riznici 2017.* ukazali Predsjednica Republike Hrvatske, Predsjednik Sabora Republike Hrvatske, Ministarstvo znanosti i obrazovanja, Ministarstvo kulture, Ministarstvo turizma, Hrvatski klaster konkurentnosti kreativnih i kulturnih industrija, Osječko-baranjska županija, Grad Osijek i Studentski zbor Sveučilišta Josipa Jurja Strossmayera. Partnerska potpora važna je u organiziranju *Kreativne riznice* čemu su pridonijeli Filozofski fakultet u Osijeku, Odjel za kulturologiju Sveučilišta J. J. Strossmayera u Osijeku i Trgovačka i komercijalna škola „Davor Milas" u Osijeku. Ekonomski fakultet u Osijeku i Institut za znanstvena i umjetnička istraživanja u kreativnoj industriji – Andizet organizatori su ovog velikog događanja, te osim pokrovitelja i partnera za organiziranje ovoga događanja, osiguravaju brojne suradnike, sponzore i volontere.

Kreativna riznica svoje ključne poruke usmjerene na povezivanje svih dionika kulturne i kreativne industrije te njegovanje kulturnih potencijala i njihovo usmjeravanje u kreativne prakse iznosi na različite načine: ustrojem samoga događanja, promidžbom sadržaja na događanju, kreiranjem znanstvene i stručne promemorije, ali i izgradnjom interijera koji poučavaju. Za potrebe održavanja *Kreativne riznice* oslikani su murali u Auli glagoljice i u Auli znanosti Ekonomskog fakulteta u Osijeku. Instalacije u prostoru svake godine potiču posjetitelje na razmišljanje o mogućnostima umrežavanja heterogenih pojedinaca, odnosno o inovativnim rješenjima u uočavanju prepreka i njihovim nadilaženjima.

Ovogodišnja instalacija u prostoru održavanja manifestacije bila je izrađena od 10 000 kockica koje su nakon treće godine njihove uporabe u vizualnom identitetu *Kreativne riznice* postale zaštitni znak ove manifestacije. Instalacija je predstavlja labirint kroz koji su brojni posjetitelji uspješno pronalazili nove načine kretanja čime su potvrdili opravdanost njegova naziva „Labirint inovacija" s obzirom na to je svaki ulazak i izlazak u 216 četvornih metara izložene instalacije donosio nove načine njegove uporabe. Elemente instalacije izrađivali su volonteri četiri mjeseca prije same manifestacije, a instalaciju je postavio Toni Andrijanić u tjednu *Kreativne riznice* s autoricama instalacije Jasnom Horvat i Josipom Mijoč.

Kreativna riznica 2017. održana je od 26. do 29. travnja 2017. godine, a krovna tema je bila Kemija kreativne industrije. Na Kreativnoj riznici sudion-

icima je pružena prilika saznati kako kemija povezuje kreativnost te kulturnu i kreativnu industriju. Sva događanja bila su besplatna i dostupna svim dobnim skupinama. Na *Kreativnoj riznici 2017.* ukupno je održano 76 događanja koja su prema vrsti prikazana Tablicom 1. Program se realizirao istodobno u više dvorana i predavaonica, a za organiziranost i provedbu programskih sadržaja brinulo je 96 studenata volontera – kreativnih rizničara te 19 članova programskog i koordinacijskog odbora.

Tablica 1 Vrsta i broj događanja

Vrsta događanja	Broj događanja
Radionica	25
Predavanje	30
Izložba	4
Videoprodukcija	1
Izložba postera	1
Digitalni poster	1
Izložba knjižnice EFOS-a	1
Dramska predstava	1
Videoprojekcija fotografija i snimki	1
Čitanje poezije	1
Okrugli stol	2
Književna tribina	1
Panel	1
Fotosession	1
Nagradna igra	1
Performans	1
Glazbeni program	1
Predstavljanje knjige	2
Instalacija prostora	1
Ukupno	*77*

Izvor: autor

Nakon svečanoga otvorenja i pozdravnih riječi dekana Vladimira Cinija otpočeo je kreativni nomadizam; programskim sadržajima, stankama i svečanostima *Kreativne riznice 2017.* godine. *Kreativna riznica* okupila je dionike iz sljedećih 12 sastavnica KKI: arhitektura; audio- vizualna umjetnost – film, video; baština – muzeji, knjižnice, arhivi; dizajn – modni dizajn, grafički dizajn, dizajn interijera, produkt-dizajn; glazba; izvedbene umjetnosti – kazalište, balet, ples; knjiga, nakladništvo; mediji – TV, radio, tiskani mediji i *web*; oglašavanje i tržišne komunikacije; primijenjene umjetnosti – staklo, keramika, nakit i druge primijenjene umjetnosti / zanati; računalne igre, novi mediji; vizualne umjetnosti – slikarstvo, kiparstvo, grafika, fotografija, novi mediji. Plan provedbe ovoga projekta obuhvaćao je razdoblje jedne godine u kojemu se prvih 6 mjeseci intenzivno pripremao program simpozija, a preostalih 6 mjeseci aktivnosti su usmjerene na komunikaciju s medijima, komunikaciju sa sponzorima, pokroviteljima, izlagačima i partnerima te na volonterske aktivnosti.

Uporabom sustava za velika događanja Eventbrite organizatori su u svakom trenutku imali kontrolu nad brojem prijavljenih posjetitelja te je nakon završetka *Kreativne riznice 2017.* učinjena analiza posjećenosti prikazana Tablicom 2.

Tablica 2 Analiza posjećenosti Kreativne riznice 2017.

Datum	Dan	Broj događanja	Broj posjetitelja	Prosječan broj posjetitelja po događanju
26. 4. 2017.	Prvi dan Kreativne riznice (otvorenje)	1	345	345
27. 4. 2017.	Drugi dan Kreativne riznice	39	2198	56
28. 4. 2017.	Treći dan Kreativne riznice	32	1776	56
29. 4. 2017.	Četvrti dan Kreativne riznice (radionice)	11	505	46
Ukupno	Četiri dana Kreativne riznice	**83***	**4824**	-

** Broj se razlikuje u odnosu na ukupan broj događanja jer za pojedina događanja (izložbe) nije registrirana ulaznica kao najava pohađanja događanja*

Izvor: autor

Velik broj raznovrsnih događanja osigurao je mrežu kontakata nazočnih predstavnika kulturnih i kreativnih institucija, dionika u sastavnicama kulturne i kreativne industrije, akademskih ustanova, umjetničkih strukovnih udruga, slobodnih umjetnika te medija. Ovogodišnja *Kreativna riznica* ističe se po međunarodnom značaju ostvarenom kroz suradnju s Konfucijevim institutom iz Zagreba (2 predavanja i 2 radionice o kineskom jeziku i književnosti) i uključenosti inozemnih studenata preko Erasmus Student Network Osijek. Upravo posljednja suradnja rezultirala je međunarodnom večeri poezije na čijoj je izvedbi sudjelovalo 47 studenata koji su posjetili Sveučilište J. J. Strossmayera u sklopu Erasmus razmjene studenata. *Kreativna riznica* je svojom sadržajnim i organizacijskim obličjem potvrdila kako je jedinstvena i u gospodarskom i u znanstveno-istraživačkom potencijalu.

Book review
Prikaz knjige

Dražen Novaković:
Prikaz knjige „Osnove upravljanja rizicima u financijskim institucijama“, autora Domagoja Sajtera

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PRIKAZ KNJIGE „OSNOVE UPRAVLJANJA RIZICIMA U FINANCIJSKIM INSTITUCIJAMA", AUTORA DOMAGOJA SAJTERA

AUTOR: Domagoj Sajter
NAKLADNIK: Sveučilište Josipa Jurja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku
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Knjiga „Osnove upravljanja rizicima u financijskim institucijama" autora izv. prof. dr. sc. Domagoja Sajtera namijenjena je prvenstveno studentima druge godine diplomskog studija Financijskoga menadžmenta na Ekonomskom fakultetu u Osijeku kao udžbenik iz obveznoga kolegija „Menadžment financijskih institucija" kojega je autor knjige nositelj i izvoditelj. Kao takav, ovaj udžbenik pokriva najveći dio sadržaja navedenoga kolegija. Udžbenikom se daje uvod u znanost i vještine upravljanja financijskim institucijama, odnosno upravljanja rizicima u financijskim institucijama. Udžbenik su recenzirali prof. dr. sc. Branko Novak s Ekonomskoga fakulteta u Osijeku i izv. prof. dr. sc. Saša Žiković s Ekonomskoga fakulteta u Rijeci dok lekturu potpisuje Sara Nikolozo, prof.

Udžbenik u sedam poglavlja obuhvaća sveukupno 229 stranica B5 formata, od čega se 208 stranica odnosi na središnji sadržaj – sam tekst. Ostalih 18 stranica čine redom: naslovnica, impressum, pregled poglavlja (opći pregled sadržaja s kazalom stranica), sadržaj (detaljni pregled sadržaja s kazalom stranica), popis tablica, grafikona, slika i kratica, popis korištene literature (pet stranica), te kazalo imena i pojmova (četiri stranice).

Stranice nakon impressuma od pregleda poglavlja do predgovora numerirane su rimskim brojevima od I. do VII., a stranice samoga sadržaja teksta od predgovora do kazala imena i pojmova arapskim brojevima od 1. do 217.

Opseg knjige je 58.230 riječi. Djelo sadrži 14 tablica, 25 grafikona i 8 slika. Popis korištenih kratica obuhvaća 54 akronima.

U nastavku je prikazana dispozicija, odnosno struktura knjige.

Prvo poglavlje – predgovor – prezentira pozitivistički smjer knjige, njezin stil, namjenu i ciljeve, funkciju priloga, te ukratko predstavlja strukturu djela prema poglavljima.

U uvodu kao drugom poglavlju opisuju se uloga menadžmenta i važnost financijskih institucija u ekonomiji te specifičnosti menadžmenta financijskih institucija u odnosu na menadžment nefinancijskih institucija.

Treće poglavlje nosi naslov „Osnovni pojmovi". Ondje autor definira temeljne pojmove koji se u knjizi koriste te na pojmu „financijske institucije" pokazuje složenost financijske regulative koja predstavlja okvir za upravljanje rizicima. Također se definira i opisuje pojam rizika te se pojašnjava koncept vjerojatnosti koji je ključan u poimanju rizika. Pritom detaljno i kroz mnoštvo primjera objašnjava pojam i značaj vjerojatnosti u svijetu financija.

U četvrtom poglavlju – „Upravljanje rizicima" – iznosi se ISO standard u području upravljanja rizicima (ISO 31000:2009). Rizici se razvrstavaju u 27 različitih vrsta i obrazlažu se četiri načina tretiranja rizika. Autor se suočava s pojmom moralnoga hazarda u financijskim institucijama i donosi neke posebnosti menadžmenta financijskih institucija.

Sljedeće, peto poglavlje pod naslovom „Regulatorni okvir" prikazuje složenost pravnoga okvira koji regulira poslovanje financijskih institucija, od globalne (Baselski standardi), preko europske (uredbe) do lokalne regulative (zakoni, pravilnici, smjernice). Pritom se autor na lokalnoj razini fokusira na propise u domeni HNB-a.

U okviru ovoga djela najviše je pažnje posvećeno mjerama kreditnog i tržišnog rizika, te se sljedeća dva poglavlja bave konkretnijim, tehničkim pitanjima mjerenja rizika.

Šesto poglavlje – „Mjere kreditnog rizika" – prikazuje upravo ono što naslov i sugerira: najčešće načine mjerenja kreditnog rizika, i to na temelju vanjske procjene, kao i mjerenje zasnovano na internim modelima. Kao i u prethodnom tekstu, sadržaj je popraćen konkretnim primjerima koji daju praktičan uvid u sadržaj onoga što se želi pojasniti.

Posljednje, sedmo poglavlje je najopsežnije i nosi naslov „Mjere tržišnog rizika". Ondje je obrađena volatilnost te u okviru nje aritmetička i geometrijska sredina, standardna devijacija i kovarijanca. Također su predstavljeni omjeri, i to Sharpeov, informacijski i Sortinoov omjer. Nadalje, obuhvaćene su mjere koje proizlaze iz metode linearne regresije (alfa, beta, R^2), rizična vrijednost (VaR), kao i kondicionalni VaR (CVaR). Sve mjere detaljno su pojašnjene uz konkretne primjere.

U bibliografiji se nalazi 60 jedinica popisanih abecednim redom prema prezimenu prvog autora, odnosno prema nazivu institucije, u APA formatu citiranja. Od navedenih 60 jedinica njih 19 su recentni etablirani udžbenici renomiranih autora i izdavača, dok su ostale jedinice većinom članci inozemnih autora u visokorangiranim časopisima čiji je sadržaj vezan uz sadržaj udžbenika. U bibliografiji se pojavljuju samo one jedinice koje su spominjane u tekstu knjige (bilo u samom tekstu, bilo u fusnotama), te nema jedinica koje nisu konkretno citirane i referirane u tekstu knjige.

Konačno, na samom kraju nalazi se Kazalo imena i pojmova koje predstavlja indeks važnijih autora i ključnih pojmova koji se u djelu spominju, a ovaj popis sadrži 189 stavki s kazalom stranica koje čitatelje upućuju na to gdje se navedena imena i pojmovi konkretno pojavljuju.

Autor knjige je samostalno obavio i prijelom teksta te je i autor dizajna naslovnice, a stil je minimalistički.

Pišući na jednostavan, razumljiv i pristupačan način, autor je materiju, koja bi se mogla učiniti suhoparnom, približio čitatelju nastojeći popularizirati znanstvenu komponentu sadržaja te je čitatelja zaintrigirao i potaknuo na razmišljanje. Naime, ovaj udžbenik se snažno odmaknuo od uobičajene forme iznošenja definicija i nabrajanja te u njemu svaku cjelinu prate konkretni primjeri koji daju praktičan uvid u ono što se želi pojasniti. Osim toga, svako je poglavlje popraćeno prilozima kao dodatnim tekstovima kojima se pobliže opisuju elementi sadržaja poglavlja. Prilozi svojom slikovitošću potiču čitatelja na razmišljanje o temama koje su, poput mnogih drugih ekonomskih tema, na tankoj granici između znanosti i vještine.

Činjenica je kako nije moguće u jednoj knjizi obuhvatiti sve bitne elemente teme koju knjiga donosi. Stoga je važno zadržati jezgrovitost i smislenost sadržaja. Autor ovog udžbenika je i u tome uspio te je upravljanje rizicima odnosno općenito menadžment financijskih institucija izložio na osnovnoj, elementarnoj razini omogućujući time da se knjigom mogu služiti i oni koji traže temeljna znanja iz ovoga područja. Osim toga, iznošenje gradiva na elementarnoj razini razvija kod čitatelja (prvenstveno studenata) kritičko razmišljanje i sagledavanje problema. Naime, iako je za kvalitetno upravljanje rizicima ključno dobro poznavati statistiku, kritički pogled na osnovne statističke koncepte i poznavanje njihovih nedostataka i više su nego nužni. Nepoznavanje pretpostavki modela i nepouzdani temelji izračuna, mogu rezultirati u pogrešnom donošenju odluka iako su izračuni matematički precizni. Kako će sadašnji studenti izgledno biti budući nositelji politika upravljanja rizicima, ovakav pristup autora se pokazuje iznimno korisnim.

Iako je jasno kako su osnovna ciljna skupina ovoga djela studenti, pristup autora koji čitatelja potiče na kritičko razmišljanje i aktivno samostalno traženje rješenja, čini ovu knjigu zanimljivom i korisnom mnogo široj publici, unutar i izvan sveučilišta. Stoga će se ovim udžbenikom zasigurno poslužiti svi oni koji se zanimaju za upravljanje rizicima jer im on nudi dobru podlogu za daljnji razvoj u tom području.

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Radove je potrebno formatirati za ispis na papiru veličine 210 x 297 mm. Treba koristiti fontove Times New Roman ili Arial veličine 12 (osim ako ovdje nije drugačije navedeno), a prored treba biti 1.5. Margine stranica (lijevu, desnu, gornju i donju) treba postaviti na 25 mm. Tekst mora biti poravnat s lijevom i desnom marginom (obostrano poravnato). Rad bi trebao imati između 4500 i 6500 riječi.

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The margins (left, right, top and bottom) should be 25mm wide. The text should be aligned with both the right and left margins (justified). The paper should have between 4500 and 6500 words.

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