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Table of Contents

Employees' attitude towards CSR in SMEs in Eastern Serbia
Sanela Arsić,Sandra Vasković, Isidora Milošević, Andjelka Stojanović, Ivan Mihajlović
Competencies as a Criterion for Assessing the Readiness of Organizations for Industry 4.0 - A Missing Dimension
Rok Črešnar, Zlatko Nedelko
Managerial decision options about BYOD with the consideration of shadow IT. 28
Pál Fehér-Polgár
Controlling as a Management Function
Anna Francsovics, Agnes Kemendi, Attila Piukovics
The room for improvement competitiveness and innovation
Miroljub Hadžić, Petar Pavlović
Consumers' Perceptions about Food Safety Issues: Evidence from Albania 55
Fatmir Guri, Elena Kokthi, Anikó Kelemen-Erdős
The situation of environment protection in Hungary and in the EU
Gábor Gyarmati
Leadership and Decision-Making. And What is Behind Them77
Csilla Kohlhoffer-Mizser
Hungary's role in developing autonomous cars
Nikolett Madarász, Péter Szikora
The Analysis of Cluster Development in the Republic of Serbia
Ivana Marinović Matović
Examination of the Current Higher Educational System at the Industry 4.0 Among Students
Amanor Moses Padi, Andrea Benedek
Country branding as a special type of place branding – An overview of the related terminology
Árpád Papp-Váry
Who has the strongest brand? The position of the Visegrád Four in country brand rankings

Árpád Papp-Váry, Máté Farkas

Succes Factors of CRM projects
Mihály Panyi, Regina Zsuzsánna Reicher
"Success is not final, failure is not fatal" – What can we learn from the fashion industry?
Noémi Piricz
Innovativeness in higher education organizations
Vojko Potocan, Dejana Zlatanović, Zlatko Nedelko
Analyzing Consumer Preferences for Honey: Empirical Evidence from Albania
Ledia Thoma, Elena Kokthi, Anikó Kelemen-Erdős
Facebook use for academic purposes
Sandra Vasković, Sanela Arsić, Slavica Stevanović, Djordje Nikolić, Isidora Milošević
Professional Technical Evaluation of Workers for their Incorporation in the Industry 4.0

Jaroslav Zaremba, Pavol Kurdel

Employees' attitude towards CSR in SMEs in Eastern Serbia

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Abstract: In recent years, corporate social responsibility (CSR) has attracted great interest in the academic and professional world. The proof of this can be seen in many conducted studies on this topic in the world. However, most studies of CSR focus on larger organizations, with only few studies focusing on small and medium enterprises (SMEs). The SMEs represent a major share of economic value creation worldwide, and they differ substantially from multinational corporations in terms of organizational characteristics, behavioral guiding principles, financial and human resources. For this reason, the objective of this research is to determine the attitude of employees towards this concept in Serbia, and to identify main barriers that appear during the implementation of CSR activities.

Keywords: Corporate Social Responsibility, Small and medium-sized enterprises, Employees

1. Introduction

Corporate Social Responsibility (CSR) has been gaining increasing attention from academics. Despite the growing interest in this topic, there is still no general agreement on the precise meaning of CSR. Instead of being a consistent concept, CSR is an umbrella term that encompasses various overlapping areas, such as corporate citizenship, stakeholder theory, business ethics, and corporate sustainability [1].

Defined as the "economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time" [2], CSR has been evolving in terms of how it is practiced and communicated. Traditionally, organizations were thought to pursue CSR as a way to satisfy internal stakeholders and improve performance [3]. Today, CSR is a global concept that has progressed from the interplay of thought and practice. CSR represents a language and a perspective that is known in the world and it has become increasingly vital as the stakeholders have communicated that modern businesses are expected to do more than make money and obey the law. Socially responsible firms make a special effort to integrate a concern for other stakeholders in their policies, decisions and operations [4]. Despite this useful conceptualization, the scope of what CSR entails, how it is defined, and the way it is enacted varies substantially between organizations depending on the philosophies, preferences, and personal values held by organizational leadership, employees, and shareholders [5].

From the SME perspective, social responsibility poses a different challenge. Frequently overwhelmed by time, financial and resource restrictions, it emerges fundamentally linked to management efficiency concerns: raising employee motivation, reduction in energy consumption or improved client relationships. On other occasions, it is also linked to the philanthropy of senior management or some voluntary desire to participate in the surrounding local community [6].

Small and medium sized enterprises (SMEs) are both the main driving force in European economic growth and a key component of the Serbian economy. The researchers usually focus on CSR in large multinational companies [7, 8], while the focus on CSR in small and medium sized enterprises (SMEs) has a limited attention by researchers and authors [9, 10, 11, 12].

Given the highly specific understanding of the CSR concept and practices by SMEs, first, the most relevant practices and stimulus mechanisms should be outlined. Quantitative data on SME CSR strategies lacks in terms of both scope and accuracy. A lack of awareness of the most common CSR practices, motivations and existing obstacles was noticed particularly in Serbia. So as to meet this shortcoming, research was carried out in Serbia.

The employees' opinion and attitude are very important requirements for better perception of overall business activity in SMEs. The aim of this study is to

^{17&}lt;sup>th</sup> International Conference on Management, Enterprise, Benchmarking. Proceedings 6

investigate the differences in respondents' attitude based on their gender by analyzing their knowledge on the CSR concept. Furthermore, the main barriers that appear during the implementation of CSR activities were investigated as well. The fact that the implementation of the CSR concept in SMEs is in the early phase, the identification of the main barriers is important for those SMEs that have not started with the implementation of the CSR. Another aim of this research is to raise awareness among employees of the importance of this concept.

2. SMEs and CSR in Serbia

The analysis of the current situation in Serbia shows that SMEs constitute a significant segment of Serbia's economy. The total of 99.8% of all active companies can be qualified as SMEs, which hire almost 2/3 of employees in non-financial sector and make 32% of Serbia's GDP.¹

Table 1 shows the number of companies based on their size according to the relevant statistical data from 2017. The distribution of companies is presented based on the regions.

Table T iveniber of companies based on their size						
2017	Micro 0-9 employees	Small 10-49 employees	Middle 50-249 employees	Large >250 employees	Total	
The Republic of Serbia	87012	16583	2372	521	100488	
Southern and Eastern Serbia Region	9748	1327	323	71	11469	
Belgrade region	40031	4080	866	204	45181	
Vojvodina Region	21812	2795	642	153	25402	
Shumadija and Western Serbia Region	15421	2381	541	93	18436	

Table 1 Number of companies based on their size

Based on the results shown in Table 1, it can be concluded that the region of Southern and Eastern Serbia is the least developed region regarding SMEs, which was the reason the authors chose to conduct research in this part of Serbia on the

¹ <u>http://www.pks.rs/PrivredaSrbije.aspx?id=20</u>

level of awareness of the CSR concept and main barriers that occur. The slower development dynamics and reduction in the number of SMEs in the region are the result of tough economic conditions, little opportunities for financing the SME sector in this region, as well as the declining foreign demand due to the reduced overall business activity of Serbia's most important foreign trade partners. One of the possibilities for faster development in this sector is the implementation of a good business practice exhibited in large and multinational companies through the implementation of CSR concept.

CSR Index Serbia is the first national platform for the assessment of social responsibility in companies in Serbia. CSR is based on the methodology which is adjusted to the state and level of national economy. It is the only methodology which allows objective comparison of companies' performance in the context of social responsibility.² Carefully implemented CSR policies can help SMEs to achieve next benefits: win new business and increase customer retention; develop and enhance relationships with suppliers and networks; attract, retain and maintain a happy workforce and become an employer of choice; save money on energy and operating costs and manage risk; and improve business reputation.

The first time CSR appeared in business and non-governmental sector in Serbia was after 2000. However, it appeared in the public policies only in 2008, in the National Strategy for sustainable Development, which addressed corporate social responsibility in Serbia and how this business policy should be organized.

In a survey conducted by Smart Kolektiv in 2014, the need for corporate social responsibility in companies was emphasized of which the citizens, regretfully, were not fully aware of. Almost 81% of citizens thought that the quality of their life would be improved if the companies in Serbia were socially responsible. As employees, the citizens were even more likely to value the corporate social responsibility than as consumers, because 87% of them would rather work in socially responsible company, even though the salaries were slightly lower. For 80% of the citizens, the requirement for the company to be socially responsible meant it had good health and safety program. For 78% of them, the requirement for corporate social responsibility was providing consumers with truthful and complete information about their products. Moreover, for 80% of the citizens, the requirement for CSR was company's concern about the environment. Conversely, for 55% of the citizens, the requirement for CSR was that company donated money to charity [13, 14].

In order to recognize the current situation and the level of CSR concept presence in Southern and Eastern Serbia (the least developed region in Serbia), considering all stated facts and significance of SMEs for the development of the whole

² <u>https://odgovornoposlovanje.rs/nase-teme/merenje-i-izvestavanje/csr-indeks-srbija</u>

country, the employees' attitude towards CSR in SMEs and main barriers for successful implementation of the CSR concept, were investigated in this paper.

3. Research Methodology

The research was conducted in July and August 2018 on the territory of Southern and Eastern Serbia. The research was conducted by anonymous survey. The questionnaire consisted of two parts. The first part involved questions about demographic structure of the data, and the second part contained questions about the CSR activities. Fifty-two (52) employees who work in SMEs on the territory in question participated in the survey. The analysis of the data was performed by the software package SPSS 18.0. The demographic characteristics of the sample are shown in Table 2.

Variables	Category	Percentage (%)
Age	18-25	17.3
-	26-35	36.5
	36-45	19.2
	46-55	11.5
	56-65	13.5
	Over 65	1.9
Gender	Male	48.1
	Female	51.9
Level of education	Primary school	1.9
	High school	36.5
	BSc	40.4
	MSc	13.5
	PhD	5.8
	Other	1.9
Position in the company	Worker	51.9
	Headworker	32.7
	Supervisor	15.4
Years of work	Up to 5	38.5
experience	6-10	19.2
-	11-20	15.4
	21-30	11.5
	Over 30 years	15.4

Table 2 Demographic characteristics of the respondents

4. Discusion of Results

The relationship between the respondent's gender and questions about the awareness of the CSR concept was examined by the application of hi square independence test. Considering the fact that one of the aims of this paper was to analyze the employees' opinions and attitudes about the above mentioned concept in order to raise awareness about the significance of the same, the obtained results are shown in Table 3.

		How familiar are you with the concept of corporate social responsibility?				
		I have never heard about it before this research	I have heard about the concept, but I am not familiar with it	I know what it means and I can explain its importance to someone else	I am interested in CSR and I actively participate in the activities	Total
	Real Value	2	13	9	1	25
Male	Expected Value	2.4	11.5	9.6	1.4	25.0
	Real Value	3	11	11	2	27
Female	Expected Value	2.6	12.5	10.4	1.6	27.0
Total	Real Value	5	24	20	3	52
	Expected Value	5.0	24.0	20.0	3.0	52.0

 Table 3 Respondents' answers about the awareness of the concept in regard to their gender

Based on the obtained results, it can be noticed that one of the hi-square test assumptions was not violated regarding the lowest expected cell value. The Pearson Chi-Square value for the analyzed data was 2.948 with p<0.005 significance, which indicates that the results are statistically relevant, that is, there is a statistically significant relation between CSR awareness and respondents' gender. For more detailed examination of the nature of this relation, the values of the cell rates were analyzed (Table 3). Based on the obtained real and expected values, it can be noticed that the number of male respondents who have never heard about CSR before this research (2) was lower than the expected value (2.4), and the value for female respondents (3) was higher than the expected value (2.6). The real value for male respondents who have heard about this concept, but were not familiar with it (13) was higher than the expected value (11.5), and female respondents' real value for this question (11) was lower than the expected value (12.5). The male employees' real value, who knew what this concept was and could explain its significance to others (9) was lower than the expected value (9.6), and female's real value for the same question (11) was higher than the expected value (10.4). Moreover, the male's real value (1) was lower than the expected one (1.4) for those who were interested in CSR and actively participated in the activities, while the female's real value (2) was higher than the expected one (1.6). It can be concluded that respondents' gender really has an impact on the awareness of the CSR concept, and that female employees are better acquainted with this concept than male employees.

Furthermore, the survey results showing whether CSR represents advantage or disadvantage for the business in regard to the respondents' gender are shown in Table 4.

			According to your opinion does CSR represent advantage or disadvantage?		Total
			Advantage	Disadvantage	
Gender	Male Female	Real Value	25	0	25
		Expected Value	23.6	1.4	25.0
		Real Value	24	3	27
		Expected Value	25.4	1.6	27.0
Total		Real Value	49	3	52
		Expected Value	49.0	3.0	52.0

Table 4 Employees' attitude towards CSR in regard to their gender

The hi-square independence test showed that there is statistically significant relation between respondents' gender and their opinion whether the CSR concept is advantage or disadvantage. The Pearson Chi-Square value for the analyzed data was 2.238 with p<0.005 significance. Based on the real and expected values (Table 4), it can be noticed that the number of male respondents (25) was higher than the expected value (23.6), that is, the male respondents consider CSR to be the advantage, while with the female respondents the real value (24) was lower than the expected value (25.4). These results indicate that the number of women who consider CSR to be the advantage is lower than the expected statistical value. When the CSR concept was investigated in regard to it disadvantageous nature, male respondents did not opt for this response, while female respondents' real value (3) was higher than the expected one (1.6). In other words, the number of women who considered the concept as disadvantage was higher than number of men. It can be concluded that the number of male respondents who considered the CSR concept to be the advantage was higher than the number of female respondents.

In addition to the stated statistical difference in the responses between male and female respondents, the main barriers that occur during the implementation of the CSR concept were examined as well.

	N	Minimum	Maximum	Average	Standard Deviation
Insufficient information about CSR	52	1.00	5.00	3.25	1.40
Lack of human resources	52	1.00	5.00	3.17	1.43
Lack of financial resources	52	1.00	5.00	3.25	1.60
Lack of support by the state	52	1.00	5.00	3.48	1.54
Lack of public support	52	1.00	5.00	3.12	1.45
Lack of knowledge about the implementation of CSR principles	52	1.00	5.00	3.04	1.44
Lack of employee motivation	52	1.00	5.00	3.38	1.43
Total	52				

Table 5 Main barriers for the companies which are socially responsible

Table 5 shows seven barriers which influence the implementation of the CSR concept in the enterprises: insufficient information about CSR; lack of human resources; lack of financial resources; lack of support by the state; lack of public support; lack of knowledge about the implementation of CSR principles; and lack of employee motivation. By analyzing respondents' opinions and obtained average values, it can be concluded that respondents consider all barriers to be significant, given the fact that all average values are higher than 3. Two barriers stand out among them, and they are lack of support by the state with the highest obtained rating (3.48) and lack of employee motivation (3.38). The respondents believe that the lack of support by the authorized state authorities as the external factor, and lack of employee motivation as internal factor represent the biggest problems for not implementing the CSR concept at the same level as it is in the developed countries. Slightly lower average ratings are obtained for the following barriers: insufficient information about CSR (3.25) and lack of human resources (3.17). The barrier which respondents consider to have the least influence on the implementation of CSR concept is the lack of knowledge about the implementation of CSR principles (3.04).

Conclusions

In recent years the CSR has become object of study among academics and professionals which increased its relevance in the corporate world. The CSR can be considered as a way of managing an enterprise, and it should be a part of its strategy when the responsibilities and duties to its stakeholders are taken into

consideration. Strengthening and including CSR in the strategy will offer a more balanced socio-economic system. Due to the limited number of studies about CSR in SMEs and their importance in Serbia, the aim of this study is to reveal the attitude of employees towards this concept, as well as to identify the main barriers which appear in everyday business. Most of the respondents stated that they were familiar with the CSR concept, but they did not know a lot about it. As the main barriers for the implementation of the CSR activities, the lack of support by state and lack of employee motivation were chosen. Moreover, the lack of knowledge about CSR was found to be the barrier with the least influence, which contradicts the employees' statement that they have heard about the concept, but did not know much about it. This can be the case that respondents in survey situations are more skeptical than in everyday situations. This is why the sample for further research should be expanded to other regions in Serbia in order to obtain more complete picture about the investigated concept.

References

- Lin-Hi, N., Müller, K. (2013). The CSR bottom line: Preventing corporate social irresponsibility. Journal of Business Research, 66, 1928-1936.
- [2] Carroll, A. (1979). A Three-Dimensional Conceptual Model of Corporate Performance. Academy of Management Review, 4(4), 497-505.
- [3] Turner, M.R., McIntosh, T., Reid, S.W., Buckley, R. (2019). Corporate implementation of socially controversial CSR initiatives: Implications for human resource management. Human Resource Management Review, 29(1), 125-136.
- [4] Carroll, A. (2015). Corporate social responsibility: The centerpiece of competing and complementary frameworks. Organizational Dynamics, 44(2), 87-96.
- [5] Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. Corporate Social Responsibility and Environmental Management, 15, 1-13.
- [6] Santos, M. (2011). CSR in SMEs: strategies, practices, motivations and obstacles. Social Responsibility Journal, 7(3), 490-508.
- [7] Spence, L.J., Rutherfoord, R. (2003). Small Business and Empirical Perspectives in Business Ethics: Editorial. Journal of Business Ethics, 47, 1-5.

- [8] Perrini, F., Russo, A., Tencati, A. (2007). CSR Strategies of SMEs and large firms. Evidence from Italy. Journal of Business Ethics, 74(3), 285-300.
- [9] Pastrana, N.A., Sriramesh, K. (2014). Corporate Social Responsibility: Perceptions and practicesamong SMEs in Colombia. Public Relations Review, 40, 14-24.
- [10]Mousiolis, D.T., Zaridis, A.D., Karamanis, K., Rontogianni, A. (2015). Corporate Social Responsibility in SMEs and MNEs. The Different Strategic Decision Making, Procedia - Social and Behavioral Sciences, 175, 579-583.
- [11]Madueño, J.H., Jorge, M.L., Conesa, I.M., Martínez-Martínez, D. (2016). Relationship between corporate social responsibility and competitive performance in Spanish SMEs: Empirical evidence from a stakeholders' perspective. Business Research Quarterly, 19(1), 55-72.
- [12]Castejón, P.J.M., López, B.A. (2016). Corporate social responsibility in family SMEs: A comparative study. European Journal of Family Business, 6, 21-31.
- [13]Kako shvatamo društvenu odgovornost, (2014). FORUM POSLOVNIH LIDERA, 6-10.
- [14]Ding, D.K., Ferreira, C., Wongchoti, U. (2019). The geography of CSR. International Review of Economics & Finance, 59, 265-288.

Competencies as a Criterion for Assessing the Readiness of Organizations for Industry 4.0 - A Missing Dimension

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Abstract: The main purpose of this paper is to present a conceptual model for the integration of employees' competencies into the models for assessing the readiness of organizations for Industry 4.0. Transformative changes of the business environment and subsequently of the organizations caused by the adoption of Industry 4.0 principles, demand from employees to have new, better, and upgraded personal and professional competencies. A growing amount of literature indicates that increasingly multicultural and multidisciplinary business environment, which is also technologically advanced, will impact the aspects of personal and professional sides of employees' competencies the most. However, with regards to the current models for assessing the readiness of organizations, their focus largely on the technological side of the transformation and subsequently the softer people-related aspects are understated. One of those understated aspects are competencies that are not considered as an independent criterion, which can help to more comprehensively determine organizations' readiness for Industry 4.0.

Keywords: Industry 4.0, Industry 4.0 readiness models, competencies.

1. Introduction

The impact of Industry 4.0 on the current business environment is a strong one and consequently organizations, especially manufacturing ones, are experiencing rapid dynamic and transitional changes that are based on the integration of technologies connected to digitalization, automation, and artificial intelligence into the business processes [1][2][3][4][5].

This means, that the impact of these technologies will be such, that it will lead the way for the next industrial revolution [6][7]. Within the economic system, these

changes are especially evident in organizations [8][5], that can be considered as core entities of the economic system [9] and thus of paramount importance to study. This opens up a question of determining the readiness of organizations for Industry 4.0, and how to comprehensively assess it. Current comprehensive models for assessing the readiness and maturity of organizations for Industry 4.0, one devised at the Fraunhofer Institute [10] and the other at the University of Warwick [11] focus largely on the side of "hard" technology related aspects and criterions and not enough on the "soft" people and philosophy related ones.

One of such soft aspects are employee competencies, as it is clear that in this manner the changes will not be focused only on technological processes within the organizations, but rather the employees will also be significantly impacted [1][12][13]. Employee competencies represent a fundamental resource that enables the success and competitiveness of an organization [14] and thus they should not be overlooked in the models for assessing the readiness for Industry 4.0.

There is a lot of fear that automation will replace the need for human labor [15][12] and this opens up a significant question of whether current employees have the right competencies to perform work in the Industry 4.0 environment. Industry 4.0 will not only replace repetitive work, but it will also change the working environment. It is estimated that the new business environment under Industry 4.0 will become more multicultural, interdisciplinary, multidisciplinary, collaborative, teamwork oriented, etc. [16][17][18][19], which by itself calls for new or improved personal and professional competencies, so that employees will still be able to add value to organizational efforts.

Since the competencies represent a major area of change, we propose that the focus on the usage and development of key competencies should be measured dimensions of assessing an organization's readiness for Industry 4.0. Additionally, based on the recognized importance of competencies for successful implementation of Industry 4.0 principles and exclusion of competencies in current models for assessing readiness, we propose the conceptual model, which outlines the relationship between organizations' readiness for industry 4.0 and key competencies under Industry 4.0 working environment. First, this paper offers a theoretical overlook of the phenomenon of digitalization and the concept of competencies, Secon, the paper offers a list of the most crucial personal and professional employees competencies required in Industry 4.0. Lastly, the paper presents a theoretical model, where employee's competencies are considered as one of the key criterions in assessing organizational readiness for Industry 4.0.

2. How Digitalization Made Industry 4.0

2.1Digitalization

Digitalization has transformed the society in recent years to the point, where it would be unrecognizable to humans only 30 years ago. This impact is such, that authors claim its importance in human development is equal to the discovery of fire, development of agriculture or the development of language. Digitalization is now guiding socio-economic development of humans, but these effects are now more than ever before spilling over to the economy [20][5]. The idea in the economy is that digitalization can enable favorable economic outcomes if properly utilized [21].

Digitalization refers to a plethora of singular phenomena, but collectively it represents the process of the representation of real-world data or objects through digital symbols and then reflecting this information back to the world with digital technologies [5]. This has significant implications in the way we spend our time working, as the majority of energy is spent on the cognitive work, where is the most added value because the machines are taking over manual workloads.

Digitalization is enabled with digital technologies that represent a plethora of devices, gadgets, protocols, etc., which are in term able to gather, interpret, use, and represent information. It should be stated however, that artificial intelligence is one step further and it is able to learn from gathered data to improve the processes [5][4][22].

Currently, in the economy and subsequently in organizations [9] the most potential for making a profit and better the situation form the standpoint of economic activities is in the adoption of principles of Industry 4.0 [4][21].

2.2Industry 4.0

Under the influence of Industry 4.0, practices of digital transformation seem to be beneficial to the degree, where they can cause the next industrial revolution [7][17][4]. Industry 4.0 is the European agenda to digitalize organizations with the implementation of high-technology in manufacturing processes and broader organizational workings [6][2][24]. So far, every industrial revolution has contributed to society and economy with its innovative solutions to improve manufacturing processes and philosophies of organizational workings [25]. With each new invention, the entropic complexities were also increasing in the organizations, where nowadays the role of human labor becomes less a factor than it was in the past [20][12]. This is nicely reflected through the evolution of industrial revolutions, as first two were driven by human labor and fossil fuels, the

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 17

third and prospective fourth are however based on cognitive work and mental power, and computational and digital technologies [5].

2.2.1 Technological drivers and enablers of industry 4.0

Basic technological concepts that are at the root of the phenomenon of Industry 4.0, have up till now been defined on the bases of three major technological groups [24][26]. Namely:

Internet of Things and Services (IoT), represents the integration of processes and machines with information and communication technologies, cloud computing, smart objects, etc. to make way for cyber-physical systems [27][28][29].

Cyber-Physical Systems (CPS) use IoT and information and communication technologies to gather data and ultimately control the production, other physical systems, and business processes in real time, presenting building blocks for smart factories [30][29][24].

Smart factories and Smart Manufacturing, are at this time considered small digitalized and entirely decentralized autonomous production units. They utilize all of aforementioned technologies (IoT and CPS) that are integrated in symbiosis with artificial intelligence, meaning that connected smart factories can self-organize and self-optimize [6][17][24].

2.3 The Current State of Models for Assessing the Readiness and Maturity of Organizations for Industry 4.0

Currently developed models for determining and assessing readiness and maturity of organizations for Industry 4.0 [31][10][11] are empirically still untested and are focusing far to greatly on the so-called "hard aspects" of organizational workings, such as information technology and infrastructure, production technology and infrastructure, sensors, smart supply chain, etc. So-called "soft aspects" are in large part understated. Although these models do encompass individual softer aspects, such as business models, human resources, organizational culture, etc. these however do not have equal precedence to hard aspects. In the literature there is a growing amount of studies indicating the importance of employees' competencies see, [16][17][18][19] in securing the relevant knowledge, skills, and abilities for employees to perform their work efficiently, effectively, and generally successfully. Yet employees' competencies are in the current models not considered as a vital soft criterion to determine the readiness of organizations for Industry 4.0. Basic traditional organizational theories [32][33] outline that in order for organizations to be successful in the marketplace or in their environment, they should have a cohesion and symbiosis between hard and soft aspects of organizational workings and behavior. Thus, to more comprehensively consider

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 18

the readiness of organizations for Industry 4.0, we should, among other soft criterions also integrate the focus on the usage and development of key employee competencies.

3. The Concept and Implications of Competencies in Industry 4.0

Competencies are conceptually a very broad field of study, which is considered important in various scientific fields dealing with human labor, e.g. business, economy, to psychology, education, etc. [18]. Because they have a different meaning in the sense of the level of consideration, different definitions have emerged.

The role of competencies was first focused on the employees' abilities to achieve desired work results. Thus, competencies were defined as a set of personal and subsequently general characteristics or even as a plethora of habits that can the individual with its application to achieve the desired work result [34][35].

Later on, competencies were more specifically defined as individual's knowledge and subsequent abilities, which are gathered with experiences, training, practice or learning that generally show what a person is capable of (Spencer & Spencer, 1993). It is curious however that up till now, competencies still do not have an excepted universal definition [18].

Speaking in practical terms, competencies can be defined as a capability of an individual to practically apply his or her knowledge, skills, and abilities to situations, where it is possible to achieve desired work result or goals [36]. To further define what comprehensively determines a competence IPMA [36, p. 15] propose three dimensions:

- 1. **Skills**, that are connected more to technical aspects of performing a given task.
- 2. **Knowledge**, that is an individual's private and personal accumulated collection of information and experiences.
- 3. Abilities, that reference an efficient and effective application of knowledge and skills in a given practical context.

With regards to the level of consideration, many types of competencies are often outlined, i.e. generic competencies [37], managerial competencies [38], etc. For this research problem it is feasible to consider competencies as professional and personal [36] due to the different goals they reference [39]:

- **Personal competencies** refer to the fundamental abilities and knowledge that a person can apply to the task.
- **Professional competencies** refer to more specific skills of technical and technological nature, which can be applied to tackle a specific problem.

3.1 Conceptual Meaning of Competencies Considered with Connection to Industry 4.0?

Nowadays, competencies could be considered more as a means to resolve specific work-related situations. Some authors emphasize professional aspects of competencies, such as customer communication, nonformal brainstorming, goal setting, debates, presentation of ideas, etc. [40]. Other authors emphasize general and generic ones, those connected to the imminent changes of the environment, changes of work, changes of society, and interpersonal relationships [17].

Specific to the current situation, important dimensions of competencies are more clearly defined. Important areas that are impacted are therefore connected to purely mental abilities e.g. leadership and decision making, cooperation and support, personal interactions, etc. and to mental and technical skills, e.g. technical presentation abilities, analytics and interpretation, creativity and conceptualization, organization and performance, self-management, and lastly to the focus on organization and work performance [18][37].

Still other model focus on the management positions as the most important. Those emphasize that managers and leaders should be creative, entrepreneurially minded, good problem and conflict solvers, good decision-makers, etc. Professional they should be good and proficient with analytics and research projects, and all the while focused on productivity and efficiency of organizational workings [38].

4. The Conceptual Model for Integration of Employees' Competencies in Industry 4.0 Readiness Models

As we have identified, there are two main categories of competencies applicable to differentiate between when examining the concept of Industry 4.0. Namely, those are connected to personal and professional dimesons. Various authors present competencies that are overlapping, but there are also some that are unique. Next, we will outline some of the most important ones, which are also represented below.

Personal competencies for Industry 4.0

- Holistic professional profile of the employee integrating self-reflection and self-management [36].
- Openness for multidisciplinary [10].
- A comprehensive approach to leadership and the openness to change management style [17][18].
- The ability to work in multicultural and multidisciplinary teams [17][10].

Professional competencies for Industry 4.0

- Technical and technological abilities [16][19].
- Digital and analytical abilities and skills [10].
- Creativity and proclivity for innovation [18].
- Professional holism of an individual (research abilities, statistical skills, communication and presentation skills, teamwork abilities, big data analytics skills, the ability to use CRM and ERP solutions, etc.) [41][30][17][18].

4.1 A more comprehensive model for assessing the readiness of organizations for Industry 4.0

To integrate employee competencies into the current models for assessing the readiness of organizations for Industry 4.0 [10][11] we propose, that two main dimensions of competencies should be measured. Namely, the focus on the usage and the development of personal and professional competencies. First, focus on the usage of these key competencies should indicate the frequency with which they are applied in the practice and should point to the level of organizations' integration and awareness of practices that Industry 4.0 is bringing. Second, the focus on the development of key competencies should reflect the Industry 4.0 strategy that organizations have set and whether they are committed to carrying through the integration of Industry 4.0 and are preparing their employees accordingly. The measurement instrument is presented in table 1.

Rank grade	Focus on the usage of key competencies	Focus on the development of key competencies
1	I do not have or use this competence	I do not recognize the importance of this competence
2	I have but do not use this competence	I recognize the importance of this competence, but do not plan to develop it
3	I have and occasionally use this competence	I recognize the importance of this competence and plan to develop it
4	I have and frequently use this competence	I am fully aware of the importance of this competence and am already developing it
5	I have and always use this competence	I am fully aware of the importance of this competence and have already developed it

 Table 1 The proposed measurement model for determining the level of focus on the usage and the development of key competencies

Source: (Own research)

The proposed measurement instrument reflects the instruments used in the existing models for assessing the readiness of organizations to Industry 4.0 [10][11][42]. This means that with the measurement of the focus on the usage and development of key competencies we measure one more dimension of readiness. The conceptual model for the integration of competencies in the existing models of readiness is presented in Figure 1.



The conceptual model for the integration of competencies into current models for assessing the readiness of organizations for Industry 4.0 Source (Own research)

The model in figure 1 shows a conceptual process of how to integrate employees' competencies in the measurement models for assessing the readiness of organizations for Industry 4.0 as a single dimension. Current criterions in the assessment models, for example [10][11] are represented as a set of dimensions of the key workings of organizations. Therefore, we add a dimension of competencies to enhance the overlooked soft gap. We present it in figure one as a single construct, which encompasses professional and personal competencies and by extension enriches the current models.

5. Discussion

It is evident that the next industrial revolution will be a consequence of the next wave of digital technologies, encompassing, automation, cybernetics, and artificial intelligence [2][22][7][5][4]. Therefore, it is understandable why in the current models for assessing the readiness of organizations for Industry 4.0, such a large focus is given to the hard aspects of organizational workings. Although to be fair these models often reference competencies as an important aspect of change, but however not as an assessment dimension or criterion. But none the less, it is also evident that for the proper workings and behavior of organizations soft aspects are equally important [32][33]. Thus, they should be in equal measure represented in the current models and more importantly correctly measured.

Employee competencies, among others, represent the organizations' competitive advantage and thus they are a key element for the successfulness and competitiveness of organizations [14]. New technologies, which are taking over the workplace and changing the organizations, demand that employee competencies are changed and upgraded [16][17][18][19]. However, not only new technologies call for better competencies, but rather the whole philosophies of organizational workings and behavior are shifting more towards multidisciplinary, cooperation, multinationalism, teamwork, etc. [5]. This adds an additional layer of complexity to the needs for competencies because in order for employees to function well in this environment, they will also have to develop competencies that will enable their entire personality to function.

The proposed conceptual models for assessing the readiness of organizations for Industry 4.0 are still in its initial stages and largely empirically untested. In order to make them more comprehensive, we will have to upgrade them continually with new dimensions, which will encompass both hard and soft aspects of organizational workings and behavior. This is so because there are still unforeseen consequences, impacts, and effects that are a consequence of digital transformation [5], and thus we do not comprehensively understand, which aspects and dimensions will play a key role in determining the readiness of organizations for Industry 4.0.

Conclusion

In this paper, we presented a conceptual model for the integration of key employees' competencies into the currently developed models for assessing the readiness of organizations for Industry 4.0. There is a need to integrate more soft aspects of organizational workings and behavior into these models, due to their large focus on the hard, technology-related aspects. Employee competencies are one of the most discussed topics, regarding the digital transition, but however, they are not considered as a dimension for assessing the readiness. Changes to the working environment under the influence of Industry 4.0, will change the job profiles, and consequently, new competencies will be needed. To comprehensively determine the readiness of organizations for Industry 4.0, we propose that employee competencies should be added as a separate dimension.

References

- R. Črešnar and Z. Nedelko, "The Role and Importance of Employee's Productivity in Industry 4.0," in *Mechanisms of interaction between competitiveness and innovation in modern international economic relations*, M. Bezpartochnyi, Ed., Riga, Latvia, ISMA University, 2017, pp. 120-133.
- [2] M. Piccarozzi, B. Aquilani and C. Gatti, "Industry 4.0 in Management Studies: A Systematic Literature Review," *Sustainability*, vol. 10, no. 10, p. 3821, 2018.
- [3] R. Y. Zhong, X. Xu, E. Klotz and S. T. Newman, "Intelligent Manufacturing in the Context of Industry 4.0: A Review," *Engineering*, vol. 3, no. 5, pp. 616-630, 2017.
- [4] J. M. Müller, D. Kiel and K.-I. Voigt, "What Drives the Implementation of Industry 4.0? The Role of Opportunities and Challenges in the Context of Sustainability," *Sustainability*, vol. 10, no. 1, p. 247, 2018.
- [5] R. W. Scholz, E. J. Bartelsman, S. Diefenbach, L. Franke, A. Grunwald, D. Helbing, R. Hill, L. Hilty, M. Höjer, S. Klauser, C. Montag, P. Parycek, J. P. Prote, O. Renn, A. Reichel, G. Schuh, G. Steiner and G. V. Pereira, "Unintended Side Effects of the Digital Transition:European Scientists' Messages from aProposition-Based Expert Round Table," *Sustainability*, vol. 10, no. 6, pp. 1-48, 2018.
- [6] V. Roblek, M. Meško and A. Krapež, "A Complex View of Industry 4.0," SAGE Open, pp. 1-11, 2016.
- [7] S. Wang, J. Wan, D. Zhang, D. Li and C. Zhang, "Towards smart factory for industry 4.0: a self-organized multi-agent system with big data based feedback and coordination," *Computer Networks*, vol. 101, p. 158–168, 2016.

- [8] P. Schneider, "Managerial challenges of Industry 4.0: an empirically backed research agenda for a nascent field," *Review of Managerial Science*, vol. 12, no. 3, pp. 803-848, 2018.
- [9] C. Perrow, "A society of organizations," *Theory and Society*, vol. 20, no. 6, pp. 725-762, 1991.
- [10] G. Schuh, R. Anderl, J. Gausemeier, M. ten Hompel and W. Wahlster, Eds., Industrie 4.0 Maturity Index. Managing the Digital Transformation of Companies (acatech STUDY), Munich: Herbert Utz Verlag, 2017.
- [11] O. Agca, J. Gibson, J. Godsell, J. Ignatius, C. W. Davies and O. Xu, An Industry 4 readiness assessment tool, Coventry: WMG-The University of Warwick, 2017.
- [12] J. Smithies, Artificial Intelligence, Digital Humanities, and the Automation of Labour, Basingstoke: Palgrave Macmillan UK, 2017.
- [13] R. Črešnar, Z. Nedelko and S. Jevšenak, "Strategies and tools for knowledge management in innovation and the future industry," in *The role of knowledge transfer in open innovation*, H. Almeida and B. Sequeira, Eds., Hershey, PA, IGI Global, 2018, p. Ch.9.
- [14] A. Wilcox King, S. W. Fowler and C. P. Zeithaml, "Managing organizational competencies for competitive advantage: The middle-management edge," *Academy of Management Perspectives*, vol. 15, no. 2, pp. 95-106, 2001.
- [15] M. Kotynkova, "Industry 4.0: Will the concept affect the world of Work?," in 14th International Scientific Conference on Economic Policy in the European Union Member Countries, Petrovice Karvine, 2016.
- [16] D. Spath, O. Ganschar, S. Gerlach and T. Hämmerle, Produktionsarbeit der Zukunft – Industrie 4.0, Munich: Fraunhofer IAO, 2013.
- [17] S. Erol, A. Jäger, P. Hold, K. Ott and W. Sihn, "Tangible Industry 4.0: A Scenario-Based Approach to Learning for the Future of Production," in *Procedia CIRP*, Gjøvik, 2016.
- [18] L. Prifti, M. Knigge, H. Kienegger and H. Krcmar, "A Competency Model for "Industrie 4.0" Employees," in *International Conference on Wirtschaftsinformatik*, St. Gallen, 2017.
- [19] J. Enke, R. Glass, A. Kre
 ß, M. Hambach, M. Tisch and J. Metternich, "Industrie 4.0 – Competencies for a modern production system: A curriculum for Learning Factories," in *Advanced Engineering Education & Training for Manufacturing Innovation"8th CIRP Sponsored Conference on Learning Factories (CLF 2018)*, Partas, 2018.
- [20] A. Takács-Sánta, "The major transitions in the history of human

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 25

transformation of the biosphere," *Human Ecology Review*, vol. 11, no. 1, pp. 51-66, 2004.

- [21] L. Varela, A. Araújo, P. Ávila, H. Castro and G. Putnik, "Evaluation of the Relation between LeanManufacturing, Industry 4.0, and Sustainability," *Sustainabiliy*, vol. 11, no. 5, p. 1439, 2019.
- [22] R. Črešnar, V. Potočan and Z. Nedelko, "Management tools for supporting transition of manufacturing organizations to Industry 4.0: The case of Slovenia," in *IACSS*, Prague, 2018.
- [23] M. Savastano, C. Amendola, F. Bellini and F. D'Ascenzo, "Contextual Impacts on Industrial Processes Brought by the Digital Transformation of Manufacturing: A Systematic Review," *Sustainability*, vol. 11, no. 3, p. 891, 2019.
- [24] J. Hoppit, "Understanding the Industrial Revolution," *The Historical Journal*, vol. 30, no. 1, pp. 211-224, 1987.
- [25] S. H. Bonilla, H. R. O. Silva, M. T. da Silva, R. F. Gonçalves and J. B. Sacomano, "Industry 4.0 and Sustainability Implications: A Scenario-Based Analysis of the Impacts and Challenges," *Sustainability*, vol. 10, no. 10, p. 3740, 2018.
- [26] L. Atzori, A. Lera and G. Morabito, "The Internet of Things: A survey," *Computer Networks*, vol. 54, no. 15, pp. 2787-2805, 2010.
- [27] C. Arnold, "The Industrial Internet of Things from a Management Perspective: A Systematic Review of Current Literature," *Journal of Emerging Trends in Marketing and Management*, vol. 1, no. 1, pp. 8-21, 2017.
- [28] L. Wang and X. V. Wang, Cloud-Based Cyber-Physical Systems in Manufacturing, New York: Springer International Publishing, 2018.
- [29] H. Kagermann, "Change Through Digitization-Value Creation in the Age of Industry 4.0," in *Management of Permanent Change*, H. Albach, H. Meffert, A. Pinkwart and R. Reichwald, Eds., Wiesbaden, Germany, Springer Fachmedien Wiesbaden, 2015, pp. 23-45.
- [30] J. Ganzarain and N. Errasti, "Three stage maturity model in SME's toward industry 4.0," *Journal of Industrial Engineering and Management*, vol. 9, no. 5, pp. 1119-1128, 2016.
- [31] H. Fayol, Administration industrielle et générale; prévoyance, organisation, commandement, coordination, controle, Paris: H. Dunod et E. Pinat, 1917.
- [32] J. Stouten, D. M. Rousseau and D. D. Cremer, "Successful Organizational Change: Integrating the Management Practice and Scholarly Literatures,"

Academy of Management Annals, vol. 12, no. 2, pp. 752-788, 2018.

- [33] D. McClelland, "Testing for Competence Rather Than for "Intelligence"," *American Psychologyst*, vol. 28, pp. 1-28, 1973.
- [34] G. Klemp, The assessment of occupational competence, Washington DC: National Institute of Education, 1980.
- [35] IPMA ICB 4.0, Individual Competence Baseline for Project, Programme & Portfolio Management, P. Coesmans, M. Fuster, J. G. Schreiner, M. Gonçalves, S. Huynink, T. Jaques, V. Pugacevskis, M. Sedlmayer, D. Thyssen, A. Tovb, M. Vukomanovic and M. Young, Eds., Zurich: International Project Management Association (IPMA), 2015.
- [36] M. Graczyk-Kucharska, M. Szafranski, M. Golinski, M. Spychala and K. Borsekova, "Model of Competency Management in the Network of Production Enterprises in Industry 4.0—Assumptions," in *Advances in Manufacturing. Lecture Notes in Mechanical Engineering*, A. Hamrol, O. Ciszak, S. Legutko and M. Jurczyk, Eds., Cham, Springer, 2018, pp. 195-204.
- [37] K. Grzybowska and A. Łupicka, "Key competencies for Industry 4.0," Economics & Management Innovations, vol. 1, no. 1, pp. 250-253, 2017.
- [38] M. Vukomanovć, M. Young and S. Huynink, "IPMA ICB 4.0—A global standard for project, programme and portfolio management competences," *International Journal of Project Management*, vol. 34, pp. 1703-1705, 2016.
- [39] T. Ley and D. Albert, "Identifying Employee Competencies in Dynamic Work Domains: Methodological Considerations and a Case Study," *Journal* of Universal Computer Science, vol. 9, no. 12, pp. 1500-1518, 2003.
- [40] H. Kagermann, W. Wahlster and J. Helbig, Securing the future of German manufacturing industry: Recommendations for implementing the strategic initiative INDUSTRIE 4.0: Final report of the Industrie 4.0 Working Group, Frankfurt: acatech – National Academy of Science and Engineering; Federal Ministry of Education and Research;, 2013.
- [41] A. Schumacher, S. Erol and W. Sihna, "A maturity model for assessing Industry 4.0 readiness and maturity of manufacturing enterprises," in *Changeable, Agile, Reconfi gurable & Virtual Production Conference*, Munich, 2016.

Managerial decision options about BYOD with the consideration of shadow IT

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Abstract: In recent years we have seen the rise and spread of BYOD (Bring Your Own Device) world wide. In this paper I will show definitions by security researchers for BYOD, and a proposed definitions for my research. When we are talking about using our own smart devices for work we cannot oversee the possibility to use them without approval of the management of the firm. Creating a secoundary non-official IT enviorinment in the firm. I will show the positive and negative side of this phonomonem and as a conclusion I will give managerial decision options for the firm for BYOD.

Keywords: BYOD, Shadow IT, Enterprise Security

Introduction

Definition of BYOD

BYOD is an acronym for Bring Your Own Device. [1][2][3][4] The term of device could mean in general a wide variety of employee owned tools and hardware, although the accepted meaning of device in this topic is IT devices, such as laptops, tablets, smart phones.

Application of BYOD

In my Information and communications technology ICT security research I narrow this definition to smartphones and tablets, as these types of devices are not always considered and used by the employees as fully flagged computers. On the other hand, these devices could be capable to have access to corporate data and can work (open, edit, insert, delete etc..) on that data also. Thus, in many aspects they have to be managed as one node in the IT infrastructure.[5][6][7]

For these devices, the most important use case is communication; e-mails and other messaging where corporate data need to be flowed between parties. Also, with these devices we can use the network infrastructure of the firm, reaching network drives, shared documents, shared databases, even the Management Information System of the firm, and much more. Just like with a computer. The question is, what kind of risks are there, and how to regulate?



In 2012 Cisco questioned IT decision makers in enterprises (>=1,000 employees) and midsize (500-999) companies in eight countries and three regions. [8]

Figure 1. Regions and countries of the sample Source: Cisco BYOD: A Global Perspective Harnessing Employee-Led Innovation

The sample contained 600 enterprises, 312 midsize from the U.S. and 2805 enterprises, 1175 midsize companies from the other three regions. The first interesting question was why an employee would want to use their own devices for work. As we can see on the second figure, the most important reasons are related to convenience and freedom of usage in the question of time, space and used hardware and software.



Figure 2. Top reasons Employees Use Their Own Devices for Work Source: Cisco BYOD: A Global Perspective Harnessing Employee-Led Innovation

For these requests from the employees the IT department of the firm needs to give an answer. In the research Cisco has given four answers.

As an answer for this the research included a question about on which level is BYOD is accepted by the firms.

All devices supported

- Selected devices supported
- Network access but no IT support
- Employee devices prohibited

As we can see the two most accepting regions were the U.S. and India (31%, 30%) where all devices were supported. It is also interesting that in average. more than seventy percent of the answerers said they support employee devices (selected, or all kind). This means that many companies need to deal with BYOD. On the other hand, in the European region the number of companies where BYOD is prohibited is higher than in the other regions. Also, in this region the highest percent of the companies which enabled only network access but no IT support. [8]





In 2016 Ipsos made a Europe wide research about the digital trends in 20 countries in the sector of small- medium- and microenterprises. In Hungary, the 57% of small enterprises answered that they support BYOD, which had a growing trend since in 2014 they measured a 38% acceptancy. While the 67% microenterprises answered positively to this question, and the medium size answerers' acceptancy rate was 51%. [9]

Shadow IT

Definition of shadow IT

Shadow IT, also known as Stealth IT or Client IT, are Information technology (IT) systems built and used within organizations without explicit organizational approval. For example, systems specified and deployed by departments other than the IT department for testing and creating new services. [10][11][12][13]

Many IT specialists consider shadow IT as an important source of innovation. As such systems may become prototypes for future approved IT solutions. [14]

On the other hand, shadow IT solutions often not in line with organizational requirements for control, documentation, security, reliability, and in other aspects of ICT security.

Most important risks of BYOD consideration of shadow IT

From a theoretical point of view the most important risk sources of using selfowned mobile devices

- 1. Control over the corporate data, as how we can keep it, as the employee might transfer it to devices without of permission and carefulness.
- 2. The type of the device, as these devices by chance cannot be controlled by the firm.
- 3. When feeling security is ,,too inconvenient", as we could have seen convenience is a motivator for the employee and it can lead to usage of risky solutions in hardware and/or software.
- 4. Unregulated usage of self-owned devices. As valuable information can be lost via unprotected, uncontrolled devices.

Other important questions about risk sources of using self-owned mobile devices:

- 1. The quality and security of the network service when the device connects to the network of the firm.
- 2. Backups how does the device makes backups for example for network failure? Does the device have a secure drive which cannot be reached other than our secured application?
- 3. The corporate data can be reached all day, from all networks, or could we make time and space regulations?
- 4. Can we lock out the user? For example, after three unsuccessful login attempts?
- 5. How do we authenticate the user? From user level (passwords, fingerprint) or from device level (device ID, secure chip, SIM card) or we are mixing these?
- 6. Can a user reach shared mailboxes and shared folders? For example, can a secretary reach his or her director's mailbox and their mails?
- 7. Can the employee connect a data storage device (Memory card, USB stick, etc.) and reach the data on it, from the secure application, and transfer data to the secure partition?

The strategic answers that managers can give to the risks

In the questionaire of Cisco we could see the levels of IT support for employee owned devices. On the managerial level of the firm this can be transformed as four level of managerial decision as the following:

- Tolerate
- Subject of vocal or written permission
- Encourage
- Completely ban

As a preparation for this managerial decision according to Lazanyi [15] the uncertainty can be reduced with the combination of the following procedures:

- Collect as much information about the viable options as it is possible, considering that the state of complete information cannot be achieved, and the consumable time and costs.
- Research for information about similar decisions from the past of the firm or from outside information sources and transform that knowledge for the current situation.
- Selection of a reference decision maker who can immersively reduce the uncertainty.

For selecting the appropriate decision option the Skill-Will matrix can be used as a managerial tool. It has two dimensions, one is for the willingness of the employee to applicate BYOD, while the other dimension is the skill of the employee. This skill dimension should include the usage skills of ITC devices with a strong consideration of the ICT security awareness of the employee.

		□ Will	
		□ low	🗆 HIGH
Skill	□ low	Permission	🗆 Ban
	🗆 HIGH	Encourage	Tolerate

Figure 4. Skill-Will matrix with strategical decision options for managers on the application of BYOD Source: Own edition of the Skill-Will matrix

Recommendations

Planning and managerial decision are needed on the following questions. What are the types of data, in what circumstances, and in what form (i.e. Only in the secure storage of the device) can be present on mobile devices? The selection of the usable devices has to be decided and also it is a have to to define the use cases and usage parameters when employees can use their own devices. To achieve this, we need proper IT and information security regulations and usage! Beside this we need to have appropriate level of security consciousness in information security.

References

- S. Blizzard (2015) Coming full circle: are there benefits to BYOD?, Computer Fraud & Security, Volume 2015, Issue 2, 2015, Pages 18-20, ISSN 1361-3723, https://doi.org/10.1016/S1361-3723(15)30010-5.
- [2] A. Hovav, F. F. Putri (2016) This is my device! Why should I follow your rules? Employees' compliance with BYOD security policy, Pervasive and Mobile Computing, Volume 32, 2016, Pages 35-49, ISSN 1574-1192, https://doi.org/10.1016/j.pmcj.2016.06.007.
- [3] N. Zahadat, P. Blessner, T. Blackburn, B. A. Olson (2015) BYOD security engineering: A framework and its analysis, Computers & Security, Volume 55, 2015, Pages 81-99, ISSN 0167-4048, https://doi.org/10.1016/j.cose.2015.06.011.
- [4] U. Vignesh, S. Asha (2015) Modifying Security Policies Towards BYOD, Procedia Computer Science, Volume 50, 2015, Pages 511-516, ISSN 1877-0509, https://doi.org/10.1016/j.procs.2015.04.023.
- [5] G. Disterer, C. Kleiner (2013) BYOD Bring Your Own Device, Procedia Technology, Volume 9, 2013, Pages 43-53, ISSN 2212-0173, https://doi.org/10.1016/j.protcy.2013.12.005.
- [6] B. Tokuyoshi (2013) The security implications of BYOD, Network Security, Volume 2013, Issue 4, 2013, Pages 12-13, ISSN 1353-4858, https://doi.org/10.1016/S1353-4858(13)70050-3.
- [7] E. Kadena, T. Kovács (2017) The need for BYOD security strategy, HADMÉRNÖK 12:4 pp. 138-145., 8 p.
- [8] J. Bradley, J. Loucks, J. Macaulay, R. Medcalf, L Buckalew (2012) BYOD: A Global Perspective Harnessing Employee-Led Innovation, Cisco IBSG Horizons https://www.cisco.com/c/dam/en_us/about/ac79/docs/re/BYOD_Horizon s-Global.pdf

- [9] E. Kis (2016) Felhőben (lehetnének) jobbak a kkv-k, Computerworld 2016 június 8. https://computerworld.hu/uzlet/felhoben-lehetnenekjobbak-a-kkv-k-211561.html
- [10]RSA (2007) The Confessions Survey: Office Workers Reveal Everyday Behavior That Places Sensitive Information at Risk
- [11] J. Nelson (2015) Shadow IT is a reality for 90% of CIOs". Logicalis. http://cxounplugged.com/2015/11/shadow-it-is-a-reality-for-most-cios/
- [12]A. Stuart (2016) The dangers of file sync and sharing services, Computer Fraud & Security, Volume 2016, Issue 11, 2016, Pages 10-12, ISSN 1361-3723, <u>https://doi.org/10.1016/S1361-3723(16)30090-2</u>.
- [13]Browne, Sean, Lang, Michael, & Golden, William. (2016). Contextualising the insider threat: a mixed method study. Paper presented at the 11th Pre-ICIS Workshop on Information Security and Privacy (SIGSEC), Dublin, Ireland, 10 December.
- [14]M.J. Handel, S. Poltrock (2011) Working around official applications: experiences from a large engineering project CSCW '11: Proceedings of the ACM 2011 conference on Computer supported cooperative work. pp. 309–312. doi:10.1145/1958824.1958870.
- [15]Lazányi, K. (2016). A biztonsági kultúra szerepe a vezetői döntések támogatásában= The role of safety culture in supporting the leaders' decision making. Taylor, 8(1), 143-150.

Controlling as a Management Function

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Abstract: An SME is able to cope with the global challenge through reliable, balanced and high-standard operation in its business. As a management tool and management function as well as a factor affecting competitiveness, the role of controlling has become more and more significant. Controlling is a managerial function based on information management, a managerial tool to plan, supervise, analyse and control events in a company. Controlling is a system which serves to support the enterprise management with coordination and information. It is implemented via planning, supervising and improving alternative strategies for management. The controlling system as a managerial function affects basic activities of the organisation.

1. Introduction

Successful company management largely depends on the management tools supporting the process of decision-making. Necessarily a suitable system of registration, navigation as well as indication should be created. [4] As for the interpretation of the 'controlling' concept involving its aims, contents, device system and application potentials, views held by theorists and professionals working in this field diverge. Benefits of controlling can be merely justified if profit to be obtained surpasses costs of development and introduction. Controlling is future-oriented, instead of focusing on the past it is concentrated on the future. Strategic controlling analyses success potentials, whereas the task of operative controlling is to achieve objectives concerning profits and solvency estimates by means of planning and comparing planned and actual performance. Controlling exerts its influence in a special learning process throughout the whole organization. Controlling organisation is meant to support leadership via jobs

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 35

related to planning, analysis and supervision, all of which are utilised by the management. [1]

Controlling supplies up-to-date information about:

- trends on the market, in turnover and sales
- gross margin
- contents of costs, deviation from plans
- tendencies in orders, their further impact
- the balance of solvency
- progress made in investment and development.

The Institute for Organisation and Management of the Budapest Tech where an SME research and development team is operating – in cooperation with the University of Banská Bystrica as well as other research institutes in Hungary and abroad – puts great emphasis on investigating the role of controlling in increasing the competitiveness of businesses. Since the management revolution highlighted by the theories of Frederick Winslow Taylor and Henry Fayol, plenty of global changes have occurred. Competitiveness has become the major factor to determine the economic and social power represented by companies and nations. Research teams in the cooperative countries are taking the challenge to analyse the role of management in the competitiveness of SME. [6][7][8][9][10]

One of the surveys of BT SME research group, currently in progress, analyses competitiveness, focusing on EU membership and a new competitive environment created by globalisation. The operational and organisational conditions of competitiveness are manifold and involve each specialist area as well as management and direction itself. [2][3]

2. Research Method

Both empirical and theoretical approaches were involved in the research work accomplished in the above-mentioned field of study. Research methodology thus shall be divided into three major categories:

- Theoretical research, whose function is to lay the grounds for study of individual groups of problems
- Elaborating our own methods on a scientific basis, simultaneously incorporating empirical experience
- Processing practical experience

During the research the methods relevant for these three categories or their combinations shall be applied:

• Thanks to research accomplished by studying libraries of controlling research we have shed light upon the issue of the usage of the concept of controlling
• Via comparison of various schools (or trends) we have set up a model of the controlling system as such

In the area of the specific question of system development we have developed our own controlling model by means of combining theoretical and empirical approaches on the basis of practical experience. This short report provides a synthesis of the results obtained with various research methods to date. Out of the factors of competitiveness, we would like to highlight controlling, as we analyse its implementation opportunities in the SME sector, primarily among small enterprises.

3. The Outcome of the Research: Controlling Management Model

Apart from summarising practical and theoretical research the study was also motivated by the aim of providing undergraduate students involved in higher education training with a course-book, which relies on a wide spectre of methodological experience and easy to use. The purpose of the study was also to re-evaluate the approach to controlling on a nationwide scale and to contribute to the development of science.

Controlling

- is strictly and primarily practice-oriented
- in its system a priority prevails and is outcome-oriented
- has an approach focusing on management
- it is theoretically rooted in management practice
- coordination and information system embodies its main function
 the development of its concept and function is centred on
- managerial functions

Empirical studies as well as theoretical research (based on technical literature) prove that controlling includes planning, co-ordination and supervisory functions, and de facto clues suggest that this also plays a role in management. The significance of the influence of controlling in the area of organisation is still not verified. The development from company management model towards management model indicates that controlling as an integrated management function will develop in the direction of the model outlined in the figure.

This theoretical approach may be verified judging from the outcome of theoretical research, too.



Fig. 1. Controlling as a managerial function

Controlling is a managerial function based on information management, a managerial tool to plan, supervise, analyse and control events in a company.

Controlling is a system which serves to support company management with coordination and information. It is implemented via planning, supervising and improving alternative strategies for company management.

The two-fold interpretation of the concept of controlling:

- function determined by information management
- a managerial device for planning, supervising analysing and controlling company efficiency.

Henry Fayol classified company activities into six groups and he devoted separate studies to examining managerial functions (planning, organization, direct management, co-ordination, supervision).

The controlling system as a managerial function affects basic activities of the organisation (company). According to the analysis of the integrated operation of logistic and controlling systems it can be presumed that most important factor in

information management is the relationship between logistics costs and logistics output.

Approaching logistics-controlling on a strategic level is an important factor determining competitiveness on the market.

It is of crucial importance to build its sets of objectives and conditions in harmony with company strategy, which will determine the competitiveness of the product (or service).

In company management competitive criteria for cutting costs should be measured in its complexity according to the competitive value of the product (or service).

The essence of up-to-date logistics- controlling management is the integrated handling of the material process and the development of the organisation and information system.

4. Controlling as Factor of Competitiveness in SME

One of the factors of competitiveness is cost-efficiency, which is required for real processes, as well as planning and controlling of costs. [5]

These functions form a regularly repeated closed system, considered a sub-system of management, and discussed as a management function on its own in the technical literature.

In the controlling system, cost controlling is very important, which is suitable to increase cost-efficiency and thus, competitiveness.

Empirical studies and theoretical and literary researches have proved that controlling contains all the managerial functions: planning, organization, supervision, coordination and control.

Empirical signs indicate that it also plays an important role in management. Development from an economic operation model to the management model indicates that controlling, an integrated management function, develops towards a new model.

On the basis of the results of empirical researches, the theoretical approach can be assumed. Thus controlling is:

- strictly and mainly practice-based,
- dominated by profit-orientation concerning its objectives,
- has an economic operation approach,
- its theoretical basis originates from economic operation, too, and
- its main functions are coordination and an information system.

As it was indicated above, the controlling function is present in 20% of the analysed enterprises. However, it does not mean that these enterprises have created a separate controller's position, or controlling organisation.

A closer study of individual cases has indicated that the manager of an enterprise requires regular generation and availability of information relating to the controlling area. Most often the information is generated by the accountant or business consultant of the enterprise, and the controlling report, i.e. the inclusion of the information in a system and its interpretation – is also prepared with external assistance. It happens very rarely that the entrepreneur's own administration prepares the information and the controlling report is prepared by a competent expert – controller – or the manager himself.

Controlling is a professionally demanding function, involving an expenditure which yield of which is not always seen directly by the entrepreneur. This explains that 40% of a sample of 400 SME-s has a controlling function, and 20% plans to implement a controlling function in their enterprise within the near future. At the same time, the personal interviews have also revealed that the managers of such enterprises consider themselves rather cost-sensitive and economic persons, who do everything to increase cost-efficiency and competitiveness. SME managers think that controlling functions in management system can help them to do competitive enterprise.

Such a low level of the presence of the controlling function among the SME-s can be explained best with the fact that the qualifications of the managers of the analysed enterprises show a rather varying picture: 30% of the managers have diploma and 42% secondary qualification.

Assuming that each SME manager with a diploma knows exactly what controlling is and intends to apply it too the proportion of existing and planned controlling functions is close to 30%.

Although attempts for cost-efficiency can be expected from managers with secondary or lower qualifications and it can actually be observed, but the solution, i.e. application of a controlling system or function does not even occur to them without the relevant knowledge or information.

Managers of successful SME-s practice the controlling function in our management system.

Thus, the presence of a need does not point to controlling, but to a management system that somehow contains both the controlling function and system.

Conclusions

The basic aim of the research to be outlined was to reveal the significance of real and information process analysis of operating controlling systems introduced in

domestic entrepreneurial practice, and also to present the features commonly shared by enterprises as well as those that can be considered unique.

The accomplishment of controlling as a managerial function implies that it appears in management systems integrated with the other functions. Individual classical management functions may be conceived as integrated, professional or individual on the level of the manager. Professional and individual managerial functions have not been integrated so far, thus controlling function is realised independent of those.

The sphere of activity available for enterprise management is determined by the ever-increasing competition, changing realization and buying markets and the tight possibilities of potential applications. The art of management lies in the skills to guarantee that the enterprise may persist and sustain its viability. Ever since market economy came into being Hungarian SME-s have been forced to continually utilise their resources rationally. Controlling is proven to be an efficient method, which is to provide key information for the management at the right moment, concerning the status of environment and inside processes. In general, building up a controlling system, toolset and organisation is implementing controlling and, at the same time, competitiveness.

References

- [1] Francsovics, A.: Controlling. Budapest: BMF -Ligatura, 2005 pp 8-22
- [2] Kadocsa, Gy. Sütő, L.: Wettbewerbsfähigkeit der Familienunternehmen in Ungarn. (Competitiveness of the Family Businesses in Hungary) Internat. Conference MEB. Budapest: BMF, 2004 pp 59-68
- [3] Francsovics, A. Kadocsa, Gy.: Globalization and Competitiveness of SME in Hungary Internat. Conference on SME and Globalization and Integration, Banska Bystrica, 2005
- [4] Observatory of European SMEs 2003/6: The impact of EU enlargement on European SMEs. Luxemburg: European Communities 2004 pp 11-53
- [5] Versenyképesség Kutató Központ: Fókuszban a verseny (Competitiveness in the Focus) Budapest: Corvinus Egyetem, 2004
- [6] Mugler, J.: Grundlagen der BWL der Klein- und Mittelbetriebe (Basics of Business Economics of SMEs) Wien: Facultas V. 2005 pp 125-147
- [7] Belak, J. and Co.: Unternehmensentwicklung und Management (Enterprise Development and Management) Zürich: Versus Verlag 1997 pp 133-293

- [8] Duh, M.: The Influence of Family Relationships on the Development of Family Enterprises in Slovenia. In MER Journal 2003/1 Maribor: MER Evrocenter, 2003 pp 38-47
- [9] Belak, J. (editor): Integralni management in razvoj podjetna (Integral Management and Enterprise Development). Maribor: MER Evrocenter, 2003 pp 73-136
- [10]Lesakova, L.: Small and medium enterprises in Slovakia the present state and the future. Internat. Conference on Future of SMEs in united Europe. Banska Bystrica: 12-13 May 2005 (on CD, 1. presentation)
- [11]Kemendi, A.: The expansion of the European Union in the 'books' of the business stakeholders, 2008
- [12]Kadocsa, Gy., Francsovics, A.: Innovationsumfeld und Innovationsfaehigkeitsfaktoren in Sektor der Kleinunternehmen in Ungarn
- [13]Kadocsa, Gy., Francsovics, A.: Management of Organizations in Real and Virtual Environment: Opportunities and Challenges IV. Slovakia 2012, Wettbewerbsfaehigkeits-Benchmarking Bereich der KMU
- [14]Francsovics, A.: Besonderheiten der Entwicklung der Controlling, Budapest, Amicus 2006
- [15]Kadocsa, Gy.: Entrepreneurial Management, Budapest, Amicus 2007
- [16]Francsovics, A, Piukovics, A.: Üzleti gazdaságtan módszertana, Budapest, Amicus, 2018

The room for improvement competitiveness and innovation

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Abstract: Last four years Serbian economy seems recover from the Global economic crisis, which caused a zero rate of growth in six years period (2009-2014). The economic development is mainly due to domestic demand increase, investment into infrastructure and increase in foreign direct investments. The macroeconomic stability is improved and for the first time in the medium term it is comparable to European standards. However, it is important to note that even the rate of growth achieved in the last year and projected for this year (4,4 and 3,5% respectively) is below the need to shorten the difference in development level to developed economies and countries in transition, as well.

In line with overall recovery, the segment of small and medium scale companies and shops (SMEs) is improved, considering that the number of new established companies is increasing and more important, higher than number of closed legal entities. It is due to more chances for start - up and development and improved business environment. Although Serbian economy has improved business environment there is still room for improvement, especially considering the lack to European countries and some countries in the neighbourhood.

European Union has already defined the strategy in which innovations became the most important factor for development. Considering the level of use of Information, Communication Technologies (ICT) and the level of competitiveness of Serbian companies, including SMEs, there is even more room for improvement. One can say that development policies has been generally defined with an aim to support fast growing and innovative companies, but these need time to achieve full effect.

The room for improvement competitiveness and innovation of Serbian companies, included SMEs, should be find on all levels of decision making: national, regional, local and level of a firm itself.

Keywords: SMEE, innovation, competitiveness

1. Introduction

In the period 2009-2014 Serbia has faced with almost zero rate of growth (GDP increased 0,6% per year) [1]. Fortunately, it seems that development is secured as GDP increased last four years with increasing rate of growth. Macroeconomic stability is improved and now is comparable to European standard. In the period under consideration Dinar is more than stable, even one can say that it is appreciated in real terms. Serbia is successful in fight with its main economic problems; the public debt is decreasing and foreign debt, as well. After the end of a stand - by arrangement with IMF last year an advisory agreement was reached.

In line with increasing overall growth tendency one can recognize a positive trend in the business demography. Namely, from 2013 on there is a tendency of increasing number of new established economic subjects, companies and shops, and at the same time decreasing number of those closed economic subjects [2]. As a result the discrepancy between opened and closed companies is also increasing. The birth rate is improving as a result of improving business climate and business conditions. The overall rate of survival (in two years period) of companies and shops is also higher than before.

In spite of bright projections one can recognize that competitiveness of Serbian SMEs and other companies is much lower than EU average. An average Serbian SME has almost two times fewer employees than European one and more than three times less productivity [2]. Different international investigations and reports pointed improvement in its business climate, but at the same time noted a lot of room for improvement in market reforms [3,4]. Also, if one talks about innovations has to be aware that Serbia belongs to the group of moderate innovators countries [5] and can be satisfied with ICT infrastructure and its use, but not with e-trade, e-production and e-government.

The aim of the paper is twofold: firstly, to envisage the level of innovation activities with comparison to European countries and especially with countries within the Region and secondly, to analyze measures and instruments of the development policies in order to find space for improvement.

2. Development is secured

Last four years Serbian GDP is increasing (1,8%, 3,3, 2% and 4,4% per year, respectively) after six years of almost zero rate of growth (0,6% per year on average) [1]. This increase is due to domestic demand increase, an increase in investment into infrastructure, financed by the Government and an increase in Foreign Direct Investments, FDI. Although one can see the light at the end of the tunnel, as the development is secured, these respectable rates of growth are unfortunately too low for Serbia to catch up transitory economies in surrounding and developed countries, as well [16].

At the same time macroeconomic stability is improved and for the first time the inflation rate can be compared to the European standard (1,9%, 1,2% 3% and 2% increase per year, respectively) [1]. The main factor behind stability is due to painful measures introduced for consolidation of the public spending, among others cut in wages of civil servants and pensions, as well. Dinar is even more than stable (in other words it is appreciated), as there are more economic subjects interested for the appreciation of foreign exchange rate, FX rate (the government, debtors generally, importers) than those interested for its depreciation (exporters only) [15].

Serbia is still fighting with problem of excessive public spending and fortunately it was put under control, even faster than expected. After the maximal level of the budget deficit (it was even 6% of GDP in 2014), the budget spending achieved surpluses in the last two years (-3,7% of GDP, -1,4%, +1,3% and 1,5% of GDP, respectively). As a result the public deficit is decreasing from 74,7% of GDP in 2015 to 56% of GDP in 2018 [7].

Considering Balance of Payment problem one can be satisfied also, as the foreign debt decreased as the share in GDP from 76% of GDP and its maximal level to 63% of GDP in the last year [1]. Although the trade deficit is increasing last two years, it is more than offset by positive balance of services, by FDI and remittances of our citizens working and lived abroad. So, foreign currency reserves of the Central Bank and commercial banks are increasing and are more than necessary to finance import [8].

Serbia signed in 2015 a stand-by arrangement with International Monetary Fund, IMF in order to secure foreign currency reserves and foreign exchange rate with credit of 1,2 billion \$. Due to positive tendencies in the economy this arrangement

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 45

was finished almost without use of sources. So, in front of decision - makers a question was opened weather to arrange a new contract with IMF or not. Among those who were against new arrangement were trade unions, the government itself and commercial banks. At the same time the Central Bank, professionals and employers advocated for a new contract. Finally, an advisory arrangement was agreed, without a credit line [8].

3. SMEs is improving

In better economic environment entrepreneurs could find more chances for start up and development of their companies and shops, which can be seen from Graph 1. It seems that for small and medium scale companies and shops, SMEs from 2013 on the business conditions are clearly improving. Business demography shows data of new established companies and shops, on the one hand, and data of closed companies and shops, on the other hand. The number of those new opened companies and shops increased each year, while at the same time the number of closed companies and shops decreased. More important is the fact that the discrepancy between opened and closed economic agents is also increasing. Net effect of business demography (number of new established minus those closed) from 5 hundred in 2013 reached 18 thousand economic subjects in 2018[9].



Graph 1 Serbia – Business Demography Source: Agency for Business Registry of RS

One has to be aware that business demography is somewhat better for companies than for shops, which can be expected. On each 10 closed companies 304 are opened and for entrepreneurs this ratio is 10:16 (on each 10 closed shops new 16 shops are opened) [2].

Generally speaking, the birth rate is rather stable during last several years (between 11,7 and 13,2%), while the death rate is decreasing (from 12 to 7% in 2018), which once again prove that overall business climate is improving and business condition, as well [2].

Similar, the overall rate of survival, which points that economic entity established has survived next two years, is also higher last year in comparisons to the previous period (74% in 2017 to 64% in 2013). It is important to note that the rate of survival is higher for companies than for entrepreneurs (88% and 70% respectively) [2].



Graph 2 Serbia – The Rate of Survival Source: Agency for Business Registry of RS

4. Low Competitiveness

In spite of improved overall economic situation and upward tendencies one cannot be satisfied if look at the competitiveness of Serbian firms on the world market, e.g. it is much lower in comparison to the EU average. SMEs are not exception. Serbian SMEs has 2,5 employees on average, while in EU is 4 employees. Productivity is 3,7 times lower than in EU. Considering productivity Serbia is only better than Bulgaria within the Region [2].

Different reports prepared by international financial institution or associations pointed out that Serbia improved its market reforms, but unfortunately less than transitory economies in the surrounding. In other words, there is a lot of room for improvement.

World Bank prepared its "Doing Business Report" on regular basis. The last report put Serbia on the 48th place, which is five points lower than a year earlier [3]. According to this report Serbia was better than majority of countries within the Region of South West Balkan, but worse than North Republic of Macedonia and Slovenia. It has improved several important market procedures and institutions, mainly administrative procedures related to construction permit and shorten the period for approval and cadastre of immovables. At the same time procedure of foreign trade staid the same as it was. The important room for improvement was noted in several fields: minor shareholders safeguard, insolvency problem, contract execution, credit approval and especially, energy permit, as the procedure is too complex and time consuming [3].



Graph 3 – The Rank on Doing Business List Source: World Bank, Doing Business Report 2019,

World Economic Forum, WEF and its Global Competition Report in 2018 put Serbia on 65th place, with index of 60,9 out of 100[4]. Its position was improved for five places in comparison to the year earlier and it is the best position from 2010 on. According to the Report Serbia is better placed than other ex - Yugoslav republics, except Slovenia, and it is worse than Bulgaria and Romania from the Region. The main finding is that macroeconomic and financial stability were the most improved, but at the same time administrative procedures are generally worsened. It is worth noting that index of innovation was improved, although it is still modest. Serbia is relatively competitive in number of international innovation per head, number of patents and research and development, R&D, but it is important to note that level of private investments in R&D is pretty low [17].



Graph 4 – Serbian Rank Source: World Bank, Doing Business Report 2019

4. Level of Innovation activity is modest

Innovations are seen as the main contributor to the social, economic and intellectual development. Fast development of Information Communication Technologies, ICT and their implementation, transformed economy and society into informatics economy and society. All industries were transformed in qualitative and quantitative term, with new products and services, which gives platform for information society [10]. Cornel University, INSEAD and World Intellectual Property Organization, WIPO conducted from 2007 so - called Innovation index measuring innovation country performances and successfulness in innovation. Global Innovation Index, GII included 84 criteria, with two sub-

indices, Innovation Output which points innovation potential and Innovation Input, which points innovation level of output.

According to the last Report Serbia still has low level of innovation activities. It was put together with other 17 countries in the group of "moderate innovators" [5]. All countries within the Region during the last several years experienced stable innovative performances. However, it is important to note that all developing countries, like countries in transition, have worse performances in comparison to developed countries.

Serbia was in 2018 placed as the 55th out of 130 countries and is better placed for seven places in comparison to the year earlier. However, its innovation index is 0,33 only, while EU average is 0,5. Moreover, in comparison to ex - Yugoslav republics its position is not prominent. As it can be seen from Graph 5 its position is better than Bosnia and Herzegovina and Albania only [5].



Graph 5 - Global Innovation Index

Source: Cornell University, INSTEAD, World Intellectual Property Organization (WIPO), Global Innovation Index 2018

According to sub-index Innovation abilities Serbian index is 44 (the rank 56th) with indices as follows: Institutions 67 (the rank 50th), Human capital 32 (58), Infrastructure 50 (48), Market sophistication 39 (101), Business sophistication 29 (79). According to the sub-index Innovation output its index is 27 (and the rank is 58^{th}) with indices as follows: Knowledge and technological abilities 27(59), Creative abilities 28 (64) [5].

The main problems which Serbia is facing with are low level of human capital, knowledge and technological abilities, creative abilities, market sophistication and business sophistication. In order to support changes more investments have to be R&D and infrastructure oriented, especially private one. Financial sophistication is also important issue, with enabling easier credit approval and establishment of microcredit institutions. Support of cooperation between big and small companies can help a lot, also [18].

Generally speaking, Serbian position is good one in ICT development and its use [11].

In Serbia 72% of all households possessed PCs in 2018 (68% and 66% in 2017 and 2016, respectively) [6]. At the same time Laptop possessed 48% of households (44% and 39%, respectively). Mobile phone possessed 93% of households (91 and 90%, respectively). Use of ICT is also respectable, as Internet connections had 73% of households in 2018 (68% and 65% in 2017 and 2016). DLS connection to Internet had 51% of household in 2018 (49%, and 46%, respectively), cable connection (43, 43 and 45%), and mainly by mobile phone (68, 54 and 47%) [6].

According to ICT access and its use Serbian companies are even in better position.



Graph 6 Order to and order from using Internet Source: Statistical Office of RS, ICT use in Serbia in 2018, Belgrade, 2018

PCs are using all companies in Serbia (99% in 2018, 100% in 2017 and 2016). In 37% companies $\frac{3}{4}$ of all employees PCs used once a week, in 15% of companies $\frac{1}{2}$ employees and 18% of all companies $\frac{1}{4}$ of employees PCs used at least once a week. Internet connection had all companies in the period under consideration, of

which 99% of companies had broadband internet connection, while mobile access 75% of companies [6].

Web sites possessed 83% of all companies in 2018 (80% in 2017 and 81% in 2016). However, when one considers its use than the clear picture is not so favourable [11]. Namely, as can be seen from Graph 6 less than one half of companies use internet as a channel to acquire necessary products and services and around ¼ of all companies only use internet to sell their products and services. So, the share of Internet trade (e-trade) in total trade considering order received through Internet is as follows: 1/4 of trade even 73% of all companies, 1/5 of trade 14% of companies, ¾ of trade only 8% of companies and more than this only 6% of all companies. Social networking as a mean of communication use 40% of companies and cloud only 16% of all companies [6].

Conclusion

Overall economic situation during the last four years is improving, considering growth of GDP, very stable macroeconomic environment and successful fight with two main economic problems: budget deficit - public debt and foreign debt. As a result, an advisory arrangement with IMF was signed. At the same time one can be aware that the growth rate is not high enough for catching up other transitory economies and developed countries, as well [16].

Entrepreneurs recognized improved macroeconomic situation and better business conditions, so as a result the number of new established companies and shops is increasing, while the number of those closed in meantime is decreasing. Moreover, the discrepancy between new and closed economic entities is higher and higher.

Generally speaking, together with perpetuation of development market reforms got momentum, which is recognized by different international financial institutions and associations in their reports. However, one has to recognise that other transitory economies improved their business conditions also, some of them even faster than Serbia. Those reports pointed out that the main room for improvement is related to minor shareholders safeguard, insolvency problem, contract execution, credit approval and especially, for energy permit.

Serbian companies and entrepreneurs are facing not only with low competiveness, but also with modest innovation abilities. Unfortunately, the main problems are related to human capital, knowledge abilities, innovation abilities, market sophistication and business sophistication [17]. Additionally, ICT infrastructure and hardware is in place, but considering its use through e - trade it is still on the low level.

In order to improve competitiveness and innovation level prerequisites are as follows: firstly, to overcome existed and present prejudices and enable easier ICT use [11]; secondly, to motivate producers and consumers for their ICT use; thirdly,

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 52

to continue with market reforms in order to make more favourable business environment [18].

The legal framework also has to be improved [12]. Law on electronic sign was enacted, bit it needs time to be fully implemented. Especially, the relation banks: traders: consumers, and its legal framework needs improvement [13]. For new generation important issue is the introduction of IT education together with entrepreneurship [10].

Some changes and improvement are necessary on the company level as well [14]. Employers have to be aware that ICT use is not any more a matter of the good image of a firm, but simply a matter of its survival on the market [11]. So, among others, they have to improve interaction with customers, and introduce client relation management, CRM [13].

References:

- [1] Statistical Office of RS, Economic trends in 2018, An Assessment, 2018
- [2] Report on SMEE Development, Ministry of Economy, The Government of Serbia, 2018
- [3] World Bank, Doing Business Report 2019,
- [4] World Economic Forum, The Global Competitiveness Report, 2018
- [5] Cornell University, INSTEAD, World Intellectual Property Organization (WIPO), The Global Innovation Index 2018
- [6] Statistical Office of RS, ICT use in Serbia in 2018, Belgrade, 2018
- [7] Ministry of Finance of RS, Current Economic Trends, December 2018
- [8] National Bank of Serbia, NBS, Inflation Report, February 2019
- [9] Agency for Business Registry of RS, Data on economic subjects 2018
- [10] Đorđević G., Impact of ICT and Information Society on Economic and Social Development, Socioeconomica, No 2/2012
- [11]Hadžić M., Mladenović Krulj M., Mladenović V., E Banking in Serbia
 great potential, Synthesis 2016, International Conference University Singidunum
- [12]Radojević T., Čelarović M., E banking use in Serbia, Finances , Banking and Insurance, 2009
- [13]Sanchez Franco M.J., The Moderating effects of Involvement on the relationship between satisfaction, trust and Commitment, Journal of Interactive Marketing, 23/2009
- [14]Agarwal R., Rastogi S., Mehrota A., Customer perspective regarding ebanking in emerging economies, Journal of Retailing and Consumer Services, No16/2009

- [15]Boljanović, S., Hadžić, M., Impact of foreign direct investments on Serbian industry, Industrija, No.3., 2017
- [16]Hadžić M., Zeković S., Usporeni rast i razvoj Srbije do 2020. godine uzroci i posledice, Obnova strateškog prostornog mišljenja, istraživanja i upravljanja u Srbiji, Knjiga 2, IAUS, Posebna izdanja br.74, 2014
- [17]Ministry of Economy and Regional Development RS, Republican Bureau for Development, Strategy of Industrial Development of Serbia in period 2011-2020, 2011
- [18]Faculty of Economics, Macroeconomic Analyses and Trends and Konjunktur-Barometer – Economic Institute, USAID. Belgrade, Serbian Post-Crisis Economic Growth and Development Model 2011-2020, 2010

Consumers' Perceptions about Food Safety Issues: Evidence from Albania

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Abstract: Food safety has become an important food quality attribute within the last decade. Scholars are seeking to understand the evolution of food safety from a consumer perspective in order to identify its impact on the purchasing process. In developing countries like Albania, where the institutional environment and related controls still need improvement, issues with food safety are even more tangible.

The main objective of the research described in this paper was to analyse consumer perceptions about food safety in Albania and the differences that exist among the social groups in the Albanian population. More than 300 face-to-face questionnaires were implemented among urban consumers in Tirana using a representative population sample concerning their perceptions about food safety in Albania, and their willingness to pay for safer food products.

Consumers consider food safety to be a quality attribute of products, and in many cases think that organic products are safer than other products. Internationally well-known labels are considered to be safer than those with national labels. However, a short supply chain (direct sales) is associated with safer products. Interviewees would pay a higher price for safer food products.

The results presented in this paper give insights into food safety in Albania and the situation in developing countries, and are important in relation to tailoring public policies and interventions into food safety.

Keywords: Food safety, consumer perception, developing countries, Albania

1. Introduction

Food safety has been an important issue on the political agenda over the last ten years in both developed and developing countries. Food safety has a significant impact on the overall acceptability of products, on returns on investment, and, as a result, on the success of the enterprises that produce them (Kokthi et al., 2015).

Grunert (2005) lists a number of factors that have led to the above-mentioned effects: a) a variety of food scares have directed public attention to food safety issues; b) segments of the general public have become interested and often critical of certain ways of producing food – both at the farm level and at the processing level; and, c) partly related to the previous factor, consumers in developed countries have become more demanding, more critical, and more fragmented in their food choices, leading to situations where the quality differentiation of food products, both vertical and horizontal, has become necessary. As a result, consumer attention to food quality has increased during the last twenty years and has shifted consumer demand toward safer products such as organic products (Rana & Paul, 2017). The issue of food safety is even more pressing for developing countries where the related controls and the institutional framework are still underdeveloped. However, evolving safety standards and monitoring can support not only a healthier domestic population (which is important above all), but also exports, which can foster economic growth (Faour-Klingbeil et al., 2018).

Although the literature is not comprehensive in its evaluation of preferences regarding food safety attributes, several factors related to food safety have been studied in relation to consumer preferences (Kokthit et al, 2015, 2016). Several studies claim that reducing food safety risks (including the need to reduce the risk of pesticide residues) is the top concern for consumers with respect to food safety (Buzby et al., 1995; Buzby et al., 1998; Govindasamy et al., 2001; Bazoche et al., 2008). Analysis conducted by several authors on the impact of organic product information on product evaluation indicates the greater preference of consumers for such quality schemes (Christensen et al., 2011; Yazdanpanah et al., 2015).

The issue of food safety is central in Albania due to the presence of numerous food-related rumours and the limited monitoring of the food sector.

The main objective of this paper is to analyse consumer perceptions about food safety in Albania, including the differences that exist among the different social groups in the Albanian population. More than 300 face-to-face questionnaires were implemented among urban consumers of Tirana on a representative sample of the population concerning their perception of food safety in Albania, and their willingness to pay for safer food products.

This paper is organized as follows: a description of the methodological approach of the paper is next, then the discussion of results, and finally conclusions are drawn.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 56

2. Methodological approach

The research into perceptions of consumers about food safety in Tirana is based on a contingent evaluation method that employed the payment card method.

The payment card method was developed by Mitchell and Carson (1981) as an alternative to the iterative bidding method. By using this approach, the number of potential answers may be increased, thereby helping the consumer to visualize and pick their preferred price level. The evaluation technique is more advanced because it specifies consumers' willing-to-pay (WTP) both in terms of price increase and decrease. The main question may be open or closed. An open question asks consumers for a precise WTP, while a closed question first asks consumers their willingness to pay more (or less) for a product, and then to specify the amount they are willing to pay (or accept). The payment card method offers many choices of price levels to consumers. Additionally, it moderates the interviewer bias through an iterative bidding approach. Generally, the payment card method is used to improve the results obtained from the application of other contingent evaluation methods. Alberini, Kanninen and Carson (1997) showed that defining WTP as a segment increases the accuracy of estimations of consumers' WTP. The use of WTP intervals creates the possibility of establishing a minimum and maximum consumer WTP. Hu et al.(2011) and Bateman et al. (2001) analysed the main issues related to this evaluation method by modifying the presentation of prices on the payment card to identify potential changes in consumer selections. Moreover, they tried to identify whether the specification of an initial price biased the final WTP of consumers. For this purpose, they used the initial prices of the natural substitutes of a product (in this case, coffee). Results generated by the two methods (i.e. using a single initial, and a substitute price) were different.

Using secondary sources, the aim of the research described herein is to investigate consumers' perceptions about food safety and potential willingness to pay more for higher food safety standards in Albania. In this way, their views and approach to food safety are highlighted. Accordingly, the following hypotheses were formed:

H1: Consumers feel confident about food safety in Albania.

H2: Consumers mistakenly equate food quality and food safety.

H3: Customers are willing to pay more for safer food products.

To identify the perceptions of consumers in Tirana we implemented face-to-face questionnaires with more than 300 randomly selected consumers in the city of Tirana. To ensure the greater representativeness of this sample the questionnaires were implemented in different areas of Tirana, including the city centre and suburban areas. Groups of interviewers were distributed in five main markets of Tirana. Fifty questionnaires were implemented in four of them and 100 questionnaires in the main market in Tirana. In each case, the interviewers (in groups of two) selected interviewees on two different days leaving three days

between interview sessions. In each session no more than 25 questionnaires were implemented. One out of five consumers were sequentially selected at the main entrance to the market (if a consumer rejected the approach, the following shopper was selected). The interviews were carried out in October 2018.

2.1The questionnaire

The questionnaire was organized in four different parts. The first part of the questionnaire was designed to collect socioeconomic information about the interviewee and their family (e.g. gender, age, education, family size, family income, etc.). The second part of the questionnaire collected information about the consumption habits of the respondent family (food expenditure), while the third part of the questionnaire referred to the respondent's perceptions about food safety. This took the form of an open question which identified the key concepts defining food safety from the consumer perspective. In this section, information about groups of products, sales units, and labels that are considered to be safer was collected. The last part of the questionnaire contained the questions on the payment card and identified consumer WTP for a higher level of food safety.

2.2The sample

More than 314 questionnaires were completed with consumers from Tirana (56% females and 44% males, representative of the gender structure of the Albanian population). The level of education of the sample respondents is higher than the national average, potentially leading to a higher level of concern about food safety, while the same comment applies to the age structure of the sample, which is younger than the national average according to INSTAT (2018) data. Detailed socio-demographic data and the related scales are included in Table 1.

The mode is four people regarding family size, and 245-490 euros (31,000-60,000 ALL) with respect to monthly food expenditure. However, the median income is 490-730 euros (61,000-90,000 ALL). Household size follows a normal distribution, while the sample contains fewer singles and large families with more than six people. The most significant monthly expenditure of a typical family on food is 80-245 euros (10,000-30,000 ALL; 47.7% of the sample), representing a very high share of income. It is generally well known that the more developed a country is, the less the proportion of income spent on food (more money is spent on clothing, health-care, leisure and other activities).

VARIABLES	SCALE	DESCRIPTION	FREQUENCY%
GENDER	1-2	male female	44 56
AGE	1-5	1)18-24 2)25-34 3)35-44 4)45-54 5)55+	31 26 24 10 9
MARITAL STATUS	1-3	single married other	36 48 16
EDUCATION	1-4	 Secondary school (9 years) Undergraduate Graduate Postgraduate 	9 27 47 17
INCOME ALL/MONTHLY (000 ALL ³)	1-6	1) 10-30 2) 30-60 3) 60-90 4) 90-120 5) 120-150 6) 150	14 28 26 10 7 13
HOUSEHOLD SIZE	1-5	1-2 people3 people4 people5 people6+ people	9.4 19.6 33 20 17
MONTHLY FOOD EXPENSE PER FAMILY (000 ALL)	1-4	10-30 30-60 60-90 90	47.7 31.7 11 9.7

Source: Authors' construction

³ Albanian Lek

3. Results and discussion

Analysis of the results shows that the majority of respondents in Tirana do not feel entirely confident about food products marketed in Albania. More than 50% of the sample feel only somewhat sure (50.4%) that food is safe. This proportion is larger than the share of those who do not feel safe at all (15%) or who feel quite safe (7%) (Figure 1.).



Figure 1: Perceptions about food safety according to respondents (N=314) Source: Authors' construction

Detailed analysis of these figures according to the socio-demographic characteristics of the sample indicates that females are more concerned about food safety than males (females in Albania are typically responsible for food purchasing and preparation and are thus more directly concerned with food-related issues). On the other hand, youngsters are more concerned about safety than older persons. This may be mainly due to the lack of experience that youngsters have with purchasing and preparing food compared to the older generation. However, in many cases this experience may not be very effective, taking into consideration that the structure of markets and products on markets have radically changed over the last 20 years. Ultimately, although both younger and experienced consumers still consider their experience to be a valid guide to the selection process.

Table 2 shows that the higher the family income, the less concerned members are with food safety; the reverse is true for families with lower incomes. This result – which may not seem logical – is based on the fact that families with higher incomes rely on food products that are more expensive, ergo perceived as safer,

compared to less wealthy consumers who are more concerned about food safety due to their limited capacity to access expensive or labeled products.

VARIABLES	DESCRIPTION	%	MEAN	F VALUE
GENDER	male	44	2.4	4.44*4
	female	56	2.2	
AGE	18-24	31	2.2	4.54**
	25-34	26	2	
	35-44	24	2.4	
	45-54	10	2.5	
	55+	9	2.7	• • •
MARITAL	single	36	2.2	2.8*
STATUS	married	48	2.3	
EDUCATION	other	16	2.5	N T 4
EDUCATION	1) Secondary	9	2.1	Not
	school (9 years),	27	2.3	significant
	2) Undergraduate	4/	2.3	
	3) Graduate	1 /	2.3	
INCOME	(1) 10.30	14	2	2 722**
ALL/MONTHLV	2)_60	28	$\frac{2}{2}$ 2	5.755
(000 ALL)	3) 60-90	26	2.2	
(000 MEL)	4) 90-120	10	2.1	
	5) 120-150	7	2.5	
	6) 150	13	2.5	
HOUSEHOLD	1-2 people	9.4		Not
SIZE	3 people	19.6		significant
	4 people	33		-
	5 people	20		
	6+ people	17		
MONTHLY	10-30;	47.7		Not
FOOD EXPENSE	30-60;	31.7		significant
PER FAMILY	60-90;	11		
(000 ALL)	90	9.7		

Table 2: Variance analysis of food safety according to socio-demographic characteristics

Source: Questionnaire responses

One of the main objectives of the paper was to identify respondents' definitions of food safety. To avoid influencing the answers of the interviewees, an open question was used in which the former could express in an honest way what their definition of food safety is. Analysis of the related answers and identification of

⁴ P≤0.10=*, P ≤0.05=**, P ≤0.01=***

the main keywords they expressed suggests that responses may be classified into four factors: namely, nutritional value, quality of products, organic products, and regular monitoring. In the literature the question of the mismatch between quality and safety is broadly discussed (van Rijswijk and Frewer, 2008). However, as comparative research claims, there is significant difference in the knowledge of the consumers of diverse developing countries (Odeyemi et al., 2019). Albanian consumers are no exception (Figure 2). Only one consumer out of four (25%) considers a product which has been adequately monitored to be a safe product. The other part of the sample mistakenly associate safety with quality. Nearly half of all respondents (42%) consider that products with greater nutritional qualities or those labelled organic are safer products. In any case, food safety is not considered to be an issue that is related to production units in terms of their responsibility for production and or processing.



Figure 2: Consumers' definitions of food safety (N=314) Source: Authors' construction

The conception of food safety is not clear to the Albanian consumer, thus it is important to clarify it through a better communication process with consumers in terms of food safety characteristics.

Perceived food safety according to product group shows that consumers consider raw products to be less safe, with the exception of fresh fruit and vegetables, and processed (baked products) like bread and pastry products, and sweets and chocolate, to be safer. As expected, meat is considered to be the least safe product among all products (77% of the sample consider meat to be unsafe, or only a little safe).

Figure 3 indicates that two-thirds of consumers would be ready to pay a higher price for safer food, clearly indicating the real concern of consumers in Albania about this topic. One-third of respondents claim that they would be ready to pay



30% or more above the present price for safer products. Such a high WTP emphasizes that food safety remains an important issue in Albania today.

Figure 3: Willingness to pay for safer products (N=314) Source: Authors' construction

Conclusions

Food safety is a significant issue in developing countries due to the lack of public institutions which are able to deal with new and increasing food safety concerns that are not only related to domestic issues, but which arise in other countries too. Independent of their social class or income level, consumer concern about food safety is very significant.

Consumers need a lot more information about food safety and the meaning of the concept. The results of the research described in this paper reflect the fact that the information about food safety is incomplete, and that policy makers should raise awareness about this topic.

H1 can be accepted: 85% of respondents feel confident about food safety in Albania. However, acceptance of H2 indicates that the sample is completely unfamiliar with the term 'food safety', as they were very likely confused in equating the former with the attributes of food quality, high nutritional quality, or organic food.

H3 can be also accepted as 72.4% are willing to pay more for safer food products, while more than half of all respondents would pay up to 30% more.

Consumers are willing to pay extra for food that is safer, meaning that it is worth investing in enhancing food safety standards. By doing so, enterprises can increase the turnover of their products.

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References

- Alberini, A., Kanninen, B., & Carson, R. T.: Modeling response incentive effects in dichotomous choice contingent valuation data. Land economics, 73 (3), 1997, pp. 309–324
- [2] Bateman, I. J., Langford, I. H., Jones, A. P., & Kerr, G. N.: Bound and path effects in double and triple bounded dichotomous choice contingent valuation. Resource and Energy Economics, 23 (3), 2001, pp. 191–213.
- [3] Bazoche, P., Deola, C., & Soler, L. G.: An experimental study of wine consumers' willingness to pay for environmental characteristics. 12th Congress of the European Association of Agricultural Economists – EAAE (No. 725-2016-49590), 2008.
- [4] Buzby, J. C., Fox, J. A., Ready, R. C., & Crutchfleld, S. R.: Measuring consumer benefits of food safety risk reductions. Journal of Agricultural and Applied Economics, 30 (1), 1998, pp. 69–82.
- [5] Christensen, T., Pedersen, A. B., Nielsen, H. O., Mørkbak, M. R., Hasler, B., & Denver, S.: Determinants of farmers' willingness to participate in subsidy schemes for pesticide-free buffer zones: A choice experiment study. Ecological Economics, 70 (8), 2011, pp. 1558–1564.
- [6] Govindasamy, R., Italia, J., & Adelaja, A.: Predicting willingness-to-pay a premium for integrated pest management produce: a logistic approach. Agricultural and Resource Economics Review, 30 (2), 2001, pp. 151– 159.
- [7] Grunert, K. G.: Food quality and safety: consumer perception and demand. European Review of Agricultural Economics, 32 (3), 2005, pp. 369–391.
- [8] Hu, W., Woods, T. A., Bastin, S., Cox, L. J., & You, W.: Assessing consumer willingness to pay for value-added blueberry products using a payment card survey. Journal of Agricultural and Applied Economics, 43 (2), 2011, pp. 243–258.
- [9] Kokthi, E., Limon, M. G., & Bermudez, I. V.: Origin or food safety attributes? Analyzing consumer preferences using Likert Scale. Empirical evidence from Albania. New Medit, 14 (4), 2015, pp. 50–58.

- [10]Kokthi, E., Vázquez Bermúdez, I., & González Limón, M.: Predicting willingness to pay for geographical origin in Albania: A logistic approach. New medit: Mediterranean Journal of Economics, Agriculture and Environment, 15 (2), 2016, pp. 63–69.
- [11]Mitchell, R. C., & Carson, R. T.: An Experiment in Determining Willingness to Pay for National Water Quality Improvements. Washington, DC: Resources for the Future, EE-0011, 1981.
- [12]Odeyemi, O. A., Sani, N. A., Obadina, A. O., Saba, C. K. S., Bamidele, F. A., Abughoush, M., Asghar, A., Dongmoi, F. F. D., Macer, D. & Aberoumand, A. (2019). Food safety knowledge, attitudes and practices among consumers in developing countries: An international survey. Food Research International, 116, 2019, pp. 1386–1390.
- [13]Rana, J., & Paul, J.: Consumer behavior and purchase intention for organic food: A review and research agenda. Journal of Retailing and Consumer Services, 38, 2017, pp. 157–165.
- [14]Röhr, A., Lüddecke, K., Druch, S., Müller, M. J., & Alvensleben, R. V.: Food quality and safety—consumer perception and public health concern. Food Control, 16 (6), 2005, pp. 649–655.
- [15]Van Rijswijk, W., & Frewer, L. J.: Consumer perceptions of food quality and safety and their relation to traceability. British Food Journal, 110 (10), 2008, pp. 1034–1046.
- [16]Yazdanpanah, M., Forouzani, M., & Hojjati, M.: Willingness of Iranian young adults to eat organic foods: Application of the Health Belief Model. Food quality and preference, 41, 2015, pp. 75-83.

The situation of environment protection in Hungary and in the EU.

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Abstract: For decades, environmental and environmental experts have been concerned about the use of the world's energy and the use and exploitation of its environmental resources. The study reviews the situation of the domestic environment and its main tools, which presupposes that it should be strengthened by central measures in addition to local communities, as shown by international trends. Hungarian environmental protection is still very restrained, although there are some signs of trust.

Keywords: environment protection, green house gas, environmental law

1. Introduction

We can rightly say that one of the most urgent tasks of the past decades is to eliminate the environmental damage caused by people. This issue is not only at the household level, but also at the level of industry, agriculture and trade. The majority of European countries wants to handle this problem, and for this reason the EU has set up a series of programs and related actions and plans. According to the approach of law, "Environmental protection is a set of activities and measures aimed at preventing, damaging, contaminating the environment, mitigating or eliminating damage, restoring a state of pre-emptive activity." (1995. évi LIII. törvény)

It can be seen from the definition that environmental protection concerns prevention and mitigation as well as restoration. A wide range of human exposure or protection is covered by the definition. In addition to legal regulation, environmental protection is a part of state activities such as public procurement. (strategic planning, operating a monitoring system, supporting research, setting up institutions). The work of several social organizations (environmental associations) is also aimed at this, and environmental users are also burdened with environmental obligations, eg. to apply specific technologies, to design and carry out accident prevention measures, and to repair possible damage. If they are met, it is also about environmental protection.

2. Environment protection and greenhouse gases

With regard to the avoidable behaviors such as pollution, damage and danger, and the use of the environment (use, load), the aim is to keep the environmental impacts at a level that ensures that loads and loads do not exceed the level that the environment can handle. (its renewable or self-cleaning ability). (Fodor László: Környezetjog Debrecen 2015.)

According to the environmental and nature conservation lexicon, "Environmental protection is a purposeful, organized, institutionalized human (social) activity aimed at eliminating and preventing the harmful consequences of man's industrial, agricultural, mining activities for the survival of wildlife and man without damage. The scientific foundations of this activity are primarily technical sciences, applied science and economics. Efficiency and functionality are provided by legal regulations and institutional systems based on user responsibility. " (Környezet- és természetvédelmi lexikon, Akadémiai, Bp. 2002.)

Human's earthly existence is already in contact with his environment, but the existence itself has an impact on the environment and the environment is returning to it. If you do not comply with natural laws, you will have a lasting effect in the environment that is usually negative. That is, it destroys, damages the environment, the wildlife, the nature. If this intervention is small, nature can restore it, but if its level is higher than the regeneration capacity per unit time, then the state of the environment will deteriorate or, in worse case, will permanently deteriorate. He has been pursuing this destructive activity for centuries intensively. However, after the industrial revolution, the rate has increased and an environmental load that has been difficult to reverse has begun.

For example, among the pollutants that pollute the atmosphere, they are already regulated such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and natrium trifluoride (NF3) in all sectors of the inventories, including international aviation, including indirect CO2emissions and excluding emissions or removals from land use, land use change and forestry (LULUCF). One of the main aim is to reduce 20% of GHG emissions by 2020 harmony with the EU international headline target.

Carbon dioxide (CO2) is the primary greenhouse gas from human activities. For example in 2017, CO2 accounted for about 81.6 percent of all U.S. greenhouse gas emissions from human activities. Carbon dioxide is naturally present in the atmosphere as part of the Earth's carbon cycle (the natural circulation of carbon among the atmosphere, oceans, soil, plants, and animals). Human activities are changing the carbon cycle–both by adding more CO2 to the atmosphere, by influencing the ability of natural sinks, like forests, to remove CO2 from the atmosphere, and by influencing the ability of soils to store carbon. While CO2

emissions come from a variety of natural sources, human-related emissions are responsible for the increase since the industrial revolution. (EPA, 2019)

Global Carbon Emissions from Fossil Fuels, 1900







According to researches tha main cause of environment load by human activity that emits CO2 is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation, although certain industrial processes and land-use changes also issue CO2. The main sources of CO2 emissions for example North America are described below. (EPA, 2019)

Transportation. The burning of fossil fuels such as gasoline and diesel transporting people and goods was the largest source of CO2 emissions in 2017, accounting for about 34.2 percent of total U.S. CO2 emissions and 27.7 percent of total U.S. greenhouse gas emissions. While in Europe there was 24% in 2016 and we can see an increase from 1990 when 15% was this figure. It is interesting that in Hungary the role of transportation is not to high (9%), because the level of Hungarian transportation is lower than in the EU average due to the lack of the mairne trasnsport and lower level of aviation. This category includes transportation sources such as highway vehicles, air travel, marine transportation, and rail. The higher level of population causes higher level of transportation but the raion os not the sami in the differnce countries.



Figure 2 2016 EU Carbon dioxide emissions, by source Source: Eurostat

Electricity. Electricity is an important source of energy in developed countries and is used to power homes, services, and industry. In 2017 the burning of fossil fuels to generate electricity was the second largest source of CO2 emissions in the US and EU, accounting for about 32.9 percent of total U.S. CO2 emissions and 26.7 percent of total U.S. greenhouse gas emissions. While in Hungary its ratio is 29% because we have more plants using fosilis materials as coat or lignit. To produce a given amount of electricity, burning coal will produce more CO2 than oil or natural gas.





Industry. Many industrial processes make an output of CO2 through fossil fuel consumption. More processes produce CO2 emissions through chemical reactions that do not involve firing; for instance, the production and consumption of mineral products such as cement, lime the production of metals such as copper and steel, and the production of chemicals. Fossil fuel firing accounted for about 15.4 percent of total U.S. CO2 emissions and 12.5 percent of total U.S. greenhouse gas emissions in 2017. While th eEuropena average is 8 % and Hungarian one is 22%. What can stand in the background of it? Despite Hungarian Industry stands lower level than western European one, but its technological level is lower than developed ones. Therefore the ratio of output of CO2 level is specifically higher. Many industrial processes also use electricity and indirectly cause the emissions from the electricity production.

Greenhouse gas emissions trend, EU-28, 1990 - 2016 (Index 1990=100)



Figure 4 Greenhouse gas emission trend EU-28 Source: Eurostat

Carbon dioxide is being exchanged among ocean, land surface and the atmosphere, as it is both produced by many plants, and animals. Since the Industrial Revolution began around 1750, human activities have contributed substantially to climate change by adding CO2 and other heat-trapping gases to the atmosphere. (EPA, 2019)



Figure 5 2017 US Carbon dioxide Emissions, by source Source: United States Environmental Protection Agency

From the model of Caisis et al. we can see that the industrial activity with 1060 units, decomposition with 347 units, fires with 3 units and off site decomposition with 278 units contributes to the carbon cycle. In opposite net primary production contributes with 595 units to the balance. As we can see from this model the production gives more green house gases to the atmosphere than it gives back. Therefore it is urgen necessary to handle GHG question in Hungary, the EU and the world.



Figure 6 2010 EU Carbon cycle Source: P. Ciais et al., 2010

3. Material and method

In terms of material and methodology, I mainly took into consideration the official statistical data on the subject, and besides, I conducted the literature research on the literature, and drew conclusions from them. Using average and correlation calculation for reason finding in the factors. After deducting the main connections I draw conclusions and suggestions.

4. Results

One of the target of the environmet program of the EU (EAP) is the safe of the environment to be able to live in safe and in good environment conditions.
"It identifies three key objectives:

- to protect, conserve and enhance the Union's natural capital
- to turn the Union into a resource-efficient, green, and competitive low-carbon economy
- to safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing

Four so called "enablers" will help Europe deliver on these goals:

- better implementation of legislation
- better information by improving the knowledge base
- more and wiser investment for environment and climate policy
- full integration of environmental requirements and considerations into other policies

Two additional horizontal priority objectives complete the programme:

- to make the Union's cities more sustainable
- to help the Union address international environmental and climate challenges more effectively." (EU evironment action programme)



Figure 7 Sustainable Development Goals Source: Eurostat

The EU 2020 environment programme contains the following points:

- EU environment action programme to 2020
- Climate and energy targets 2020
- Energy strategy
- EU biodiversity strategy
- The circular economy action plan. (ec.europa.eu)

We can see that the large of the environment protection increased in the last interval. Poland and the UK had the largest increase in this period of time. Poland had an intensive environment protection programme while the UK doubled this value because of new environment protection plan. We can see governmetal actions in the background so the roles of the central decesions and programmes are very large.

If we can analyse the data of EU in environment protection and co2 emission the correlation factor is -0,86 which means a strong and negative connection. If there is an increase in the level of co2 emissions there is a decrease of the total EU level of environment protection expenditure.



Figure 8 Environmental protection expenditure in million euro Source: Eurostat, own edition

There is no strong connection between GDP or GPD per capita and environment protection expenditure, which means that the condition of economy cannot affect

to the expenditures. But There is a negative strong correlation between GPD or GPD per capita and co2 emission. What does it mean? The main ratio of DP affector cannot affect to the CO2 emission (like services) or the sum of consumption, investment, government expenditure and export import volume can affect negatively to the co2 emission. What would stand in the background?

If there is an increase in the level of agriculture or industrial production therefore increase of the level of CO2 emission we are sure there is a decrease in the level of GDP. Industrial and Agricultural activity could affect negatively to the GDP level.



Conclusions

Environmental protection measures are a priority objective of both the EU and the Hungarian government, supported by the existence of action programs up to 2020 and a series of related measures, as well as the objectives of the 2030 Agenda. Behind the plans, there are also activities and sums of money available, which means that the plans can be realized with them. From the available data, we see that environmental degradation has stopped in Europe, at least partly through the measures, partly due to the increase in the budget. It may be surprising that there was no strong positive correlation between GDP size and co2 output, and the relationship with the last decade was negative. It follows that GDP is now not dependent on polluting production branches, ie not on those that have the greatest impact on the environment, but on the role of services. However, most of these services do not have a high environmental impact.

The other surprising lesson from the studies was that there was an unexpected relationship between the amount of environmental spending and the co2 emission word, ie when the amount of spending fell, co2 emissions fell and vice versa, when spending increased, co2 emission increased as well.

References

- [1] 1995. évi LIII. törvény a környezet védelmének általános szabályairól
- [2] Crais, P. et al.: The greenhouse gas balance of European grasslands Biogeosciences Discuss., 7, pp. 5997-6050
- [3] ec.europa.eu download in in May 1st of 2019
- [4] EU evironment action programme: <u>https://ec.europa.eu/info/energy-</u> <u>climate-change-environment_en</u> download in in May 1st of 2019
- [5] Eurostat https://ec.europa.eu/eurostat download in May 1st of 2019
- [6] Fodor László: Környezetjog Debrecen 2015.
- [7] Greenhouse gas emission statistics emission inventories by eurostat, 2019 June
- [8] Környezet- és természetvédelmi lexikon, Akadémiai, Bp. 2002.
- [9] Központi Statisztikai Hivatal www.ksh.hu download in May 1st of 2019
- [10]United States Environmental Protection Agency www.epa.gov download in May 31st of 2019

Leadership and Decision-Making. And What is Behind Them

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Abstract: The purpose of this paper is to examine the relationship between leadership decision-making and resolution of conflict. The aim of the study is to provide a comprehensive literature review of managerial decision-making and conflict management. Alternative dispute resolution methods are to support persons and expressly leaders with several levels of conflict solving. Reorganization, resolution, restoration, evaluation and conversion are available to provide persons, parties with methods. Not the same tools are used by different types of leaders from different dimensions, as transformational, transactional, and laissez-faire leader dimensions. This approach treated conflict styles as individual disposition, stable over time and across situations. It is argued and supported by literature that leadership styles or behaviors remain stable over time and are expected to be significantly related to conflict management styles (Hendel, 2005). Despite the universal acceptance of leadership importance in corporate settings, research so far investigated leadership styles as determinants of conflict management styles are population-specific, including nursing managers (Hendel, 2005), university academic staff (Paul, 2006) and healthcare professionals (Saeed, 2008). Furthermore, the findings in the referred studies are not consistent, and this issue seems to be at an exploratory phase that requires further investigation to establish the relationship. Blake and Mouton (1964) and Rahim (1992) tried to measure the strategies in which individuals typically deal with the conflicts. Keywords: leadership styles, conflict management styles, court procedure, mediation

1. Introduction

In legal relationships, in human relations, but also in organizational systems and in the relationships between legal persons, the conflict necessarily appears. The emergence of conflict is not necessarily a negative event in the life of a natural person or a legal person.

Conflict is definitely a collision, most often a conflict of interests - however, these collisions have many times the ability to transform, reorganize, and positively link our relations with human or legal relationships.

As much leaders - so many decisions? Or as much leadership styles -so many types of decisions?

The present study aims to investigate what categories of conflict settlement and management can be grouped in the field covered by literature and practice, depending on management styles.

2. Leaders and styles. Styles compared to conflicts.

In order for an organization to be successful, its employees need to work in harmony to achieve their goals. (Saeed, 2014)

In the beginning, what is leadership? The leader's first responsibility is to define reality. The last one is to thank you. Between the two stages, the leader must become a servant and a debtor. This is a summary of the development of the artistic leader. Real leaders are sought after and educated. (De Pree, 2004)

There are countless theoretical works, writing, curriculum, discussion paper, website on leadership, direction, leadership concepts. It is not easy to determine what leadership means.

Leadership is any management, organizational, and control activity that a person has in relation to at least one additional person.

Different leadership styles are associated with conflict resolution styles. Leaders who are predominantly in the transformative leadership style have adopted integrative and mandatory conflict management styles. Leaders who are mostly transactional style leaders, represent a compromise (unified) conflict management style. While the laissez-faire management style has adopted the avoidance conflict management style. (Saeed et al, 2014)

From the iceberg model of the conflict to the top of it, in court proceedings, we can only encounter the matter, the dispute, the evidence - the law.

What does not appear in the court proceedings - the top of the iceberg - is already apparent at the next level - the level of mediation, the conflict management possibilities provided by the mediation procedure. Here, the interests of the parties come to the surface, they get into communication, they are in use.

However, there is even one of the peaks, also invisible to the conflicts, that contain unresolved issues of the past, untreated - other, non-legal-settable conflicts.



 Graph: The Iceberg-model of conflict Source: edited by the author

In Rahim's (2011) typology, organizational conflict management styles are:

- -Integrating
- -Obliging
- -Compromising
- -Dominating
- -Avoiding

Leadership styles of leaders in the organization system are:

- -Transformational
- -Transactional
- -Laissez-faire

Saeed and his co-workers (2014) consider integrative and obligatory, while destructive conflict management as dominant and bypass styles as constructive conflict management.

Their assertions have been confirmed in their study, according to which the transformational leadership style has a positive relationship with a constructive

conflict segmentation and a negative connection to this style of leadership in the destructive conflict management style.

There is also a link between transaction management style and compromise conflict management style.

Partial connectivity can be demonstrated by the identification of laissez-faire leadership with a destructive conflict management style. However, the laissez-faire leadership has a negative relationship with constructive conflict management styles.

Going through the levels of mediation, compromise, and consensual conflict management, it can be seen that this process is not the final step in the process, but the conclusion of the conclusions, future engagement, and follow-up.



 Graph: From the conflict to the connection Source: edited by the author

3. Court decision or settlement agreement? Conflict management in leadership.

The conflict is everywhere. Can be found in human relationships and in business relationships. The businesses involved in the formal conflict are, of course, interested in the effective resolution of the conflict.

It is not only a matter of conflict that needs to be resolved, but a solution must also be found to make the best use of the resources of the leaders and to ensure that their solutions not only provide short-term solutions but also, if possible, final solutions.

Recently, Alternative Dispute Resolution (ADR) has become an increasingly effective and popular strategy for conflict resolution. The most well-known alternative dispute resolution methods include mediation, conciliation, negotiation and arbitration (Lieberman, 1986).

Litigation is a disadvantage for businesses - the parties lose control, lawyers and the judiciary have power over the timing and procedure of conflict resolution, and as a result, the debate may take years.

The participants in the conflict lose their ability to communicate with each other in the process of resolving the problem. This damages most business relationships and undermines trust and cooperation.

In addition, the costs of litigation, court fees, litigation costs and lawyers' fees are significant to settle the conflict. Companies that participate in court proceedings may lose their competitive advantage.

On the other hand, alternative dispute resolution procedures have become increasingly common due to the benefits. Costs are lower, the process is simplier, less formalized, and communication between the parties is more sustainable and managed.

If alternative dispute resolution methods are used, the agreement is reached only if both parties agree to voluntarily participate in the mediation procedure. Expressing their own intent on conflict management is a rationalized approach to conflict.

Although there are some remarkable differences between the various ADR procedures, a common feature can be identified: the dispute is mostly determined by the parties involved and the third party (the intermediary) has less power.

While in court cases the court has absolute jurisdiction to resolve the conflict and to enforce the decision, the parties will determine the outcome of the dispute through mediation, of course, in accordance with the rules and applicable law. In alternative dispute resolution, when the result is reached, that is, at the conclusion of the settlement, the parties may take into account a wider range of rules, especially their business interests (Bercovitch, 2001).

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 81

Therefore mediation and arbitration are procedures based on interests and rights. The fact that the business interests are taken into account also means that the parties may decide on the result based on their desired future relationship, and not only on the basis of their past behavior.

According to Abraham Lincoln, the role of lawyers and advocates in conflict management is the role of mediator and negotiator. If lawyers or advocates do not do this, they will only become part of the division and the problem, and not part of the solution (Reavley, 1990; Nies, 1991).

This transforms the conflict into a devastating phase in which contradictory and confrontational parts alternate. This destructive phase is a result that the parties do not want and results in cost, resource growth and dispute resolution.

The settlement of alternative dispute resolution can help to rebuild relationships, restore the original state, establish new relationships, and maintain communication between the parties.

The results of the analysis of the Hungarian data indicate that the statement recorded in the title of Abraham and Eörsi (2003) can be confirmed. Is it bad to litigate? Based on mediator experience, two statements have to be recorded.

The mediator, the procedure og the mediator is not against the court procedure. The two procedures are linked to the question of enforceability - if the parties of the dispute submit the settlement of the mediation procedure to the competent court with jurisdiction, to include in the decision - enforceability is a common issue, a common matter.

The term conflict (Coser, 1956; Dahrendorf, 1959; Pondy, 1967; Fink, 1968) has no single meaning. Most of the confusion around the definition was created by scientists from different disciplines who are interested in studying conflicts. The literature review of the conflict shows the conceptual complexity of the commonly accepted definition of conflict.

The term "conflict" has no single clear meaning. Much of the confusion has been created by scholars in different disciplines who are interested in studying conflict. Reviews of the conflict literature show a conceptual sympathy for, but little consensual endorsement of, any generally accepted definition of conflict. There is tremendous variance in conflict definitions that include a range of definitions for specific interests and a variety of general definitions that attempt to be all-inclusive. Conflict can be considered as a breakdown in the standard mechanisms of decision making, so that an individual or group experiences difficulty in selecting an alternative. (Rahim, 2011)

Authors analyze conflicts from the point of view of peace: "Peace is nothing but a conflict change in the person of the opponent or the subject of the conflict or ultimately the chances of the election. "(Coser, 1998)

Conclusions

This paper aims to be forward-looking in the sense that it emphasizes the importance of leadership styles in conflict, in conflict management, connectivity and peaceful settlement. In trust based relationships liability has a significant role, to be liable for our decisions we may recognized as a profit in society, and look at Alternative Dispute Resolution (ADR) approach as a progress, society is going to focus on in the way that this process can bring for the individual as well as for the community the greatest benefit.

Leadership styles can vary from one person to another, and one has to consider that there are no two identical cases, no two identical decisions.

In the future, the relationship between different management styles and conflict resolution will be measured with a questionnaire for managers. Which leadership style prefers the judiciary, which is the alternative dispute resolution.

Leadership decisions, the possibilities of settling legal relationships (corporate law disputes, disputes between companies, labor law conflicts) play an important role in the alternative dispute resolution practice and while working with students in education.

References

- [1] Ábrahám, Z., Eörsi, M.(2003) Pereskedni rossz! –Mediáció: a szelíd konfliktuskezelés, Budapest, Minerva
- [2] Bercovitch J. & Jackson R. (2001). Negotiation or Mediation?: An Exploration of Factors Affecting the Choice of Conflict Management in International Conflict. Negotiation Journal Volume17, Issue1, Pages 59-77.
- [3] De Pree, Max: Leadership is an Art. Currency Book Doubleday, New York 2004
- [4] Fink, C.F.: (1968): Some conceptual difficulties in the theory of social conflict. Journal of Conflict Resolution, XII, 4: 413-458
- [5] Guido Calabresi (1970). The Costs of Accidents, a legal and economic analysis, Yale University Press.
- [6] Jethro K. Lieberman and James F. Henry (1986) The University of Chicago Law Review Vol. 53, No. 2 (Spring, 1986), pp. 424-439
- [7] Helen W. Nies (1991), Rambo, Lawyering: The Need for Civility in Civil Litigation, 32 IDEA 1, 1-2.
- [8] Pondy, L.R. (1967): Organizational conflict: concepts and models. Administrative Science Quarterly, 12: 296-320

- [9] Rahim, A.M. (2011): Managing Conflict in Organizations, 4th ed.Tylor & Francis.
- [10]Saeed, T., Almas, S, Anis-ul-Haq, M., Niazi, G.: Leadership styles: relationship with conflict management styles. International Journal of Conflict Management. Vol. 25. No. 3, 2014. p. 214-225.
- [11]Thomas M. Reavley (1990), Rambo Litigators: Pitting Aggressive Tactics Against Legal Ethics, 17 Pepp. L. Rev. 637, 637.

Hungary's role in developing autonomous cars

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Abstract: In recent years, the topic of self-driving cars has become very popular. This innovation will have a great impact on many areas of our lives, and will cause a lot of changes just like the human presence will not be necessary and we will be only passengers in our own car. Nowadays, not only foreign multinational automotive companies are developing these cars and exploring this subject, but the university sphere has also started to take part in it. Recognising and taking advantage of opportunities, Hungary broke into the forefront of developments. The purpose of this study to prove an insight into the current situation of self-driving cars in Hungary.

Keywords: self-driving technology, Hungary

1. Introduction

The manufacture and use of cars has played a significant role in the world for decades. For some time, their development goes to a very new direction. Selfdriving cars are coming, where the human factor will no longer be needed, as a driver, we will also serve as a passenger in our own car.

We are dealing with this issue because it is very actual nowadays and the society is not ready enough in our opinion. It turned out from different studies that people are concerned about this new technology. Research shows that the attitude of accepting innovations in a given country can be considered as a kind of social institution, which also affects economic growth. At the same time, innovation plays an important role in production and consumption [2][4][11].

Last year we wanted to find answers for these concers, what are the causes and how can they be reduced, but now we would like to deal with the those developments which are placed in Hungary and serve that purpose to develop

safer cars. Thus we have collected those companies which has a main role in automotive industry in the world and then present those which are placed in Hungary. We dealt with the test track in Zalaegerszeg and its effect deeply, through an interview.

2. Self-driving cars

Autonomous cars are those vehicles which are driven by digital technologies without any human intervention. They are capable of driving and navigating themselves on the roads by sensing the environmental impacts. With the help of the system built up by different sensors, hardware components and a complex software, the car can go from one place to another safely. Their appearance is designed to occupy less space on the road in order to avoid traffic jams and reduce the likelihood of accidents [9][14].

Desipte of this enormous developments accepted atomated cars on public roads in 2017, were not fully autonomous: each one needed a human driver who noticed when it is necessary to take back the control over the vehicle [8]. But there are some features that we can already use:

- Collision avoidance
- •Drifting warning
- •Blind-spot detectors
- •Enhanced cruise control
- •Self-parking

These cars belong to 0., 1., and 2., levels of automation.

Different sites rank different companies among the most prominent companies in the development of self-driving cars today, some of them collected in Table 1 below:

Company	Where are they now?	Partners	When?	Curiosity
Volvo	2. level of automation	Nvidia, Uber, Baidu, Nanyang Technological University	By 2021, 100 Swedish testers are planned	Take full responsibility for autopilot and self- driving cars.
Waymo	Testing the 4. level of automation	Part of Google	~ 2020	Only three collisions in a year.
Mercedes- Benz	2. level of automation, parking assistance and HomeZone	BMW, Bosch	2020	Radar localization map stratification.
BMW	2. level of automation, Surround View camera system	Intel, Mobileye, Mercedes	2021	~40 4. level automation cars are tested in Munich and California.
Nvidia	2. level of automation	PACCAR	-	320 companies have used the Nvidia Drive computer platform to accelerate the production of autonomous vehicles.
Continental	2. level of automation	Nvidia	~2020	The R&D Laboratory in Silicon Valley and they are also here in Hungary
Uber	Self-driving trucks in Arizona	Toyota Google, Ford, Lyft, Volvo, Arizona State University	2021	They plan to buy "ten thousand" self- propelled cars from Volvo.
Ford	Testing the 4. level of automation	Domino's Pizza, Postmates	2021	In 2016, tripled its test team.
General Motors	2. level of automation	Lyft	No schedule	Building R&D facility for Cruise Automation.
Toyota	2. level of automation	Uber, University of Michigan	2020	Establishing a Toyota Research Institute-Advanced Development Company.

 Table 1

 Self-driving car development companies [9]

From these data, it can be seen that most companies plan to have fully self-driving cars or at least they want to reach level 4 automation around 2020, which will be able to drive themselves on the road without accident.

Hungary is also at the forefront of testing and developing self-driving vehicles; these are the most prominent companies:

- Bosch- more than 2,000 Hungarian engineers are researching, developing and testing novelties. This is where the development of self-propelled, electrical technology and propulsion takes place. According to Bosch's vision, private cars will be the first to represent levels 2 and 3 with different assistants and partly with automated systems, while cars that are truly autonomous and without drivers are car sharing, taxi and driver services, and mass travel. to the roads [10].
- Continental- The globally determining German company, chose Budapest as the next R&D place. Artificial Intelligence Development Center is a milestone for Continental, bringing a step closer to full automation. In the new unit 100 software and hardware experts are working and it will soon shape from Budapest the future of partly or entirely self-driving technologies based on real-time software applications of critical safety [3].
- AIMotive- This is a Hungarian startup company, which has offices in Mountain View, California; and Tokyo, Japan. This company is the lagest independent team working on self-driving technology. The biggest developments take place in Budapest, where a team of 140 highly skilled engineers is testing self-driving technology [13].
- RECAR- Research Center for Autonomous Road vehicles-was founded in September 2015 by BME, ELTE, MTA SZTAKI and Knorr-Bremsees together with Bosch. Since then, several universities and industrial companies have joined to this the partnership. RECAR really important because they take part in the training of professionals in the field, so that Hungary can become the basis for autonomous vehicle development through the test track [1].
- ZalaZone Kft.- It is a test track that provides a comprehensive test environment for future vehicles and communication technologies, from multi-level testing to prototype testing and serial product development.

2.1 The Zalaegerszeg test track

People are concerned about self driving technology because of safety reasons [5][6][7]. So in our opinion to reduce this fear in the society these cars need more space to be tested. As the Hungarian government realized this, they decided to make a test track for autonomous technology, thus they could connect this demand with their aim to become one of Europe's most competitive bases for research and development. In the first part of this chapter we give a few information about the test track and in the second part the results of the interview are presented.

2.1.1.Main information

The vision of the project: "Establish a full range validation facility for the vehicles and communication technologies of the future enabling multilevel testing opportunities from prototype tests till serial products development [15]."

It is placed on a 265 hectares field, containing a lot of road section, where the car manufacturers and software developers can test at different speeds and surfaces. These are the main ones:

- Dynamic platform;
- Braking platform;
- Handling course;
- Highway and rural road;
- High speed oval;
- Bad road module;
- Slopes;
- Deep water.

Magyar Telekom has launched a 5G test station to monitor how the new network standard can be integrated with existing networks. Testing is done with routers and prototype tools, but there is no fixed date for actual 5G tests. There are a number of benefits to the new 5G network compared to what is now being used:

- Network response time significantly improves;
- Millions of devices can connect to a cell;
- Gigabit transmission speeds are also available;
- These features make 5G suitable for wired connections in certain situations.

According to Magyar Telekom's announcement, 5G will be available in Europe within a few years [12].

2.1.2. Interview

We have chosen to examine the effects of an institution that aims to provide space for testing automated technology of cars in safe conditions so that they can continue to be used on the roads later on. The quantitative part of our research was an interview with András Nagy, who is the manager of economic development.

In the interview, we dealt with the general questions, infrastructure and the effects of the test track, but we now we only present the impacts. Since even the test track is 50% ready, we were able to examine the effects only at the level of forecasts.

- Due to the complexity of the test track, it also requires the use of technological and other socio-environmental (eg educational) services, thus raising the value creation capacity of the region.
- The test track will create 4000 new jobs for people, so they will also build a workers' hostel on the test track site to help locate people from the countryside or from abroad.
- The technology used on the test track requires highly skilled, primarily technical labor, which is closely related to research and development activities, different companies and higher education institutions. They are connected with a number of universities, where students can take part in the development of new technology, thus ensuring the future professional workforce.
- As for the income effect: "We try to show the economic impact of the test track with three environmental factors. In this respect, the direct environment of the organization -where the value-creating nature of the service affects the cooperating companies more intensively- it is a smart field, moreover, a division of 50-100 km is HUB1, and then the wider environment is called HUB 2. In these three divisions, we try to examine the economic and income effects of the test track. –András Nagy"
- High value-added activities and development companies will make a significant contribution to the growth of regional GDP and the value produced by the region.

Conclusions

Overall, the effects of the test track are expected to act as catalysts. It can attract additional business activities, services, and higher education institutions. In addition, due to its innovative character, many technology companies specializing in research and development are expected to settle. Value creation is one of the most important positive aspects causing the growth of regional GDP. The income

effect, after the construction of the facility, can be better investigated from more accurate data. I believe that it will also have a positive impact on job creation.

András Nagy's answers were clearly positive. High quality; providing complex services; high level satisfaction of demands; and putting research and development at the forefront, all contributing to Hungary's advancement.

References

- DigitalHungary (2016) Nálunk is lesz önvezető autós-mérnökképzés [on-line], Available: https://www.digitalhungary.hu/start-up/Nalunkis-lesz-onvezeto-autos-mernokkepzes/2449/ [Downloaded: 2019.04.15.]
- [2] Gyarmati, G. (2018): Helyi élelmiszer rendszerek a világban, az EUban és Magyarországon In: Csiszárik-Kocsir, Ágnes; Garai-Fodor, Mónika (szerk.) Vállalkozásfejlesztés a XXI. században VIII./1. : Integrált vállalkozásfejlesztési megoldások Budapest, Magyarország : Óbudai Egyetem Keleti Károly Gazdasági Kar, (2018) pp. 81-92., 12 p.
- [3] HIPA (2019) Continental develops driverless car technology from new budapest office - video report [on-line], Available: https://hipa.hu/continental-develops-driverless-car-technology-fromnew-budapest-office [Downloaded: 2019.04.15.]
- [4] Kozma, T. Gyarmati, G. (2018): The questions of Hungarian short supply chain p. 39 In: Pál, Fehér-Polgár (szerk.) 16th International Conference on Management, Enterprise and Benchmarking Abstract Booklet : MEB 2018 Budapest, Magyarország : Óbudai Egyetem Keleti Károly Gazdasági Kar, (2018) p. 70
- [5] Lazányi, K. Maráczi, G. (2017): "Dispositional trust Do we trust autonomous cars?" In: Szakál, Anikó (szerk.) IEEE 15th International Symposium on Intelligent Systems and Informatics : SISY 2017, New York, USA : IEEE, (2017) pp. 135-140.
- [6] Lazányi, K. (2016): "Dou you trust your car?", In: Szakál, Anikó (szerk.) 17th IEEE International Symposium on Computational Intelligence and Informatics (CINTI 2016) Budapest, Magyarország: IEEE Hungary Section, (2016) pp. 309-313.
- [7] Lazányi, K. (2018): "Are we ready for self-driving cars: a case of principal-agent theory" In: Szakál, Anikó (szerk.) IEEE 12th International Symposium on Applied Computational Intelligence and Informatics (SACI 2018) Temesvár, Románia : IEEE Romania Section, IEEE Hungary Section, (2018) pp. 251-254.

- [8] Liden, D. (2017) What Is a Driverless Car? [on-line], Available: http://www.wisegeek.com/what-is-a-driverless-car.htm [Downloaded: 2018.04.02.]
- [9] Mercer, C., Macaulay, T. (2019) Which companies are making driverless cars? [on-line], Available: https://www.techworld.com/picture-gallery/data/-companies-workingon-driverless-cars-3641537/ [Downloaded: 2019.04.16.]
- [10] Pintér, M. (2017) Magyar mérnökök fejlesztik a jövő önjáró autóit [on-line], Available: https://24.hu/tech/2017/11/12/magyar-mernokokfejlesztik-a-jovo-onjaro-autoit/ [Downloaded: 2019.04.16.]
- [11] Pintér, T. (2010) Demokratizálódás és gazdasági növekedés a Nyugat-Balkánon. EU Working Papers, 2. 11-23. pp.
- [12] Tóth, B. (2019) Zalaegerszegen elindult az 5G [on-line], Available: https://index.hu/techtud/2019/01/28/zalaegerszegen_elindult_az_5g/ [Downloaded: 2019.03.17.]
- [13] Tóth, B., (2018) Magyar gépagy hajtja meg a jövő autóit [on-line], Available: https://index.hu/techtud/2018/12/22/magyar_onvezeto_ai_kerul_par_e ven_belul_az_autokba/ [Downloaded: 2019.04.15.]
- [14] Union of Concerned Scientists (2018) How do self-driving cars work—and what do they mean for the future? [on-line], Available: https://www.ucsusa.org/cleanvehicles/how-self-driving-cars-work [Downloaded: 2018.03.26.]
- [15] ZalaZone (2017) The essence of the project [on-line], Available: https://zalazone.hu/en/track-vision/the-essence-of-the-project/ [Downloaded: 2019.03.15.]

The Analysis of Cluster Development in the Republic of Serbia

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Abstract: Cluster, as a form of SMEs association that drives innovation, productivity and competitiveness through collaboration with educational research institutions and the public sector, is a tool for achieving economic growth in underdeveloped national economies. Precondition for the successful cluster development in transitional economies is the existence of infrastructure and legislation, as well as the national cluster development strategy. This paper investigates the main characteristics of clusters in the Republic of Serbia, European country which is still in transition from statism to a market economy. Transition process in the Republic of Serbia is characterized by reforms, new institutions, private companies and changed government role. An efficient and effective cluster development concept requires an analytical examination of economic and legal environment. The paper analyzes the cluster development in the Serbian economy, and its growth, despite the lack of national policy on cluster development. The special interest of the paper is focused on the size and nature of the clusters, industrial activities performed in the clusters and tendencies in cluster development. The purpose of this research is to emphasize the importance of clusters as a tool for achieving sustainable local economic development in the Republic of Serbia.

Keywords: Cluster, Republic of Serbia, SME, Economic development, Transition

1. Introduction

In contemporary business conditions, due to the increasing turbulence of the business environment, a cluster needs to be a new approach, based on quality, speed, flexibility and innovation. Cluster is linking production, education and science, as conditions for economic development and innovative processes stimulating. Clusters, as one of the main pillars of development, are innovative tools that create a basis for the improvement of less developed regions, as well as for increasing production, competitiveness and exports, restructuring large inefficient enterprises, creating new employment opportunities, etc.

Michael E. Porter introduced the clusters when he published The Competitive Advantage of Nations [1] in which he presented a theory of local, regional and state competitiveness in the context of the global economy, which gives a significant role to clusters. Clusters represent the geographical concentrations of interconnected companies, specialized suppliers, service providers, related and

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 93

diverse businesses, related companies and related institutions - support organizations (educational and research institutions, trade associations, standard agencies, etc.) which compete, but also co-operate, in the appropriate area [2].

Clustering is one of the basic "catalysts" of economic development in local, regional and national frameworks. Experiences in the world, as well as in the Republic of Serbia, show that the way enterprises and institutions are linked into clusters is one of the essential factors of competitiveness of regions, because clusters develop unique knowledge. It is this knowledge, businesses and/or regions that provide long-term competitive advantages, in spite of the growing globalization.

2. Cluster Organization as a Business Model

The decision of related and geographically close companies, institutions and organizations to work towards achieving common interests and certain competitive advantages, led to the creation of business networks and cluster development. Clusters, as a concept of economic development, encourage systematically improving processes in the production, innovation and sales of products and services.

Clusters are the basis for successful reduction of large enterprises' monopoly, as well as for the restructuring of unproductive companies, and at the same time clusters provide support to small and medium-sized enterprises to enter international markets for which these companies alone do not have enough strength and opportunities.

The tendency of grouping companies into clusters on a geographical basis, determined territorially and related to activity, as one of the forms of networking and linking enterprises, scientific, public and developmental institutions, has been present in the world in recent decades. Cluster merger represents a "relatively new form of organizational linking of business organizations in the function of increasing efficiency and competitiveness" [3].

Clustered institutions and companies are characterized by: location nearnes, interaction - activity of participants, interconnection and critical mass - sufficient number of participants with a common goal and significant influence on the business organizations [4].

The word cluster is of English origin and comes from the word with meaning "bundle, set, flock, cluster, bock, sword, bunch, bouquet, group", first used by an American composer to mark a set of tight, simultaneous, densely strung tones [5].

Clusters have become a significant and complex form of organization with a crucial impact on competition, production potential and competitive export

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 94

advantage in all economies. The nucleus of the development of this organizational phenomenon, that is, the theoretical roots of the cluster, was set up a little over a century ago by the famous English economist Alfred Marshall (1842-1924). He noted the company's desire to group within a certain activity in the same geographical area, in order to optimize their economic activity and increase the efficiency of business processes of the company. Alfred Marshall, founder of the english neoclassical school of economic thought, and pioneer of microeconomic theory, was the first economist to write a detailed cluster study in his book "Principles of Economics" [6], published for the first time in 1890.

Responsible for the full popularization of the term as we know it today, and for developing the idea of clusters as a geographical concentration of the companies, is certainly the American professor Porter, who in 1990 published "The Competitive Advantage of Nations", where he gives cluster a prominent role and promotes cluster as a mean to increase the competitiveness of the region [7]. It is precisely because of its extraordinary role in the popularization of the cluster idea itself, the term industrial cluster, or business cluster, is sometimes replaced with the term "Porter cluster" [8] precisely because of the fact that Porter first used and popularized clusters.

In Serbia, cluster initiatives are related to different sectors and many of them have become serious cluster organizations, some are still developing, while others due to lack of financial resources, lack of managerial knowledge, and awareness of the needs for such synergy, are still looking for their purpose and its identity [9]. Because there is no single database, it is difficult to determine the total number of cluster initiatives in Serbia. The National Agency for Regional Development, through the program of support to innovative clusters, has provided significant support to cluster initiatives in Serbia, while the latter was subsequently taken over by the Development Agency of Serbia.

3. Cluster Characteristics and Factors

According to "Cluster Initiatives in Developing and Transition Economies" [10], cluster development in developed and highly developed countries was significantly accelerated in the 1990s, while in transition countries in the 2000s. Cluster development initiators in developed countries (Brazil, China, India, Turkey, etc.) are mainly donors and government institutions, to a lesser extent enterprises; in transition countries (Albania, Bosnia and Herzegovina, Croatia, Serbia) are enterprises, donors and to a lesser extent the government; in highly developed countries (Switzerland, Austria, the Netherlands, Luxembourg, Germany, etc.) are governments and companies.

Regarding the economic area, clusters in the developed countries are mainly represented in agriculture and food production and basic production (furniture, footwear, textiles), much less in capital-intensive production (cars, chemicals, plastics, energy equipment, etc.) and "high tech" activities (air industry, biotechnology, finance, pharmacy, medical equipment) and tourism. Clusters in transition countries are represented in agriculture and food production, then equally in capital-intensive production and "high tech" activities, considerably less in tourism. Clusters in highly developed countries are mostly represented in "high tech" activities and capital-intensive production, slightly in the agriculture and basic industry.

The main objectives of clustering in developed countries are primarily the increase of additional value, the increase in exports, support for innovation, the development of the supply chain, the increase in employment, to a lesser extent improving the business environment, reducing costs, seeking funds, commercializing academic research. The objectives of cluster formation in transition countries are to increase exports, support innovation, develop the supply chain, improve the business environment. In highly developed countries, the goals of cluster formation are mainly the development of the supply chain, improving the business environment, increasing employment, commercialization of academic research [11].

The objective of clustering can be increasing the competitiveness of domestic products in the domestic and foreign markets; better and more efficient use of domestic resources; initiation and support of cooperation between enterprises, educational and developmental institutions; linking with funds for financing innovative projects; training and education, as well as many other interests of both the member and the region, as well as the government.

Benefits and the advantages for cluster members are numerous: export promotion, realization of larger and more complex projects, development of human potential, procurement of common resources and optimization of allocation, exchange of different business and technological knowledge, experiences and best practices, joint research and development of products and solutions, joint marketing, product branding, savings due to size, more efficient lobbying and obtaining public support, development of quality culture.

By forming a cluster, business organizations strive to achieve greater competitiveness through cooperation and competitive relations, thus strengthening the regional identity and building national and international reputation. Important factors for the cluster formation are [12]:

1. A strong scientific base - mainly involving leading research organizations such as university departments, hospitals / medical schools and charities, as well as leading world scientists and a critical mass of researchers;

2. Entrepreneurial culture - expanding awareness of trade and entrepreneurship in secondary schools, universities and research institutes is of great importance for

the development of entrepreneurial culture, recognition of the role of entrepreneurs and role models in business behavior;

3. The ability of incubators and clusters to attract professionals and workers with key competences - depends on the reputation, specialty, and location that provides an attractive place for the lives of workers and managers;

4. Growth of the company base - in certain industries and groups;

5. Commercial space and built infrastructure - an important factor for clusters are incubators located close to research organizations. Facilities with laboratories and other flexible arrangements, as well as space for the expansion of transport links, mainly consisting of highways, railways and international airports;

6. Availability of sources of finance - availability of external sources of funding in order to provide funds for necessary investments, projects and development is a particularly important factor for cluster development;

7. Business support services and large enterprises - donors (large enterprises in related sectors, specialized business advisors, patents, employment, legal issues and ownership);

8. Knowledge and skills - training courses, trained workforce, improvement of professional qualities and increasing the potential of employees through continuous training and learning;

9. Effective networking - a common desire for businesses to connect to a cluster, the existence of regional trade associations, the promotion of mutual cooperation;

10. Policy of support from the environment - support of economic development agencies, national and a sectoral policy of innovation support, stimulating fiscal and legal environment.

4. Characteristics of Cluster Networking in the Republic of Serbia

In order to successfully organize clusters, according to Morača [13], it is necessary to develop the following areas: education and training; favorable start-up businesses; legal system; own research capacities; IT connectivity; SMEs doing business in domestic and foreign markets; tax system; technological capacities in SMEs; supporting small business; cluster promotion. However, it's important to determine what areas will have development priority, or what is the reflection of a particular area in other fields. Institutions in the Republic of Serbia are most often not ready to provide professional assistance to the development of SMEs, which is particularly relevant for tax and financial institutions, because financing start-up business by banks is very difficult.

The clusters have been popularized in the Republic of Serbia in the period 2008-2013, through the "Cluster Development Incentives Program in Serbia" which was implemented by the Ministry of Economy and Regional Development of the Republic of Serbia and Germany Association for Technical Cooperation

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 97

(Deutsche Gesellschaft fuer Technische Zusammenarbeit - GTZ). Accoring to the research study carried out by Radulovic [14] the reason for organizing enterprises to clusters in the Republic of Serbia is overcoming common business problems, and not economic benefits. The study also stated that small and medium enterprises, organized into clusters, could be the main driving force of economy, if government helps them in seeking partners.

In Serbia, today there are officially over 20 clusters, and most of them are in the second phase of development, while for several cluster initiatives it can be said that they are in the zero phase of development. Most clusters have been identified in the field of tourism, as well as in agriculture and food industry. Serbian Automotive Cluster, ICT Network Cluster and Claster Bipom are the most successful clusters in Serbia's economy. In addition, the clusters of the so-called 2nd (higher) phases of development include: Cluster of flower producers Sumadian flower, Cluster Galenit for collection and recycling of batteries and accumulators, construction Cluster Dundjer from Niš, Royal Holiday Fund tourist cluster of the municipality Kraljevo with its surroundings, Cluster of medical tourism, Netwood - cluster of furniture manufacturers, Wood Agency cluster of wood processing companies of Serbia, Serbian Film Association - SFA. Clusters in the 1st phase of the development are: Istar 21 - association for improvement of cooperation and development of tourism in the Danube region, Memos - association for improving the competitiveness of metal producers, FENIKS - cluster of the Serbian aviation industry, association of textile manufacturers Asstex, Agroindustrija, Cluster of fashion and clothing industry of Serbia - FACTS, Cluster of food manufacturers of Serbia - POLUKS, Fund Tourist cluster of micro-region Subotica-Palić, Vojvodina ICT cluster. The Ministry of Economy and Regional Development of the Republic of Serbia supported these clusters in the period from 2007 to 2011 through Public invitations to support their development. The zero-phase clusters, that have selforganized and work without the support of the Government are: Textile cluster LZOTEKS, Cluster for preservation of old crafts in Serbia and Cluster Somborski salas [15].

However, there are numerous obstacles in the cluster development in the Republic of Serbia, manifested through: lack of financial resources needed for the development of small businesses, lack of professional staff and private entrepreneurs who have the necessary experience and business culture in the sense of risk readiness, inclinations for team work, cooperation and association, mistrust and unwillingness for cooperation between enterprises and research and development institutions, undeveloped common cluster infrastructure (design centers, laboratories, training centers, etc.) and financial self-sustainability. Establishment of appropriate research centers, export promotion agencies, quality assessment institutions, etc., as well as the strengthening of business associations, the promotion of new brands and locations, can significantly contribute to the strengthening of the competitiveness of cluster members.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 98

5. The Importance of Accelerating Development of Clusters in the Republic of Serbia

The overall economic environment is extremely important for the operation of each individual cluster. A favorable general economic situation implies, for example, the availability of relatively inexpensive capital, rising demand and the security of cash flows. The general stability of the economy is particularly expressed in the level of inflation, in the of employment level, in the level and dynamics of the economic activities (growth rates and other indicators), through monetary policy, international economic relations. For business organizations involved at international market, the foreign exchange balance of own and foreign countries is very important [16]. Lack of favorable financing sources, inadequate legal framework for business, lack of employees with certain occupations and qualifications, mismatch of business with requirements of quality standard, as well as lack of information about markets and technologies, are some of the key problems in the Republic of Serbia [17]. Banking institutions are reluctant to provide adequate financial support when it comes to start-up business organizations. For start-ups, banks bind the lack of credibility, given the fact that newly established companies do not have enough documentation to enable a realistic financial risk assessment. The international financial institutions' contribution is to promote investments in underdeveloped national economies, help downsize poorness and upgrade the quality of people's lives. In particular, IFC, the private sector arm of the World Bank Group, transfers investment in the underdeveloped national economies, acquires financial resources on the international capital market and ensures technical help and council to governments and economies.

The Republic of Serbia should accelerate the development of clusters using different measures. Improving the quality of the banking sector offers for SMEs, development of new financial instruments, creating conditions for investment of entrepreneurial capital, investments of business angels in SMEs, strengthening the SMEs' ability to access different financial resources are just few of them.

The most important and the greatest state influence on the business organizations is related to defining the institutional basis of the economic system, on the one hand, and defining and implementing the measures of economic policy, on the other. From the aspect of legal and political environment, the Republic of Serbia in period from 2004 to 2012 has made a significant shift in completing a stimulating business environment and foreign and domestic investors. The acceleration of economic reforms has increased the legal safety of business organizations and improved business conditions, especially important for foreign investors: the laws have passed that enable a better business environment, protection of property, contracts, creditors and investors, economic subjects, bankruptcy, registration of business organizations, civil proceedings, mortgages,

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 99

foreign trade operations, protection of competition, etc. In period 2007-2012, the Ministry of Economy of the Republic of Serbia had a budget of 1.61 million EUR for cluster development programs. This program included 26 clusters of 43 mapped, and 86 registered [18]. Danish program for local economic development in the Balkans, LEDIB, in period 2007-2012, allocated 3 million EUR for the cluster development in the agriculture, construction and textile sector in the area Nisava district. The EU program SECEP, worth 3.5 million EUR, in period 2009-2011 invested in cluster development in Serbia and the establishment of Serbian Association of Exporters. The project "Vojvodina Metal Cluster - VMC" was realized in period 2011-2013 with the EU financial support in the amount of 739.687 EUR and own participation in the amount of 122.319 EUR. The EU has invested about 50 million EUR in Serbian SMEs, including 20 million EUR in direct credit line, until 2006, with an additional 6.5 million EUR from IPA in 2007 and 2008 [19].

Improving the economic environment implies, above all, the creation of a legal environment and the administrative business framework that provides legal security, administrative simplicity, incentives for the economic development, implementation of the EU motto "Think first of all about the little ones", and more. All measures taken must be implemented efficiently at all government levels [16].

Cluster further develompent requires improvement of the economic environment, that should be realized through improvement of legal environment. The Republic of Serbia should establishing an incentive legal framework adapted to the SMEs operations (improvement of legal framework for founding, operating, shutting down of SMEs, reduction of fiscal and para-fiscal charges, improvement of the labor relations, inspection supervision, and the like). Administrative procedures in the state administration and local self-governments should be effectively implemented (strengthening of e-government, establishment of a one-way system, efficiency control of administrative procedures and administrative costs of the economy, improvement of conditions for SMEs participation in public procurement). The Republic of Serbia should strengthen the transparency of regulatory and public policy processes, the Entrepreneurship and competitiveness council should be established, as well as the mechanisms to monitor the effects of regulations relating to business environment.

Conclusions

Cluster as a networking concept is relatively a new way of economic organization in order to improve the development of innovative business, employment, productivity increase, technology diffusion, greater export and strategic linkage, and therefore clusters represent a natural mix of businesses rather than a set of factors for which this connection is imposed.

In the process of globalization, the advanced economies are increasingly competing with high productivity and innovative strategies. It is of great

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 100

importance, for creating these competitive advantage, to develop research, advanced technology, innovation, knowledge and finance The groups of professional individuals, companies and institutions, that best assemble into a cluster, is a combination of cooperation and competition and an effective instrument for raising the economy of the region to a higher level.

Intensive technical and technological progress and globalization have significantly affected the structure of clusters whose role in competition and competitiveness has become extremely important. In addition to clusters affecting productivity growth, they are also a response to both the process of globalization and the uneven regional growth and development. Clusters accelerate the specialization of small firms and influence the improvement of their mutual cooperation, encourage the establishment of new firms, increase the productivity of companies within the cluster, strengthen their competitiveness and enable their export advantages, influence the growth and stimulation of the economic volume of production and creating conditions for mutual cooperation and thus increase the economic performance of the company.

Functioning of clusters in the Republic of Serbia is a particular challenge for certain industries and related activities, but also an incentive for the government to create an incentive production environment and stimulate clustering through links with scientific research institutes, universities and other scientific institutions, in order to achieve faster cluster development and the development of entire economy. Due to the role that clusters play in raising the competitiveness of the Serbian industry, it is reasonable that the state provides the development of transport and market infrastructure, provides the conditions for the increase in the number of development and research institutions, the creation of a stable macroeconomic environment, the development of institutions for quality standardization, etc. The state and its institutions play an important role in the development of clusters by: stimulating mergers, organizing trainings for employees in the cluster, influencing the increase of competitiveness in the domestic and international market, forming expert teams for monitoring the business of clusters, affecting the creation of a more favorable business environment for successful cluster development, etc.

Cluster development measures in the Republic of Serbia must go towards fostering cooperation and partnership between companies, government, research and academic institutions, as well as increasing cluster cooperation in order to share knowledge, experience and practice. Different sources of funding need to be provided for the implementation of cluster development measures in the Republic of Serbia.

References

- [1] Porter, M.E.: The Competitive Advantage of Nations. New York: Free Press, 1990.
- [2] Porter, M.E.: Competition, FEFA, Belgrade, 2008.
- [3] Stanisavljević, N.: Cluster organization conceptual basics and life cycle elements, Ekonomika, Vol.60, July-September 2014, no.3.
- [4] Sudarić, T., Zmaić, K., Petrač, B.: Regional clusters in a function of rural development in Croatia, Thematic proceedings "Development of Agriculture and Rural Areas in Central and Eastern Europe", 100th Seminar of the EAAE, Novi Sad, 2007.
- [5] Cappellin, R., Wink, R.: International Knowledge and Innovation Networks-Knowledge Creation and Innovation in Medium-technology Cluster, USA: Edward Elgar, 2009.
- [6] Ilić, M.: Business incubators and clusters as a new model for the development of small and medium enterprises in industry, Industry, Vol.34, no. 4/2006, Economic Institute, Belgrade, 2006.
- [7] Porter, M. E.: The competitive advantage of nations, 1990.
- [8] Porter, M.E.: Competition, Faculty of Economics, Finance and Administration, Belgrade, 2008.
- [9] Association of Serbian Clusters ASKA, retrieved from http://www.aska.org.rs/dobrodosli/ (10.05.2019).
- [10]Ketels, Christian H.M., Göran Lindqvist, Örjan Sölvell: Cluster Initiatives in Developing and Transition Economies. Report, Ivory Tower AB, Stockholm, 2006.
- [11]Ketels, Christian H.M., Göran Lindqvist, Örjan Sölvell: Cluster Initiatives in Developing and Transition Economies. Report, Ivory Tower AB, Stockholm, 2006.
- [12]Hopkinson, L.: Innovation clusters, Non-financial Assistance to SMEs in Serbia, 2003.
- [13]Morača, S.: Cluster Development and Development Strategy in AP Vojvodina, Provincial Secretariat for Economy, Center for Competitiveness and Cluster Development, Novi Sad, 2009.
- [14]Radulović, M.: The Creation, Importance and Economic Benefits of Industrial Clusters for Serbian Companies, A Dissertation presented in part consideration for the Degree of MSc International Business, 2008.
- [15]http://klasteri.merr.gov.rs/Klasteri-u-Srbiji

- [16]Marinović-Matović, I., Cvetković, Z.: CLUSTERS IN EU COUNTRIES AND THE REPUBLIC OF SERBIA – ECONOMIC AND LEGAL ASPECTS OF DEVELOPMENT STRATEGY, Proceedings: European Integration Process and Regional Cooperation "Constantin Magnus 2018", 2018, pp.179-197.
- [17]Report on Small and Medium Enterprises and Entrepreneurship in 2011, Ministry of Finance and Economy of RS, Ministry of Regional Development and Local Government of RS and National Agency for Regional Development of the Republic of Slovenia, Belgrade, 2012.
- [18]Marić Z.: Policies and tool for cluster excellence, IV Balkan Black Sea Conference ,,Cluster Days 2013", Sofia, Bulgaria, 2013, retrieved from http://daniklastera.clusterhouse.rs/ (01.05.2019)

[19]http://ec.europa.eu/enterprise/dg/

Examination of the Current Higher Educational System at the Industry 4.0 Among Students

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Abstract: Background. The Industry 4.0 is no longer fiction, it is reality nowadays. Although in recent years several measures, government activities, projects and increased R&D resources have motivated and assisted companies in their innovation activities. This resource will be not enough to the transition because the main resources, the qualified employees, are lacking from the system. The education shows a strong fallback compared to Industry 4.0. Research aims. The primary research examines the education system from Industry 4.0 point of view. What do students expect from educational institutions during the 4th Industrial Revolution? Methodology. A primary research was carried out among students in Hungary in 2018, which focused on education system from Industry 4.0. The research applied the focus group depth interview method. Key findings. Most of students think they do not have a chance on the job market nowadays because they just have general knowledge of study but not specific issues relating to the new industrial revolution. There are more opportunities for engineering students. The research identifies some factors of problems of current education system by students. There were: resistance to change, government policies, luck of collaboration of stakeholders, financial resources.

Keywords: Industry 4.0; Education 4.0; Qualification, Human Resource

1. Introduction

The Industry 4.0 is no longer fiction, it is reality nowadays. Although in recent years several measures, government activities, projects and increased R&D resources have motivated and assisted companies in their innovation activities. This resource will be not enough to the transition because the main resources, the qualified employees, are lacking from the system. The education shows a strong fallback compared to Industry 4.0. There is a notion that this revolution will impact societal activities and mode of living and economic trends is therefore something that not just a few 'players' should be concerned about but must be a

major concern for the entire society especially the providers of knowledge which are the educational institutions.

One can say that education and learning which prepares individuals to be equipped in their dispensation of both economic and civic duty to society and inventers of new ideas for societal development over many generations seem to lag behind the new era. Today, the educational system as has been affected over the years by trends of society that has somewhat a questionable form. Also, its level of complexity is not at par with the speed and scope of new trends of high technological advancement of society today.

The standardization and the modus operandi of the educational institutions over the years do not seem to be complex enough in giving students the requisite skill, competence and ability to be competitive on the economic spheres of society.

2. Review of Literature

2.1Brief History of the Industrial revolution

The term "Industrial Revolution" was coined by Auguste Blanqui, a French economist, in 1837 to denote the economic and social changes arising out of the transition from industries carried in the homes with simple instruments, to industries in factories with power-driven machinery in Britain, but it came into vogue when Arnold Toynbee, the great historian, used it in 1882.

The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. There are three reasons why today's transformations represent not merely a prolongation of the third Industrial Revolution but rather the arrival of a Fourth and distinct one: velocity, scope, and systems impact (Schwab, 2016).

2.2Defining Industry 4.0

Industry 4.0 is the vision of increasing digitization of production. The concept describes how the so-called Internet of things, data and services will change in future production, logistics and work processes (Acatech, 2014). In this context according to Buhr (2017) industry representatives also like to talk about a fourth

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 105

industrial revolution. They are alluding to a new organization and steering of the entire value chain, which is increasingly becoming aligned with individual customer demands. The value chain thus has to cover the entire lifecycle of a product, from the initial idea through the task of developing and manufacturing it to successive customer delivery as well as the product's recycling, all the while integrating the associated services. In another explanation MacDougall (2014) smart industry or industry 4.0 refers to the technological evolution from embedded systems to cyber – physical stems. He opined that put simply industry 4.0 represents the coming of a fourth industrial revolution on the way to internet of things, Data and services. MacDougall (2014) explained that decentralized intelligence helps create intelligent objects networking and independent process management with interaction of real and virtual worlds representing a crucial new aspect of manufacturing and production process. This simply means industrial production machinery no longer simply 'processes' the product but that the product communicates the machinery to tell it exactly what to do.

2.3Characteristics of Industry 4.0

Industry 4.0 is driven by Digitization and integration of vertical and horizontal value chains, Digitization of product and service offerings and Digital business models and customer access. Industry 4.0 digitizes and integrates processes vertically across the entire organization, from product development and purchasing, through manufacturing, logistics and service. All data about operations processes, process efficiency and quality management, as well as operations planning are available real-time, supported by augmented reality and optimized in an integrated network. Horizontal integration stretches beyond the internal operations from suppliers to customers and all key value chain partners. It includes technologies from track and trace devices to real-time integrated planning with execution (Pwc, 2015).

2.3.1Significance for the employment market

During the transition to Industry 4.0, the change in production structure will surely have consequences. With regard to the working and professional world, according to the assumptions, work will become more challenging and have more informal qualification requirements such as the ability to act independently, self-organization, abstract thinking-skills (Forschungsunion & acatech, 2013). In line with qualitative preliminary studies BIBB and IAB (2015) conducted with companies which have already intensively involved with the implementation of Industry 4.0, results show there will particularly be less need for simple, repetitive tasks and special knowledge applied. Key results of the study show that although the transition to Industry 4.0 can on one hand in fact yield an improvement in the

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 106

economic development, on the other hand, however, based on the assumptions made in ten years there will be 60,000 fewer jobs than in the baseline scenario. At the same time, 490,000 jobs will be lost, particularly in the manufacturing sector, and approximately 430,000 new ones will be created. To a great extent, jobs "switch" between sectors, occupations and qualifications (BIBB-IAB, 2015).

2.3.2 Impact of industry 4.0 on higher education

The core mission of higher education remains the same whatever the era. The goal of higher education is to ensure quality of learning via teaching, to enable the students to get the latest knowledge through exploratory research, and to sustain the development of societies by means of service (Bo Xing and Tshilidzi Marwala, 2017). They added that to sustain the competitive position among world higher education system, we need to radically improve educational services. In particular, we need to drive much greater innovation and competition into education.

But Wallner and Wagner (2016), questioned; how can we fulfill this obligation, when new professions pop up at an ever-faster rate and relatively stable professional profiles are increasingly replaced by generalized skill sets? They answered by giving out the suggestion that 'the complexity we find in the 'outside' world is reflected in each and every aspect of our academic work. When it comes to cope with complexity, standardization is always tempting. But standardization always means simplification, and thus standardized programs cannot deliver what we need'. Today, all graduates face a world transformed by technology, in which the Internet, cloud computing, and social media create different opportunities and challenges for formal education systems. Xing (2017), they further ascertained that as students consider life after graduation, universities are facing questions about their own destiny especially employment.

3. The method and sampling

The study achieves its goal with the method of qualitative research, of which results presents the opinions of students of the higher educational institutions.

The depth interviews were carried out in Gyongyos (Heves County) and Budapest with students of the Eszterhazy Karoly University and students of Budapest Business School. Among the participants were 24 students in four groups each from three faculties of the Eszterhazy Karoly University and 6 students from the Budapest Business School. All the interviews were carried out personally and based on questions complied and recorded beforehand. So, the study is based on the depth interviews of 30 participants from two universities in Hungary.

The data processing of the depth interviews and information processing were carried out in an oral way, however, the research to unveil the relationships examines frequency, causal relationships, processes and consequences and sets up structures (Babbie 2001).

4. Results of the research and findings

It is worthy of note that most of the respondent/ interviewees were so much aware of the era of the new industry revolution (industry 4.0).

4.1Conceptual definition of industry 4.0 among students

Like all concepts in the social sciences, it is a very difficult task to give a comprehensive definition of the concept Industry 4.0 which is adequate from every aspect. So, it is not surprising that the interviewees gave different definitions. However, these definitions, unambiguously, can be grouped around the Chart for the Industrial environment below:



Own construction 2018/N=30
4.2Chance on the job market

It was also discovered that most students thought they do not have a chance on the job market without innovative and modern knowledge nowadays because:

a)They just have general knowledge of study but not specific issues relating to the new industrial revolution which is driving the job market now.

b)They think it is an area for engineering students and those in the applied sciences and not for the social sciences.

c)It is difficult to acquire such expertise now as most educational institutions focus on the social sciences subjects which is more of theory base.

d)Their knowledge in technological applications is not sufficient enough.

e)Some few students' participants also believed that not every job requires technology application hence their chance of securing a job opportunity

On the premise of which specific subjects will be appropriate for students in the new industry revolution era, interviewees opined that the 'STEM' which is the acronym for Scientific, Technology, Engineering and Mathematics be compulsory for students at all levels of the educational ladder.

Some also advised that schools should guide students at all levels to pursue subject where their passions are and help them nurture.

4.3Perception of the current educational system

On the issue of the perception of the current educational system, higher percentage of respondents has this to say:

Findings			Comments from students			
It is still primitive in	its	content	'I think it must focus on the individual			
delivery and operations	delivery and operations		skill development rather than delivery			
			of theory'			
			'The school must have laboratories to			
			help us the student to engage in the			
			practical application of the theory ba			
			learning which do not help us discover			
			our areas of interest'			
			'I do not think we are been taught			
			subjects that relate to the current trends			
			in the world and on the job market'			

It lags behind the current new economic and technological trends	'For me I think our schools teaches us random subjects which don't much new wave of society' 'I see us study selected subjects of past generations which do not match today's HR capacities'
Low investment into higher education by governments	'The higher education ten years ago has three times more money than today'
It has failed to churn out good 'products' for the current economic market	'To be honest the unversities are just generating 'puppets' right now because people complete their university education and still cannot have job'
The educational system is regid in its content delivery approach	'I think what is happenning to us with our educations is that we are given what teachers know not what we want to learn'

4.4 Identified problems of the current education system by students as shown in the diagram below:



Figure 2 Identified problems of current education system Source: Own construction 2018/N30

Findings on the related issues regarding the level at which to start imbibing science and technological knowledge; most of the respondents proposed that it should start right from kindergarten with the view that the more children play with these tools the better they become at it and that will help them develop strong interest and further pursue it at all levels. Others are of the opinion that the introduction should be at the high school level where the students can understand the use of these tools in a more 'controlled' way. A few participants were of the view that exposing the children to these tool at these levels poses lots of danger as some may engage in the wrong use of it and therefore suggest the best place to introduce should be at the college/University level. Proposed techology tools for teaching by student participant at the various levels as shown below:





Figure 3 Identified problems of current education system Source: Own construction 2018/N30

5. Conclusion

The results of the research show that most students are very much aware of the new industrial trends as shown in their various definitions of Industry 4.0 above. However, none of the students gave any definition in relation to cybersecurity and cloud computing and I find this quiet unusual as almost all students are constantly using this applications.

The results of the research also showed that students of the current educational system do not have the prerequisite practical innovative knowledge to prepare them for the modern corporate world. This is as a result of the over reliance of the general knowledge acquisitions method which the education provides student instead of specific vocational training for the latest things and expectations.

It is evident that the new industry revolution (industry 4.0) will /has great impact on the educational system in the preparation of students, content delivery and curriculum design or development of courses. This confirmed the major modern tools identified by interviewees, which cut-across the levels of the education ladder - 3D printers and projectors, Computers of all forms, Virtual reality

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 112

glasses, Robotics and Cloud computing among others. The result shows that educational system over the years has kept the old standards hence its inability to provide students with modern practical knowledge.

The complexity we find in the 'outside' world is reflected in each and every aspect of our academic work. When it comes to cope with complexity, standardization is always tempting. But, standardization always means simplification, and thus standardized programs cannot deliver what we need. (Wallner, 2012).

It is also evident from the research results that if the current education system will/can:

Be flexible in its content and delivery approach to student learning.

Allow students to be responsible for their learning

Allow students to take more practical learning on contemporary subjects and

Research made compulsory to all students at the various levels with high supervision, it will enhance the preparedness and employability of students for the current job market.

References

- Reinhard G,Stefan (Pwc) Schrauf,Volkmar(Pwc) Koch Simon K (2014): Industry 4.0 Opportunities and Challenges of the industrial internet Schlaepfer R.C, Koch M, Merkofer P (2015) Deloitte – Industry 4.0 Challenges and Solutions for the Digital Transformation and the use of Exponential Technologies
- [2] Jan SMIT, Centre for Strategy & Evaluation Services LLP, Stephan KREUTZER, Centre for Strategy & Evaluation Services LLP, Carolin MOELLER, Centre for Strategy & Evaluation Services LLP, Malin CARLBERG, Centre for Strategy & Evaluation Services LLP: Economic And Scientific Policy – Study On Industry 4.0 Study
- [3] David H.; Levy, Frank; Murnane, Richard J. (2013): The Skill Content of Recent Technological Change: An Empirical Exploration. In: The Quarterly Journal of Economics, page 118(4).
- [4] Berger, Roland (2014): INDUSTRY 4.0 The new industrial revolution. How Europe will succeed.
- [5] BITKOM (2014): Industrie 4.0 Volkswirtschaftliches Potenzial für Deutschland.
- [6] Aggarwal (2012). History of the Industrial Revolution
- [7] Pfeiffer, Sabine; Suphan, Anne (2015 Das Corporate Design der Universität Hohenheim) .The Labouring Capacity Index: Living

Labouring Capacity and Experience as Resources on the Road to Industry 4.0

- [8] Wegener et al,(2015) Xing, "Massive online open course assisted mechatronics learning a hybrid approach," in Furthering Higher Education Possibilities through Massive Open Online Courses, Chapter 12, pp. 245-268, A. Mesquita and P. Peres, Eds., 701 E. Chocolate Avenue, Hershey PA, USA 17033: IGI Global, ISBN 978-1-4666-8279-5, 2015.
- [9] Marwala, I. Boulkaibet, and S. Adhikari, Probabilistic finite element model updating using Bayesian statistics: applications to aeronautical and mechanical engineering. The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, United Kingdom: John Wiley & Sons, Ltd, ISBN 978-1-1191-5301-6, 2017.

[10]Wallner et al (2016) ACADEMIC EDUCATION 4.0

- [11]Arbeit 4.0 (2015), Megatrends digitaler Arbeit 25 Thesen, Ergebnisse eines Projekts von Shareground und der Universität St. Gallen, Retrieved May 16, 2016 from https://www.telekom.com/static/-/285820/1/150902-Studie-St.-Gallen-si
- [12] Ashby, W. R. (1956). An introduction to Cybernetics, New York, Wiley.
- [13]Klaus Schwab (2016), World Economic Forum Annual.Meeting 2016, Davos-Klosters, Switzerland. Theme: "Mastering the Fourth Industrial Revolution"20-23 January 2016
- [14]David H. (2015): Why Are There Still So Many Jobs? The History and Future of Workplace Automation. Journal of Economic Perspectives, 29, 3, 3–30.
- [15]Dengler, Katharina; Matthes, Britta (2015): Folgen der Digitalisierung für die Arbeitswelt: Substituierbarkeitspotenziale von Berufen in Deutschland. IAB-Forschungsbericht 11/2015
- [16]Frey, Carl B.; Osborne, Michael A. (2013): The Future Of Employment: How Susceptible Are Jobs To Computerisation? Oxford Martin School.
- [17]Hanushek, Eric A.; Schwerdt, Guido; Wößmann, Ludger; Zhang, Lei (2017): General Education, Vocational Education, and Labor-Market Outcomes over the Lifecycle. Journal of Human Resources, 52, 1, 48-87.
- [18]Kruppe, Thomas (2012): Organisation und Finanzierung von Qualifizierung und Weiterbildung im Lebensverlauf. Expertise im Auftrag der Abteilung Wirtschafts- und Sozialpolitik der Friedrich-Ebert-Stiftung.

- [19]Warning, Anja; Weber, Enzo (2017): Economy 4.0: Digitalisierung verändert die betriebliche Personalpolitik. IAB-Kurzbericht 12/2017.
- [20]Weber, Enzo (2016): Industrie 4.0: Wirkungen auf den Arbeitsmarkt und politische Herausforderungen. Zeitschrift f
 ür Wirtschaftspolitik, 65, 1, 66–74.
- [21]Weber, Enzo (2017):Digitalisierungals Herausforderung füreine Weiterbildungspolitik.Wirtschaftsdienst, 97, 5, 372–374.
- [22]Wolter, Marc Ingo; Mönnig, Anke, Hummel, Markus; Schneemann, Christian; Weber, Enzo; Zika, Gerd; Maier, Tobias; Neuber-Pohl, Caroline; Helmrich, Robert (2015 Industry 4.0 and the consequences for labour market and economy: scenario calculations in line with the BIBB-IAB qualifications and occupational field projections. IAB-Forschungsbericht 8/2015.
- [23]Wolter, Marc Ingo; Mönnig, Anke; Hummel, Markus; Weber, Enzo; Zika, Gerd; Helmrich, Robert; Maier, Tobias; Neuber-Pohl, Caroline (2016): Economy 4.0 and its labour market and economic impacts: Scenario calculations in line with the BIBB-IAB qualification and occupational field projections. IAB-Forschungsbericht 13/2016

Country branding as a special type of place branding – An overview of the related terminology

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Abstract: Country branding has become a 'hot topic' in the last two decades, and country image centers, country brand councils were set up all over Europe simultaneously. While the practice of the field is quite developed, its theoretical framework is lagging behind. For this reason, the present study systematizes concepts and terms related to country branding as a special type of place branding. Terms such as nation branding, state branding, destination branding, location branding, territory branding and region branding occur, while the similarities and differences of these expressions are also discussed. The study systematizes the related literature and analyizes the most relevant country case study articles with titles that include country branding, place branding or related terms. As a result of the systematization of the relevant terminology, country branding can be managed more consciously, and country competitiveness may be increased.

Keywords: country branding, nation branding, place branding

1. Introduction

It has been two decades since the concept of country brands and country branding appeared in international literature. Very soon, organizations specialized in country branding were established all around the globe with great hopes, but only a few successful examples are known, and their primary focus is destination branding.

As a matter of fact, country branding and destination branding are not the same: while the latter only deals with the attraction of tourists, the former is also engaged in attracting investors to the country, increasing the sales of national products in foreign markets, enabling an increasing number of talents to study in the country, or even settle there, and, last but not least, the development of the country image.

Terminological misunderstandings may be further increased by the frequent appearance of the terms nation branding, state branding, place branding, location branding, territory branding, and region branding.

Therefore the primary aim of this research is to identify all the synonyms and related terms that can be replaced/standardized by the terminology of country branding.

In this connection, the most relevant country case study articles have been examined, providing interesting findings regarding the variety of ways they mention country branding and related terms in their titles.

2.Various terminologies associated with country branding

Destination branding is the term most often confused with nation branding, country branding, sometimes with state branding, or, in a broader sense, place branding. The book that is usually considered the first serious comprehensive literature of the latter is "Destination branding – Creating the unique destination" edited by Morgan, Pritchard and Pride. It was first published in 2002, well before the first country branding book, and right when the abovementioned special issue of Journal of Brand Management was published.

One of the classical definitions of destination branding is associated with the names of Ritchie and Ritchie (1998. 17), and Blain, Levy, Ritchie (2005. 337), who state that "destination branding is the set of marketing activities that (1) support the creation of a name, symbol, logo, word mark or other graphic that readily identifies and differentiates a destination; that (2) consistently convey the expectation of a memorable travel experience that is uniquely associated with the destination; that (3) serve to consolidate and reinforce the emotional connection between the visitor and the destination; and that (4) reduce consumer search costs and perceived risk". Collectively, these activities serve to create a destination image that positively influences consumer destination choice, as opposed to an alternative option. Therefore it is important to note that "destination branding" is always about travelling or tourism, because a destination is actually a target of tourism (Sziva 2015).

On the other hand, "place branding" covers much more. Anholt (2004, cited in Kerr 2006. 278) defined place branding as "the practice of applying brand strategy and other marketing techniques and disciplines to the economic, social, political and cultural developments of cities, regions and countries", asserting that holistic place branding "encompasses everything a place wishes to sell" (Lodge, 2006: 9).

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 117

As Hanna and Rowley (2008), or Piskóti (2012) suggest, the concept of "place branding" is considerably more complex than that of "destination branding", although we have to add that the latter is rather complex in itself.

The perplexity of the tourism destination concept is based on a myriad of different products, services and experiences, which are all managed, distributed and 'consumed' by different stakeholders (hoteliers, travel agents, tour operators, transportation companies, local authorities and residents, destination management organizations, tourists, etc.) with a variety of ownership forms, and often without an appropriate hierarchy with a set of rules for stakeholders to adhere to (Konecnik–Go 2008; Konecnik 2002).

Or, as Törőcsik and Somogyi say (2009: 23): "The problems of destination branding can basically be characterised by diversity. A destination is not a uniform product; it has several ingredients (accomodation, catering, tourist attractions, entertainment, cultural locations, natural and built environment)", which are factors mostly unaffected by the creators and managers of the term destination brand. The key aspect of branding is that an emotional link between the product and its customers must be established. In the case of destination branding, atmosphere, the behaviour of inhabitants, and the personal impression of visitors are of outstanding importance."

Having examined the brand management of countries, we can state that it can be interpreted as "destination branding" (when the only aims are the attraction of tourists, increasing the number of overnight stays and the amount spent in the destination country, and the return of the tourists, of course), or "place branding" in a broader sense. In the case of countries, we use more concrete terms for the latter: nation branding, or country branding.

As it has been mentioned before, the fathers of the "nation brand" and "nation branding" terminology were Anholt (1998), and Dinnie (2008). In addition, we should also mention the name of a third British expert Olins, who published his book "Trading identities" in 2000. "Nation branding" can be defined as a means to measure, build and manage the reputation of countries, including the application of corporate marketing concepts and techniques to countries, in the interests of enhancing their reputation in international relations.

It must be pointed out that the aims of "nation branding" (and "country branding") are far more complicated than those of "destination branding". According to Papp-Váry (2009), these activities include:

- 1) Stimulation of tourism, attracting tourists to the specific country, and increasing their spendings and overnight stays.
- 2) The promotion of investments arriving in the country.
- 3) The development of export, and improving the sales of the country's products in foreign markets.

- 4) A more significant role in international organizations and foreign policy.
- 5) Improving the well-being and comfort of citizens, increasing pride and patriotism in a good sense.

The difference between the two terms is also well represented by the fact that only one dimension of the **Nation Brand Hexagon** concept created by Anholt (a tool that demonstrates how people see a country) deals with tourism; the other five aspects include export, investment and immigration, culture and heritage, people, and even governance (foreign and domestic policy). However, the reason of this difficulty is that each dimension is usually dealt with by dedicated organizations, but no organization is handles them all at the same time. For example, in the case of Hungary:

- the organ in control of tourism (currently the Hungarian Tourism Agency) promotes the country among holidaymakers and business travellers
- the organ promoting investments (HIPA Hungarian Investment Promotion Agency) tries make the country attractive for foreign companies and investors
- cultural institutes (e.g. Balassi Institute) builds cultural relations with other countries, and promotes the cultural products and services of the country
- there are dedicated organizations for the support of export (e.g. HEPA, the Hungarian Export Promotion Agency)
- and, finally, in terms of governance, the Ministry of Foreign Affairs and Trade (among others) deals with the presentation of the country's policies in the best possible light.

The list above only includes the most important organizations. In most countries, several other bodies, government organs, ministries, special interest groups, NGO's and companies promote an aspect of the country that is most important for them.

Although the majority of these official and unofficial, national and regional, political and commercial organizations operate independently of the others, they often communicate conflicting, or even opposite messages about the country. As a result, the country image created by them inconsistent, and the general reputation of the country stagnates, or even gets damaged.

Therefore several countries are experimenting with the creation of a single umbrella organization for the coordination of these activities. In the case of Hungary, for example, the Country Image Centre (Országimázs Központ) played this role between 2000 and 2002, and the Country Brand Council (Országmárka Tanács) was active for a few years starting from 2009.

In terms of terminologies, while "**nation branding**" became the most popular expression in international professional literature and practice (which is clearly demonstrated by a Google Scholar search or an ordinary Google search), "**country**

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 119

branding" is also often mentioned. "Nation branding" and "country branding" basically mean the same thing, but in countries where "nation" and "country" do not overlap completely, the use of "country branding" is preferred.

Hungary is also an example of this – branding the country is a challenge itself (see the work of the Country Image Centre or the Country Brand Council), but it is an even greater task if it is a nation of 15 million people inside and outside Hungary.

In other cases, the term "country branding" is used just for the opposite reasons (Gilmore 2002). In Spain, Catalan, Galician and Basque nationalities are very important, in addition to Spanish people (Castilians). Therefore, in a sense, it would be peculiar to see a Spanish nation branding effort. (And it would not be weird if the Catalan independence movement would launch nation branding activities regarding Catalonia).

At this point we must also mention that besides country branding and nation branding, there are examples of using the definition "**state branding**". As early as in 2002, a study by van Ham titled "The rise of the branded state" was published. However, this terminology may also be misleading in the sense that the word state may mean the country as a geographical unit, but it can also mean the institutional system itself. As Bíró explains the three terms above in a 2009 special issue of the Journal of Marketing és Menedzsment focusing on country image and country brand, "A country is a geographically demarcated area, and a state is the organization of life in this specific area; however, a nation also includes a population that lives outside the country, stating that they belong to the country in terms of their origin." (Bíró 2009. 59)

To make it even more complex, there are numerous other terms that are also used in connection with this topic. "**Country of origin branding**" is considered a term belonging to "country branding", and explores the context between country image and the export of products originating from that specific country (see for example Brodie–Benson-Rea 2016 or Malota 2008).

"Location branding" is often used in terms of cities, but it is also adapted for countries every now and then (Hall 2004, Morley 2009). The same can be said of the term "territorial branding" (van Ham 2002b). On the other hand, "inter-territorial branding" is usually used for clusters, but it is also mentioned in connection with countries, e.g. in a study by Pasquinelli (2013).

"Region branding" is another exciting term (Caldwell–Freire 2004). On the one hand, it can be interpreted as the branding of a region of a country, see the example of Catalonia mentioned above. On the other hand, it may also mean the branding of a region encompassing several countries. In the case of the Baltics, the latter use is usual, even if the three Baltic states (Estonia, Latvia and Lithuania) are sometimes unhappy about it. The Visegrad Four can also be viewed as the common branding of various countries, although the group is not currently considered as a branding effort. (However, the destination marketing campaigns of

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 120

the Hungarian Tourism Agency – especially in Asian countries – suggest some Visegrad4 cooperation among Hungary, Czech Republic, Slovakia, and Poland.) We may also mention "region branding" in case of a larger region, e.g. the "Let's Invent Central Europe" movement by Hankiss.

As we can see from the above, a great variety of interpretations exist in connection with the branding of countries. In addition, these are more overlapping than different from each other (Herstein 2012). Moreover, there are cases when destination is the subject of a wordplay and becomes "Desti-Nation" (Giannopoulos, Piha, Avlonitis 2011). It is no wonder that authors summarize and conceptualize the trends of the field again and again (Kavaratzis 2005, Berács et al. 2006).

3.Case studies on country branding using different expressions

It is worth using an overview table to summarize the terminologies associated withountry branding that have appeared in practice and the literature on country branding. The table below presents different case studies, and well demonstrates the diversity of branding terminologies.

Terminology used	Examined country	Title of case study	Year of publication	Place of publication
Country branding	Spain	A country – Can it be repositioned? Spain – The success story of country branding	2002	Brand Management
Country branding	Poland	The country brand as a new challenge for Poland	2005	Place Branding
Nation branding	Latvia	Remaking the Nation of Latvia: Anthropological perspectives on nation branding	2005	Place Branding
State branding	South Africa	Selling the state: State branding as a political resource in South Africa	2009	Place Branding and Public Diplomacy

Table 1 The appearance of various country branding terminologies in case studies

Destination branding	New Zealand	Destination branding and the role of stakeholders: The case of New Zealand	2003	Vacation Marketing
Destination branding	Singapore	Uniquely Singapore? A case study in destination branding	2007	Vacation Marketing
Location branding	Great Britain	Branding Britain	2004	Journal of Vacation Marketing
Country-of-origin branding	New Zealand	Country of origin branding: an integrative perspective	2016	Journal of Product and Brand Management
Territorial branding, and inter-territorial branding	Baltic countries (Baltic region) (among others)	Competition, cooperation and co- opetition: unfolding the process of inter- territorial branding	2013	Urban Research and Practice
Region branding	Baltic countries (Baltic region)	Region branding: The case of the Baltic Sea Region	2007	Place Branding
Place branding	Armenia	A place brand strategy for the Republic of Armenia: Quality of context and sustainability as competitive advantage	2005	Place Branding

Source: A summary by the author based on the terms discussed in the article

Conclusions

The aim of the study was to collect and systematize the synonyms of country branding and the terms associated with t. The theoretical significance of the writing is that it serves as a kind of starting point for further research in the field, and provides help for upcoming studies regarding the consistent use of related terminologies.

The practical significance of the study would be especially highlighted if organizations engaged in the building of country brands considered it while setting up the frameworks for their strategy.

Conscious country branding (a concept that goes significantly beyond destination branding and raising tourists' interest) may result in high added value in the long term: it may contribute to the stimulation of investment, the increasing of the turnover and exports of the country's products, and the attraction and retaining of talents. Country branding may even improve the country's position in foreign affairs.

As a result of the systematization of terminologies, the subchapters of strategic documents discussing the development of competitiveness may include country branding in a more conscious and focused way.

References

- Anholt, S. (1998): Nation-brands of the twenty-first century. Journal of Brand Management, 5(6), pp. 395-406.
- [2] Berács, J., Clifton, R., Davidson, H., Johnston, Y., Lodge, C., Melissen, J., Morgan, N., Norrman, K., Pant, D., Porritt, J., Rainisto, S., Wästberg, O. (2006): How has place branding developed during the year that Place Branding has been in publication? Place Branding and Public Diplomacy, 2(1), pp. 6-17.
- [3] Bíró, P. (2009): Magyarországkép 2009: Másképp, más kép Feltételek és esélyek. ("Otherwise, other image – Conditions and chances") Marketing és Menedzsment, 43(2) pp. 56-62.
- [4] Blain, C., Levy, S., Ritchie, J. R. B. (2005): Destination Branding: Insights and Practices from Destination Management Organizations. Journal of Travel Research, 43(4), pp. 328-338.
- [5] Brodie, R., Benson-Rea, M. (2016): Country-of-origin branding An integrative perspective. Journal of Product and Brand Management. 25(4), pp. 322-336.
- [6] Caldwell, N., Freire, J. (2004): The differences between branding a country, a region and a city: Applying the Brand Box Model. Journal of Brand Management, 12(1), pp. 50-61.
- [7] Dinnie, K. (ed.) (2008): Nation Branding Concepts, Issues, Practice. Oxford, UK: Elsevier Butterworth-Heinemann
- [8] Giannopoulos, A., Piha, L., Avlonitis, G. (2011): "Desti–Nation Branding": What for? From the notions of tourism and nation branding to an integrated framework. URL: http://culturaldiplomacy.org/academy/content/pdf/participantpapers/2011/april/biec-roa-nua/desti-nation_branding-_antonios_giannopoulos.pdf, downloaded: 10 January 2018

- [9] Gilmore, F. (2002): A country Can it be repositioned? Spain The success story of country branding. Brand Management, 9(4), pp. 281-293.
- [10]Hall, J. (2004): Branding Britain. Journal of Vacation Marketing. 10(2), pp. 171-185.
- [11]Hanna, S., Rowley, J. (2008): An analysis of terminology use in place branding. Place Branding and Public Diplomacy, 4(1), pp. 61-75.
- [12]Herstein, R. (2012): Thin line between country, city, and region branding. Journal of Vacation Marketing, 18(2), pp. 147-155.
- [13]Kavaratzis, M. (2005): Place Branding: A Review of Trends and Conceptual Models. The Marketing Review, 5(4), pp. 329-342
- [14]Kerr, G. (2006): From destination brand to location brand. Journal of Brand Management, 13(4-5), pp. 276-283.
- [15]Konecnik, M., Go, F. (2008): Tourism Destination Brand Identity: The Case of Slovenia. Journal of Brand Management, 15(3), pp. 177-189.
- [16]Konecnik, M. (2002): The Image as a Possible Source of Competitive Advantage of the Destination – The Case of Slovenia. Tourism Review, 57(1/2), pp. 6-12.
- [17]Lodge, C. (2006): Opinion pieces: How has place branding developed during the year that place branding has been in publication. Place Branding, 2(1), pp. 6-17.
- [18]Malota, E. (2008): Országeredet-hatás. ("Country-of-origin effect") In: Tóth, T. (2008): Nemzetközi marketing. ("International marketing") Budapest: Akadémiai Kiadó, pp. 218-229.
- [19]Morgan, N., Pritchard, A., Pride, R. (ed.) (2002): Destination Branding Creating the Unique Destination Proposition. London, UK: Elsevier Butterworth Heinemann.
- [20]Morley, M. (2009): Location branding. In: Morley, Michael (ed.): The Global Corporate Brand Book. London, UK: Palgrave MacMillan, pp. 78-88.
- [21]Olins, W. (2000): Trading Identities: Why Countries and Companies are Taking on Each Others' Roles. London, UK: Foreign Policy Centre
- [22]Papp-Váry, Á. (2009): Országmárkázástól a versenyképes identitásig és még tovább. A country branding megjelenése, céljai és természete. ("From country branding to competitive identity – and even further. The rise, aims and nature of country branding.") Marketing és Menedzsment, 43(2), pp. 4-19.

- [23]Pasquinelli, C. (2013): Competition, cooperation and co-opetition: unfolding the process of inter-territorial branding. Urban Research and Practice, 6(2013), pp. 1-18.
- [24]Piskóti, I. (2012): Régió- és településmarketing Marketingorientált fejlesztés, márkázás. ("Regional and city marketing – Marketing-focused development and branding") Budapest: Akadémiai Kiadó
- [25]Ritchie, J. R. B., Ritchie, R. J. B. (1998). The Branding of Tourism Destination: Past Achievements and Future Trends. Reports of 48th Congress, AIEST, St-Gall, pp. 89-116.
- [26]Sziva, I. (2015): Hazai desztinációs márkák online felmérése a Magyar TDM Szövetséggel való közös kutatás eredményei – Kutatási jelentés ("An online survey of domestic destination brands – The results of a research project in cooperation with the Hungarian TDM Association", Budapesti Metropolitan Egyetem – TDM Szövetség, URL: http://www.tdmszovetseg.eu/files/_tdmsz/download_files/ 103/Desztinaciosmarkakonlineertekelese_Kutatasiosszefoglalo_SzivaIvet t.pdf, downloaded: 7 January 2018)
- [27]Törőcsik, M., Somogyi Z. (2009): Az országmárkázás kérdései. ("Questions of country branding") Marketing és Menedzsment, 43(2), pp 20-29.
- [28]van Ham, P. (2002a): A márkás állam felemelkedése Az imázs és a hírnév posztmodern logikája. ("The rise of the brand state – The postmodern logic of image and reputation") Marketing és Menedzsment, 36(1), pp. 3-7.
- [29]van Ham, P. (2002b): Branding Territory: Inside the Wonderful Worlds of PR and IR Theory. Millenium: Journal of International Studies, 31(2), pp. 249-269.

Who has the strongest brand? The position of the Visegrád Four in country brand rankings

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Abstract: Global brand rankings measuring the strength and value of various brands are popular in the world of products and services. Brands such as Apple, Google, Amazon, Microsoft or Coca-Cola usually top these lists. Similar rankings created with a rather complex methodology are also available in the case of countries. These are usually topped by countries such as Germany, Switzerland, Sweden, Japan or the United States. The current article aims to provide a brief overview of the criteria of each ranking, and analyze the position of Visegrád countries in these lists. As it turns out, the rankings show that Poland has the strongest brand, followed by Hungary and the Czech Republic with a roughly equal position (with the latter leading slightly), and last, but not least, Slovakia usually occupies the last position among the four countries if it is taken into account at all.

Keywords: brand rankings, country branding, nation rankings, Visegrád countries, V4

1. Introduction

Brand rankings have been popular in the world of products and services for some time: top 100 global brand lists are published by Interbrand, Millward Brown BrandZ and Brand Finance. For example, the top five brands on Interbrand's 2018 list are Apple, Google, Amazon, Microsoft and Coca-Cola. The 2018 BrandZ ranking shows a similar picture, altough they also feature an IT brand instead the only non-IT brand (Coca-Cola) included in Interband's list above. BrandZ's ranking is: Google, Apple, Amazon, Microsoft, Tencent.

In parallel with classic brand rankings, several top lists and lists of country brands have been compiled. Moreover, at least one new ranking appears almost every year. It would be impossible to discuss all of them, therefore we only put the most acknowledged ones under the microscope. These include Anholt Nation Brands Index, FutureBrand Country Brand Index, Bloom Consulting Country Brand

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 126

Ranking (Tourism Edition and Trade Edition), Young&Rubicam Best Countries and Reputation Institute Country RepTrak.

The publication serves a dual purpose. On the one hand, it systematizes the criteria of individual rankings, and on the other hand, it presents the position of Visegrád countries (Poland, Czech Republic, Slovakia, Hungary) in those rankings and their relationship with each other.

At this point it is important to mention that the availability of information for each year is different in the case of individual rankings, therefore the comparison of their results may not be completely uniform. The latest (2018) versions of several lists were available at the time of writing this paper, but in a few cases, we could only rely on information from the years 2017, 2016 or 2015, or detailed public information was only available for these years. We also have to note that some research companies try to "overtake" the others, thus they publish their ranking for each year at the beginning of that year. As a result, they gain greater media publicity, but it is obvious that the data published are not based on the year of publication, but rather the previous year.

Whereas, however, the results of such rankings show that the perception and image of individual countries rarely change radically. Therefore they have a steady position in rankings, so it is not a problem that not all lists are available for the year 2018 yet.

2. Methodological background

Let us face it, we tend to compare our own country with other countries. There are nations that stand on a lower rung of the *imaginary ladder*, and there are countries above us. Maybe this is also related to our superiority or inferiority complexes, but we can also find a marketing-based explanation in the background – namely the position of a country or a country brand on that ladder basically depends on the value or values we associate it with.

The question is, of course, whether it can be calculated and scientifically proven. Well, the creators of country brand rankings say that it can. Such lists are published from time to time – some of them can be disputed, but there are also lists that have become accepted in recent years, insomuch that foreign ministers and prime ministers of governments draw conclusions according to the results.

These lists include examples that are not specifically brand rankings, but are still worth mentioning because of their frequency of being cited. Such rankings include the *IMD competitiveness report* and the *World Economic Forum* global competitiveness report. As Péter Ákos Bod states in his article on the topic (2009, 32.), "In a professional sense, we can consider these lists as beauty contest

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 127

rankings that we do not have to agree with, and (as it often happens in beauty contests) a high ranking on the list does not always reflect the real values. However, a significant step backwards on these lists has a negative effect on the global perception of the country."

Similar rankings are also regularly published by renowned journals such as *The Economist, Forbes* or *Euromoney.* Country lists by credit rating agencies such as *Moody's Investors Service, Standard&Poor's, Fitch-IBCA* or *Japan Credit Rating Agency* can be considered some kind of thematic rankings.

However though, this article aims to stay true to the theme and specifically discuss country brand rankings, not the abovementioned lists. The study therefore presents the methodologies and dimensions of the five best-known country brand rankings, and analyzes the position of Hungary and the other three Visegrád countries in these lists.

3. The most important country brand rankings

3.1Anholt Nation Brands Ranking

This index launched in 2005 has had various complicated names. First it was called *Simon Anholt's Nation Brands Index*, then it was mentioned as *Anholt-GMI Nation Brands Index* and from 2008 as *Anholt-GfK Roper Nation Brands Index*, then in 2017 it was finally named *Anholt Nation Brands Index powered by Ipsos*, its current name.

The research is conducted in 20 countries, and uses a representative sample to monitor the influence and attractiveness of 50 countries. This is also the most common reason for criticism regarding the ranking: on the one hand, only 50 countries are included (although, for example, Hungary is on the list), and on the other hand, the survey itself only takes place in 20 countries. However, as they say, if a research makes exactly the same mistake from time to time, the changes can be interpreted in the very same way, and that is the point.

The six indicators demonstrating *competence fields*, that is, the dimensions of the nation brand hexagon are (see: Anholt-GfK Roper Nation Brands Index 2016):

- *Tourism:* How likely a visit to the country would be if money was no object; Natural beauty; Historic buildings; Vibrant city life.
- *Export:* Science and technology; Product purchases; Creative place.
- *Governance:* Competent and honest; Rights and fair treatment; Peace and security; Environment; Poverty.
- *Investment and immigration:* Work and life; Quality of life; Educational qualifications; Business investment; Social equality.

- *Culture:* Sport; Cultural heritage; Contemporary culture.
- People: Welcoming; Close friend; Employability.

According to the the above criteria and the results of the survey, Germany had the best country brand in 2018, followed by Japan and the United Kingdom, then France and Canada. Italy and the USA finished in a dead heat for the sixth place.

3.2FutureBrand Country Brand Index

The second best-known ranking following *Anholt Nation Brands Index* is related to *FutureBrand*, a global consultancy, and evaluates 75 countries. In their case, the dimensions under assessment were:

- *Value system:* Political freedom; Environmental awareness; Legal environment; Tolerance; Freedom of speech.
- *Quality of life:* Education; Health; Standard of living; Safety & Security; Employment opportunities.
- *Business environment:* Investment climate; Advanced technologies; Regulatory environment; Highly-skilled workforce.
- *Tourism:* The value of the currency; Attractions; Lodging options; Gastronomy.
- *Heritage and culture:* History; Art and culture; Authenticity; Natural resource.
- *Made in:* Products made in the country.

While the first three associations (value system, quality of life, business environment) define the country's so-called *status*, the other three (tourism, heritage and culture, made-in) define the (country) *experience*. Therefore, a separate ranking can be set up for each of the six dimensions, and a summary list can also be created based on them. The most recently published, 2014-2015 summary list is headed by Japan, which means that this is the best country brand according to the survey.

Furthermore, FutureBrand's research suggests that not all countries can be considered a country brand. Based on their result, only 22 of the 75 countries included in the survey qualify as a country brand. In addition, another three groups can be set up:

1. "Countries": This group includes countries that have weaker than average perceptions overall against both status and experience dimensions, although there may be considerable differences between them. Russia and Taiwan sit at the threshold of country brands in terms of perception strength, therefore they can 'jump' to the strongest category from the weakest one. However, the perception of Nigeria, Bangladesh, Pakistan and Ukraine is extremely weak among the 75 countries studied. It should also be said that, according to FutureBrands, Hungary may also be included in the group of "countries", similarly to Poland and Slovakia. It is a country, but far from a country brand.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 129

- 2. "Status countries": Those countries with a perception bias in favour of attributes associated with quality of life, value system and business potential. The group only includes three countries: Belgium, Qatar and Bahrain. The brand development opportunity for these countries lies in the development of perceptions of heritage and culture, tourism and 'made in' and of course in the development of reality itself.
- 3. "Experience countries": Countries with a bias in favour of heritage and culture, tourism and 'made in'. The group mostly consists of places traditionally strongly associated with tourism, including Egypt, Thailand, Greece, Portugal and even Spain. The Czech Republic also belongs to this group according to the survey. The brand development opportunity for these countries lies in their perceptions of quality of life, value system and business potential.
- 4. "Country brands": Countries with stronger than average perceptions relating to the dimensions 'status' and 'experience', and, as a result, measurable competitive advantage against their competitors. Of the 75 countries included in our survey, only 22 belong here. The top 10 list includes (in order of their ranking): Japan, Switzerland, Germany, Sweden, Canada, Norway, United States, Australia, Denmark, Austria.

The study also examined if "country brands" actually have advantage over the countries of the other three groups. Well, the findings of the research suggest that people prefer to recommend or choose a "country brand" as a travel destination or the target of their business activities. In addition, twice as many people would buy a product from a "country brand" than a "country".

3.3Bloom Consulting Country Brand Rankings

Founded in 2003, Bloom Consulting is a consulting company specialized in nation branding, region branding and city branding, with headquarters in Madrid, and offices in Lisboa and São Paulo. The founder and CEO of the company is José Filipe Torres, who has provided advisory for the OECD, and lectured on country branding several times at universities such as Harvard. His ranking list is unique because it actually has three versions: one examines tourism, the other focuses on trade, and the third analyzes digital impact.

For the sake of brevity, we only discuss the methodology of the 2017-2018 tourism ranking, which is called *Bloom Consulting Country Brand Ranking – Tourism Edition*. The algorithm consists of four key variables, which are used to analyze the success of the 193 analyzed country brands and territory brands, as well as their relative performance as compared to each other:

 Economic performance: Average of total annual tourism receipts of international tourists within a country, and the average growth of these receipts.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 130

- Digital demand: The total online search volume for tourism-related activities and attractions
- Country brand strategy (CBS) rating: The most popular brandtags for a specific country are compared to the brandtags most heavily promoted by that country's national tourism organization (NTO).
- Online performance: The website and social media analysis of the country's NTO.

Based on these four key variables the top 10 performers of the tourism ranking for 2018 were: United States of America, Thailand, Spain, Hong Kong, Australia, France, China, Germany, United Kingdom, Italy.

In terms of the trade ranking (*Bloom Consulting Country Brand Ranking 2017-2018 Trade Edition*), the top performer is also the United States of America, followed by the United Kingdom, Brazil, China, Hong Kong, Canada, Australia, France, India and Singapore.

3.4Young&Rubicam Best Countries

Young and Rubicam (or Y&R, as used today), is one of the world's biggest advertising agency networks which has long been known for its research surveying and assessing brands called *Brand Asset Valuator (BAV)*. In addition, the company also performs research to evaluate country brands called *Best Countries*, created in cooperation with recognized media outlet U.S. News and one of the best business and marketing universities, Wharton Business School.

In 2016, the first major round of the research examined 60 countries. One of the special features of their methodology is that they gather data from a survey of 16 200 opinion leaders, informed elites and business leaders from 36 countries. Another interesting aspect of the survey is that it covers hard and soft attributes as well, but the the weighting of the 8 dimensions is not equal, like in the case of most rankings with a similar purpose.

Namely, the dimensions with the greatest weight are innovation and entrepreneurship, quality of life, and citizens' rights and opportunities, with 19-19 percent each – this means that they determine 57 percent of the country brand altogether according to Y&R. These are followed by cultural influence (14 percent) and business-friendly environment (13 percent). The next dimension is power (political and economic influence) with 8 percent. This is followed by two dimensions associated with tourism: cultural heritage (4 percent) and adventure (4 percent). (Turizmusonline.hu 2016).

Based on these results, the overall winner, that is, the "best country" was Germany in 2016. The other two countries in the 2016 top three were Canada and the United Kingdom.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 131

In 2017, Switzerland took the leading position. This is mainly due to the fact that (oddly enough) Switzerland was not included in the 2016 rankings, but another reason is that Germany's image deteriorated in terms of business-friendly environment, citizens' rights and opportunities, and quality of life. According to Y&R analysts the primary reason of this change was the situation evolved after the arrival of large numbers of refugees and acts of terrorism (Y&R 2017).

Therefore Germany dropped to the 4th place in 2017, also outperformed by Canada and the United Kingdom in addition to Switzerland. Similarly to Germany, the United States of Americal fell three places, dropping to the 7th place from the 4th. Similarly to Anholt Nation Brands analysts, Y&R's researchers attributed this downturn in image to the Trump phenomenon. However though, it can be seen that the USA tops the ranking in terms of the power dimension, closely followed by Russia, and China was ranked third in the list.

As Y&R examined 80 countries in 2017 (and 2018) instead of 60, this rearranged the list. For example, Norway and Finland, two Scandinavian countries appearing on the list, also perform well, that is, their international reputation is excellent in the abovementioned dimensions. (BAV Group 2018).

In the meantime, the eight dimensions have been supplemented with a ninth one called "movers". This category includes the most dynamically developing economies (that is, the ones with this percepction). The ranking of the 2018 list was United Arab Emirates, India, Singapore, China, Japan, Thailand, Egypt, Russia, Brazil and és Israel.

An interesting fact is that Switzerland is only 28th, the USA is 29th, and Germany is 35th in the same list. According to this dimension, Hungary is unfortunately the 79th, that is, the last but one, having only outperformed Poland. (US News 2018).

3.5Reputation Institute Country RepTrak

Just like all other rankings presented above, the Reputation Institute Country RepTrak has its own characteristics. First of all, this study examines country reputation, although this is not much different from the term 'country brand'.

Another unique characteristic of the survey is that it only examines 55 countries, namely the 55 countries with the biggest GDP. The research itself is only conducted in the so-called G8 countries, that is, the United Kingdom, France, Japan, Canada, Germany, Italy, Russia and the USA. In these countries, a total of 58 thousand people are surveyed, who only evaluate countries that they know from the list of 55, or countries they know about.

The research examines 3 major dimensions: advanced economy, appealing environment and effective government. These include various attributes (Reputation Institute 2018):

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 132

- Advanced economy: High-quality products and services; Well-known brands; Contributor to global culture; Technology; Well-educated, reliable workforce; Values education.
- Appealing environment: Beautiful country; Enjoyable country; Appealing lifestyle; Friendly and welcoming people.
- *Effective government:* Business environment; Institutional environment; Social and economic policies; International participation; Safety; Efficient use of public resources; Ethical country.

Another interesting feature of Country RepTrak is its method of evaluation. The rating is similar to the Anglo-Saxon scoring and classification system. Countries that achieve a total score higher than 80 are classified into the category 'excellent'. Countries with a score between 70 and 80 are classified as 'strong', ones with 60-70 points are 'average', and ones between 40-60 are 'weak'. Countries that achieve less than 40 points are ranked as bad, or 'poor' if you like.

An interesting fact from the 2018 report is that the categories of excellent countries (Sweden, Finland, Switzerland, Norway) and 'failed' ones (Russia, Nigeria, Iran, Iraq) both included 4 countries. However, just as in the case of the other rankings, it is noteworthy that making it to the list of the 55 examined countries is already a big deal.

4. The position of the Visegrád Four in rankings

Having analyzed the rankings, it is worth examining where the Visegrád Four (Poland, Czech Republic, Slovakia and Hungary) are located in each list, and understanding how good their brands are.

Although detailed information on the 2018 version of the *Anholt Nation Brands* ranking is not publicly available, we did have access to the detailed list for 2016. Based on those data, Poland was the best ranked, followed by Hungary, and the Czech Republic, having achieved the 26th, 28th and 30th positions. Slovakia was not featured in the list.

The 29th position of the Czech Republic in the 75-country ranking of the *FutureBrands* survey is rather surprising, especially in the light of the fact that in most of the other indexes the country achieved a similar position to Hungary. Poland finished 45th, Hungary 56th, and Slovakia 59th in the same ranking.

In *Bloom's lists on tourism and trade,* Poland is ranked best of the four Visegrád countries: it is 31st and 36th. Hungary and Czech Republic follow closely, and Slovakia fell behind in the ranking.

The latest (2018) *Young&Rubicam Best Countries* overall ranking features Poland in the 32nd position, while the Czech Republic finished 33rd. Hungary is in the 38th position.

Last, but not least, the Czech Republic (65.6 points) and Hungary (62.0 points) was ranked 'average' in the 55-country *Country RepTrak* list published by Reputation Institute. With those scores they achieved the 21^{st} and 25^{th} positions. An interesting fact is that France (ranked 18^{th} with 69.3 points) and Germany (ranked 19^{th} with 68.5 points) also belong to the 'average' category including countries having achieved a result between 60 and 70 points. However, Poland falls behind, and is classified as 'weak' with its performance under 60 – its 59.5 points is only enough for the 30^{th} position, with Malaysia and South Korea as its two "neighbours". Slovakia is not included in this ranking, either.

After all this, it is worth comparing the results of the Visegrád countries in a summary table. It is clear from Table 1 that Poland triumphed in 4 rankings out of 6. The main reason of this is probably related to the size and economic weight of the country. For example, it is striking that the country finished in a remarkable 31st position in the Bloom trade ranking of 193 countries. The performance of the Czech Republic in FutureBrands' list was also an extremely positive surprise, and Hungarians were ranked in the middle of each ranking. However, Slovakia is not even featured in three of the lists (Anholt-GfK, Y&R Best Countries, Country RepTrak), and in the remaining three rankings they finished fourth in terms of a comparison of Visegrád Four countries.

This leads us to conclude that Poland's country brand is the strongest of the four Visegrád Countries, the Czech Republic and Hungary are more or less on the same level (although the perception of the Czechs is slightly better), while the perception of Slovakia's country brand is the weakest.

	Number of countries examined	Poland	Hungary	Czech Republic	Slovakia
Anholt-GfK Roper Nation Brands (2016)	50	26.	28.	31.	-
Futurebrands (2014-2015)	75	45.	56.	29.	59.
Bloom Consulting Country Brand Rankings (Trade) (2017)	193	31.	53.	48.	78.
Bloom Consulting Country Brand Rankings (Tourism) (2017)	193	36.	57.	58.	83.
Young&Rubicam Best Countries (2018)	80	32.	38.	33.	-
Reputation Institute	55	30.	25.	21.	-

 Table 1

 The position of Hungary and the other V4 countries in country brand rankings

	1		
Country RepTrak (2018)			

Source: Results based on the rankings presented above, edited by the author

Conclusions

The collection and analysis of country brand rankings provided added value primarily through the studying of their methodology. As a result of their different criteria and weighting, we can see differences in the countries' places on these lists, but the strongest brands and the top 10 countries are almost always the same.

Considering further lines of research, it may be worthwhile to compile a country brand ranking list with a Central and Eastern European focus. The exciting question is where the boundaries of mutual cooperation and competition lie. Is there a V4 brand? What may be its components? How could the four member countries be more competitive together and individually in country brand rankings?

References

- BAV Group (2018): BAV Group Unveils 2018 Best Countries Rankings (URL: https://www.bavgroup.com/brands-culture/bav-group-unveils-2018-best-countries-rankings, published: 23 January 2018, downloaded: 2 November 2018)
- [2] Bloom Consulting (2018a): Bloom Consulting Country Brand Ranking 2017-2018 Tourism Edition. (URL: https://www.bloomconsulting.com/en/pdf/rankings/Bloom_Consulting_Country_Brand_Ran king_Tourism.pdf, downloaded: 30 May 2018)
- [3] Bloom Consulting (2018b): Bloom Consulting Country Brand Ranking 2017-2018 Trade Edition (URL: https://www.bloomconsulting.com/en/pdf/rankings/Bloom_Consulting_Country_Brand_Ran king_Trade.pdf, downloaded: 30 May 2018)
- [4] Bod, Péter Ákos (2009): Magyarország tőkepiaci megítélése Okok és következmények. ("Hungary's capital market perception – Reasons and consequences") Marketing és Menedzsment, 43(2), 30-37.
- [5] BrandZ (2018): Top 100 Global Brands 2018 (URL: http://brandz.com/admin/uploads/files/BZ_Global_2018_DL.pdf, downloaded: 1 November 2018.)
- [6] FutureBrand (2015): Country Brand Index 2014-2015. (URL: https://www.futurebrand.com/uploads/CBI2014-5.pdf, downloaded: 26 October 2018)

- [7] GfK Research (2017): Anholt-GfK Roper Nation Brands Index. Gfk Custom Research North America.
- [8] Interbrand (2018): Best Global Brands 2013 (URL: https://www.interbrand.com/best-brands/best-globalbrands/2018/ranking/, downloaded: 1 November 2018)
- [9] Turizmus Online (2016): Rosszabbnak értékeljük hazánkat, mint Oroszországot. ("Our perception of our own country is worse than that of Russia") Turizmus Online. (URL: http://turizmusonline.hu/belfold/cikk/rosszabbnak_ertekeljuk_hazankat_ mint_oroszorszagot, published: 19 September 2016, downloaded: 2 November 2018)
- [10]US News (2018): Best Countries Rankings, News, Country Profiles (URL: https://www.usnews.com/news/best-countries, downloaded: 25 November 2018)
- [11]Y&R (2017): Y&R's BAV Consulting Unveils Annual Best Countries Rankings (URL: https://www.yr.com/the-pulse/y-r-s-bav-consultingunveils-annual-best-countries-rankings, published: 6 March 2017, downloaded: 4 November 2018)

Succes Factors of CRM projects

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Abstract: The aim of this article is to gather all of necessary steps and stages to reach best effort by these special system implementations. Customer Relationship Management (CRM) systems have been established with high excpectations by companies to win more and more new customers, improve their customer retentations ratio and increase Customer Value. At the end of this professional summary the readers will have a high level overview about CRM projects to support these systems extensions on worldwide market.

Keywords: Customer Relationship Management (CRM), Srategy, Customer Value, Risk, Quality

1. Introduction

Due to the fast-changing world in nowadays, businesses need to implement a customer strategy that will quickly respond to market changes through which they can meet their customers' individual needs. The impact of globalization on business felt in many areas, as consumers can choose from more than one competitors, mutation of products and services challenge market participants and, last but not least, the increase in the number of sales channels required for sales activity also significantly contributes to rethinking the existing strategy. The sales vision of companies sometimes focuses on acquiring new customers, otherwise keeping existing ones, increasing efficiency. To overcome these challenges, company can call on an integrated Customer Management System known as Customer Relationship Management (CRM) as an effective solution to reach best effort on their market.

2. About CRM in General

Definitions

There are several approaches to defining CRM and its inherent integrated systems, both by international and domestic authors. I have tried to present several approaches, the necessity of which lies in a more precise understanding. The customer relationship management approach has received much attention in marketing thought during the last three decades. At the core of this approach is the use of IT-based systems (CRM systems) to manage customer relationships, and also relationships within an organization with the ultimate purpose of creating customer value. A CRM system may be defined to be Technologies that support the planning, execution and monitoring of customer interactions. (Payne-Frow, 2006)

According to Coltman, Devinney, and Midgley (Coltman et. al, 2011), CRM is increasingly important to firms as they seek to improve their profits through longer term relationships with customers. (kebede-Tegegne, 2018) In recent years, many have invested heavily in IT assets to better manage their interactions with customers before, during and after purchase (Bohling et. al, 2006). Yet, measurable returns from IT investment programs rarely arise from a narrow concentration on IT alone, with the most successful programs combining technology with the effective organization of people and their skills (Piccoli, 2205). Most of the research in CRM and customer exit investigates the processes separately without linking the two processes together (Colgate, 2006). Based on literatures, this study developed a customer retention model linking several major constructs that are proposed to impact a customer's decision to stay with, or leave, his or her current bank. The literature suggests that there is a positive relationship between consumers' behavioral intentions and customers loyalty and customer retention in banks. Furthermore, there is a positive relationship between customer satisfaction and customer value and consumers' behavioral intentions and customer retention. Similarly, there is a positive relationship between competitive advantage, customer satisfaction, customer value, corporate image, switching barriers, customer loyalty and customer retention.

Types of CRM systems

Operational CRM:,,The main task is to provide technical support of direct management by the help of information science. It performs integrated and continuous collection of data meanwhile consolidating information. Information of client interactions, which are coming from the outer channels, is managed, recorded and computerized by the Operational CRM system. The system supports tasks from related functional fields like Implementation, client service and marketing. Operational CRM systems are able to report a wide range of client data, but they cannot be used for information analysis. The first and the most important systems' tasks to support daily operational duties duties (marketing,

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 138

Implementation, client service, production development) of contact management." (Deák-Mester, 2005)

Analitical CRM:,,Due to the analysis of customer information collected by the operational CRM software and other outer data sources such knowledge can be gained, which can give significant advantage for the organization in any field of contact management. Reports are able to facilitate company management providing further advantages: observation of client segmentation; client dropout is a potential task of marketing. Realizations based on the purchasing models provide significant information for realization. Amount of complaints in different regions has high importance in the terms of customer care.

It should be mentioned that system helps on the way of company's strategy Implementation. Nevertheless, analytical methods should be realized only after setting up the Operational CRM System." (Deák-Mester, 2005)

Collaborative CRM: "Perhaps this field of information technology develops most rapidly nowadays. Spread and development of mobile tools are significant for those merchants who are working in the field of Implementation. On-line mobile networking and Internet connection spread widely. Off-line network with a central database plays important role in providing extensive data safety and extending mobile tools accessibility." (Deák-Mester, 2005)

3. Main Steps of successful CRM Project

In the previous chapters there were mostly underlying CRM backgrounds, but the success factors must be examined before the detailed of the necessary processes for implementation. Implementation of the system are separate processes, which only you can clearly understand each detailed. Many solution available if you want to introduce a company's CRM system, however, the selected software developed individually, boxed, or the existence of these is essential. (Payne, 2006)

Analysis of risks

Lack of expertise: The lack of expertise is most likely to be measured by human resources, as many leaders have realized that a complex project requires expertise that is lacking in the companies.

Insufficient investment: The budget for CRM projects is high, so many companies try to eliminate this by opting for fast-paced systems that may not always prove to be profitable.

Insufficient Data Quality and Data: One of the inhibitory factors is the inadequacy of available data, which can be a key issue at an early stage.

Lack of Understanding of Business Benefits: The lack of understanding and communication of benefits arising from the system can be a significant factor in introducing a successful system. This is to say that top executives who consider it expensive to maintain the CRM data warehouse will not be able to see the benefits of the system.

Functional barriers: Mostly, problems may arise in co-operation between the heads of the departmental divisions, they are not willing to help the project team work. This is an essential element of change management, which is also important when implementing the system.

Lack of Leadership representation: The most advanced senior executives are good customer relationship leaders nowadays. This factor can be one of the key issues in change management, as these managers can see what benefits the system should offer to their backward partners in a position.

Inadequate Performance Measurement Systems: Measuring Customer Relationships is a key factor in the system, since measurability gives success rates. In many cases, this key problem is missing or incorrectly defined in companies.

Process of Strategy Improvement

According to Adrian Payne, who is perhaps the industry's most prestigious authority, the strategy development process is in the first place, as it sets the nature of further processes and defines the company's CRM objectives. In reference to the CRM systems, the above-mentioned customer strategy is at the forefront, as creating the right direction will greatly help us to further structure the system. Segmentation involves these issues, through which we can get our potential customers and we can group our current customers. During segmentation, it is important to ensure that the company is genuinely the best way to create the segments through which it will be able to target target groups that CRM can provide on the basis of customer information. When creating a customer strategy, care must be taken to ensure that the corporate strategy is consistent with the factors under investigation. Defining the target market is an indispensable tool for the process, and it is also important to choose the method by which we want to serve the targeted customer segments. The basis for the segmentation in this case should be the correct segmentation of the segment, which requires a lot of creativity from the labor involved, whether it be a marketing or a salesman. Once you have the right levels, you need to think about how your company is heading towards mass marketing or choosing individualized sales.

From the other side Eisinger and Józsa have similar opinion about the analysis of the Hungarian sugar market. With the introduction of CRM systems, it could be more transparent to analyse the consumption habits in sugar market. It is clear, that the companies not jet introduced in Hungarian sugar market CRM system, but it could be important to improve their strategy. (Józsa-Eisinger, 2010) Competitive

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 140

environment and competitors definitely make necessary efficiency and strategy or the so-called management whose goal is not merely to control. (Gyenge – Buresch – Kozma, 2013)

Process of Value Foundation

One of the most important goals of the CRM system is to create relationships with the segments that can generate profitable revenue. If we do not pay enough attention to the values given to the most important clients, the value of the company bids will also be reduced. It is important, then, to create an ideal balance where both of the two parties meet. Recognizing conflicts of interest is the cornerstone of value creation, as the client's centricity can not go into excessive customer service, where no profit is created.

Determining the value provided to a client is not a complicated task, as it is nothing more than an added value through products and services. To achieve a successful CRM strategy, it is imperative to understand what the customer is buying. When you buy from us, you can benefit from our offer. The basic offer must in principle be supplemented, since the added value only arises if something is offered to customers. It is important to be aware of the properties of our products and services and find the communication that can be a source of awareness to the customer through which he or she may feel different when he buys us. Determining the value of customers can be distorted in many companies because they are still looking at profits through products and services, even if customers make a profit. Pareto has developed a theory called the 80/20 Pareto Rule. Its essence is that 80% of the company's total revenue is usually generated by 20% of customers and 80% of the total cost of serving customers is spent on 20% of customers. (Keller-Happ, 2016) It can be said that profits in each segment may be different, the finding of which is a key task. Examining values can help where the company sets the key clients you want to keep. They need to create the synergy through which we can increase profits and where both parties have been satisfied.

Integration of multi Sales Chanels

The process of integrating sales multichannels have a significant role in the successful introduction of CRM as it transforms corporate strategy and value creation process into value-added customer interactions. If you want to put the most important issues in the process, two factors can be mentioned: What is the best way to reach a client and how an affordable customer experience looks like. Ongoing task is up to get the company's campaigns and sales activities at the highest level. Finding the best method is a very difficult thing, as we can now reach a consumer on a number of roads. Today, it is typical that sales through

automated systems (SFA) are attempting to reach the maximum of personalization, but of course, the human resource's capability, of course, for both training and attitude. A negative factor, however, can be on the sales staff for limited access to them and may not always be able to serve all customers or even halfway. Many companies have therefore established a sales network, which in turn is a costly marketing channel, so others are more receptive to the traditional sales staff. There are many benefits from the physical manifestation of shops, as they can give the consumer peace of mind through the opportunity to get familiar with the products. The skills of employees working in stores can further increase this feeling in the end-user as they can help with specific questions and possibly decision-making. However, negative factors appear as well, as opening hours can limit buyers' traffic, and by virtue of on-line revenue, the physical presence of customers in the various shops is slowly disappearing. E-commerce started to grow in parallel with the spread of the Internet.

Nowadays, this channel is the most widely used, as it is possible to track customer behavior through various technologies to build a strategy later on. However, there is no way for the physical experience of the product, and there is also a question of mistrust. If the company chooses the right channel for them, they should be reviewed for their profitability and if one does not bring the expected results worthwhile. However, integration of off-line and on-line sales channels may help to improve CRM, but this is only possible if consensus is reached between the different functional areas and can determine the image of the channels. The background to this is the process of information management, through which it is possible to get a sense of the consistency of the different sales channels.

Process of Information Management

The process now being presented covers two main areas. One of these areas is gathering and organizing information from buyers, updating the information mentioned above, and assigning them to CRM-related departments. The aim of managing this information is thus to find a coherent balance between intelligent and ideal operation. For CRM systems, this goal can not be different because the acquired information needs to be transformed into knowledge so that employees can serve their achievements. That is why we can say that information management involves the systematization, use and regulation of information. It is worth introducing the information management process itself in two phases. Combining one's organization's information needs with the CRM strategy and the other is selecting technology for the strategy. These are presented separately to understand the horizontal position of the process in the model and we really know the importance of it. The need for information needs is important because data received through sales channels are not always important and should therefore be selected in accordance with the strategy. Because the CRM system has technical limitations (storage, maintenance, etc.), it is important to ensure that the most

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 142

important information is included in the system. The question of what information is relevant to the company is that the company has identified the segments in the processes and wants to sell them most efficiently. Through this process, we can achieve that the organization is customer-centric and really can think about with the customer. Taking these factors into account, it is worth developing the information management structure to meet the CRM strategy. Information obtained from customers is therefore really important, but only if the goal behind them is in line with the strategy. Many companies fall into the dock to record every interaction with the customer and lose the list of important things during the listing. The essence of the system is that the processes are automated and this can only be achieved with the required information set. As decision-makers decide on the need for information, central consensus is also a significant factor in the process being studied. "Many have tried to describe the process of decisionmaking. No one has properly succeeded, so it is still up to humans to use the knowledge they need when they need it, then and there. One cannot make decisions based on the few steps described by decision algorithms. The thinking of a decision maker is an internal monologue whose building blocks are meaningful symbols. They are not comprised of data, nor do they operate according to the laws of mathematical logic" (Velencei, 2016, p.3).

Process of Performance Evaluation

The final phase of the CRM strategic model is the process of benchmarking, where it is possible to determine the direction of future developments. Performance evaluation can be approached from two sides, which can categorized based on economy point of view. One such approach is exploring ownership interests (macro environment) and the other exploring factors describing performance (micro environment). There has not been a single statement to measure the success of the system, but companies can formulate benchmarks that can be tested. As I have already said, these indicators should cover areas affecting the system as well as financial indicators that are indirectly influenced by the results achieved. Profit is the primary consideration for the owners and the company's strength in the market. For management, it is important to create this environment, which can only be controlled by continuous measurements. Monitoring the results can also help reverse direction if the trend is negative. Exploring the factors affecting the profits expected by the owners is not a simple task, since the economy of companies is a complex process. As I have described in the value creation process, the value of the buyer's values and the employee's benefits greatly contribute to profit growth. Of course, you have to know the expected values because you can only plan and analyze it based on one goal. Nowadays it is not enought to think in corporate level, because of the organization and planning of supply chains have become a strategic area, the companies presence in the supply chain play an important role in their growth and expansions. Supply chain management provides many advantages to companies

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 143

connected to the chain. Due to organizational techniques and a high degree of coordination, work sharing and capacity utilization improve. (Kozma, 2017)

Summary

In the article, there are clear indications of what are the main steps of a successful CRM project, the factors that need to go through in order to meet the expectations of the system. Of course, these processes are company-dependent and can not be drawn to companies operating in different industries. Most of the CRM projects are backed up in many cases as capital investment is sometimes negligible compared to the company's financial position.

However, small and medium-sized companies with significant implementation of such a system may expect to follow-up, mostly in terms of profit, new customers, and customer retention rates. In sum, before the expectations of such projects, enterprise maturity needs to be recognized and serious strategic guidelines need to be developed to maximize returns. If they are missing, then the system will not be expected to produce the expected results, and companies may mistake that they take the wrong investment for the project to be delivered. This is dangerous because other IT investments can measure and stop in continuous development.

References

- Bohling, T., Bowman, D., LaValle, S., Mittal, V., Narayandas, D., Ramani, G., & Varadarajan, R. (2006). CRM implementation: Effectiveness issues and insights. Journal of Services Research, 9(2), 184–194.
- [2] Colgate, M., & Norris, M. (2001). Developing a comprehensive picture of service failure. International Journal of Service Industry Management, 12(3/4),
- [3] Coltman, T., Devinney, T. M., & Midgley, D. F. (2011). Customer relationship management and firm performance. Journal of Information Technology, 26(3), 205–219.
- [4] Deak Cs.- Mester Cs. (2005): Change management in the backstage of CRM projects, Miskolc University, 3-5 p.,
- [5] Gyenge B. Buresch J. Kozma T. (2013): How to Measure the Efficiency of Management Strategy in Organisational Structure. In: Felicjan Bylok, Leszek Cichobłaziński (szerk.) HUMAN CAPITAL AND CORPORATE RESPONSIBILITY. 284 p. Lengyelország Czestochowa: Politechniki Czestochowskiej, pp. 60-72.
- [6] Józsa, L., Eisinger, B., (2010): Strategic Analysis through the Example of the Hungarian Sugar Market, In: Strategic Management: International Journal Of Strategic Management And Decision Support System In Strategic Management 15:(1) pp. 39-45.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 144
- [7] Kebede A. M. & Tegegne Z. L. (2018) The effect of customer relationship management on bank performance: In context of commercial banks in Amhara Region, Ethiopia Cogent Business & Management No 5, https://doi.org/10.1080/23311975.2018.1499183
- [8] Keller; V Happ É. (2016) Planning and Resources of Integrated marketing communication: Lecture notes, Győr, Magyarország : Szerzői kiadás 201 p.
- [9] Kozma, T. (2017): COOPERATION IN THE SUPPLY CHAIN NETWORK. FORUM SCIENTIAE OECONOMIA 5 : 3 pp. 45-58., 14 p.
- [10]Payne, A. (2006): CRM Handbook, Oxford ; Burlington, MA : Elsevier Butterworth-Heinemann
- [11]Payne, A., & Frow, P. (2006). Customer relationship management: From strategy to implementation. Journal of Marketing Management, 22, 135– 168.
- [12]Piccoli, G., & Ives, B. (2005). IT-dependent strategic initiatives and sustained competitive advantage: A review and synthesis of the literature. Mis Quarterly, 29(4), 747-776.
- [13]Velencei, J. (2016). Developing a Massive Open Online Course by Cmap-tool. International Journal of Management and Applied Science, 2(12), 1-4. http://www.iraj.in/journal/journal_file/journal_pdf/14-328-14852502001-4.pdf

"Success is not final, failure is not fatal" – What can we learn from the fashion industry?

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Abstract: The fashion industry has become an unavoidable factor in people's everyday lives by the 21st century; even affecting the lives of consumers who do not consider themselves "fashionable". During the 2008 crisis, one of the largest fashion companies, Inditex Group, has not only lost revenue but has shown one of the biggest developments. Due to the short lifetime of products, companies need to quickly and efficiently deliver the latest trends to users, so besides successful marketing activity the supply chains in the fashion industry have to prominently effective and highly organised comparing with other industries. In this empirical paper we analyse the latest trends and challenges of fashion industry. We found that fashion indutry involves many current hot topics from other sectors, such as failure of earlier starts or the debate about the future functions and roles of on-line business or how to behave like a start-up or the rising demand for fashion both in the Near and Far East.

Keywords: fashion industry, supply chain management

1. Introduction

In today's economic environment, a fashion conglomerate can have the same weight as any other industry, whether it is a stock exchange or an investment. The Business of Fashion (BOF), one of the most well-known fashion professional websites, in association with McKinsey & Company, one of the world's leading consulting companies, has for the first time published an annual analysis and forecast of fashion as an industry (see: The State of Fashion 2017). Between 2015 and 2018, the turnover of online fashion products grew threefold (Debreceni, 2018). So we think that Winston Churchill's saying – "Success is not final, failure is not fatal: it is the courage to continue that counts." – is applicable to the modern fashion industry as well.

At the turn of the century, thanks to globalization, the fashion industry started to develop explosively. In addition to mass production, the emergence of mass communication has also led to the emergence and strengthening of the fashion industry. With the help of newspapers and magazines, more and more people have access to the latest fashion trends, creating the potential for advertising and their

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 146

increasing influence. The fashion capitals such as London or Paris, and finally in the middle of the century in New York, began to develop in this period. In the 20th century, with the emergence of new media, fashion has evolved and evolved. In addition to magazines, the music and film industry has become more and more interested in fashion, creating new opportunities for product distribution. The press began to encourage people to copy their celebrity clothes. Fashion magazines have had a great deal of power and not only impacted on customers, but also on fashion houses, and thus on trends (Csipes 2006). The new millennium has completely changed due to the reorganization and increase of fashion, consumption and communication. As the world accelerated, fashion accelerated as well.

Nowadays, more and more fashion companies are losing out on traditional sales that require actual store presence, or if they still retain this form of sales, they are trying to open less and less expensive stores. Their real, in-house service introduces a customer experience that can significantly differentiate themselves from an online sales platform. Today's big fashion companies also have to learn to think of as a start-up company. Fashion itself is very volatile, it has to adapt to not only changing collections constantly, but the way it works also requires huge flexibility in today's world. They must be open to change both culturally and digitally.

In this paper, we present some of the emerging trends in the rapidly changing fashion industry, which can be useful for other industries too while the need for ever-accelerating adjustment will be strengthened in other sectors of the economy. According to expert forecasts, customization and speed in many industries will be the most important competitive factors. Businesses can respond to consumer needs faster and more accurately by building a direct relationship with users. The revolutionary innovations of the Spanish Zara are well-known, but the other players in the industry have met the challenges, the proven methods and solutions in the fashion industry that can provide a significant competitive advantage to other companies as well. Prior to the analysis of expert in-depth interviews, the relevant literature findings are collected below.

2. Short literature review

The fashion mechanism of fashion was formulated by Simmel in his essay entitled "Fashion" (Simmel 1973, p. 473-507). Simmel (1973) is based on the fact that human being is dualistic: he wants to be part of a community at the same time, to merge (to aspire to the general) and to stand out (grasping uniqueness). Fashion can do this duality. Fashion, although it has a historical aspect, is basically about the present: Baudrillard writes that fashion always creates the status of the present, that is, a synchronicity (Baudrillard 1987, pp. 161-183).

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 147

In addition, we can also see that fashion affects almost every aspect of our lives. For example, it has its own fashion for speaking, spending leisure time, using social media, computing and, of course, clothing. In this study, we deal with clothing fashion products and we look at its supply chain.

Kandikó (1982) put fashion into economic light: Fashion – not forgetting its aesthetic, psychological and sociological aspects – is basically an economic factor that induces new demand by accelerating the moral wear of the existing garment stock (cited by Kovács 2009). This definition illustrates that fashion is part of the economy, based on demand-supply relationships, but also refers to other features of fashion. So fashion is a complex phenomenon that affects several fields of science, and affects almost every area and product of everyday life.

There has been a change in the chain of distribution with the acceleration of the processes: the number of intermediate steps decreases. With the emergence and intense spread of the Internet, the fashion industry is increasingly oriented towards the digital environment. The main reason for this is that the needs of the fast and continuous change of fashion are mostly served by the most frequently visited sites of the Internet and by the users, the community. On the corporate side, communication and transaction costs are reduced. The fact that production moves to the pull system instead of the push system, where customer needs are becoming more prominent and determining roles (Szegedi et al., 2017).

The theoretical examination of supply chains often raises the question of the starting point, ie how long we should go back in the supply chain. In the case of the fashion industry, it may be worthwhile to start with the textile industry. The textile industry is one of the oldest craft activities, and today it is one of the most industrialized. In fact, we distinguish between the textile industry – we are talking about yarn production – and the clothing industry, which includes the fashion industry. The characteristics of the textile and yarn industry are very different from those of the clothing industry, but this does not belong to our focus now. However fashion supply chains are not only special for this. There are several types of products in the fashion industry that require different supply chains: from the fast fashion products to the everyday FMCG, as well as the ready-to-wear products, to the range of luxury products. In addition to this, we can add the bullwhip effect, which, in the supply chain, shows upward trends in demand, which means that the previous uncertainties in the supply chain at the end of the chain – in our case in the textile industry – accumulate.

So far, most of the traffic has been carried out by North America and Europe, but by now the Far East market already has a share of over 50% worldwide (BOF-McKinsey, 2018). As a result, some major brands, for example, are already designing collections for the Far East, tailoring their clothes to that body. In addition, ethnic differences can be a driving force for a trend, a collection. A good example of this is Christian Louboutin's 2013 nude (body color) shoe collection: so far, the body color has adapted to the European skin color, but the company has

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 148

now created another four-body high heels so that any ethnic lady can find her own skin color.

The strength of the fashion industry is shown by the fact that during the recent crisis, the strongest brands and groups at that time hardly felt, or barely, the negative effects. Large fast fashion companies come up with eco-conscious products and campaigns and many of the luxury brands work with recycled materials (e.g. Modern Meadow's cow-less leather created in an eco-friendly process). As long as this macro factor has been negligible for companies a few years ago, it may have become one of the most important elements today. Environmental awareness is no longer just a trend for buyers (including buyers of more affluent markets with higher purchasing potential), but a basic requirement that can lead to big brands failing. This affects both the source, preparation, normalization of production processes, but also the collection of waste generated in the store.

Entry barriers to the market are fundamentally high, because on the one hand capital is efficient to create an efficient, fast-functioning supply chain, and on the other hand an innovative idea is needed. Due to market saturation, product differentiation is a must for a new entrant. Fashion is virtually the market for substitutable products.

Despite the fact that a fashion item usually disappears from the market within a year, its production and the creation of that collection take still more than two years for most major brands. One of the most powerful hit cards of fast fashion brands is that this time has been radically shortened, for example, Zara has been getting one and a half months from the start of the idea to getting the product to the store because they are also the source of raw materials and all other supply chains in their hands to do so, shortening the time (Horváth, 2012). The idea behind this is that today's big fashion companies have to learn to think a bit of a start-up company.

3. Results of empirical research

During our empirical research, we have conducted in-depth interviews with fashion industry managers. Method of sampling: based on the original design, we wanted to interview four professionals in various categories of fashion industry who have been in management for many years (fast fashion, ready-to-wear, luxury, Hungarian fashion). Finally, three people were able to talk in the spring of 2018, because the employees of the well-known luxury supermarkets have to make a privacy statement, ie they cannot give any information on any professional matters. Since the other three professionals were able to comment not only on their own category, but could cover the entire industry and have a high level of

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 149

professionalism in any fashion industry, they are considered an authentic expert interview. The most important topics involved together with their findings Figure 1 summarizes.

Main characteristics of the interviewees:

A. Man, working in the fashion industry for 15 years, is currently the director of a Slovenian-owned franchise of the Spanish ready-to-wear brand operating internationally.

B. Woman, active fashion designer for nearly 25 years. She knows all the layers, actors and peculiarities of the Hungarian fashion industry.

C. Woman, has been working in the fashion industry for 10 years. She is currently leading several branches of a Scottish luxury fashion store, and has been in a ready-to-wear sports brand for many years.

They see that in terms of the development of the production chain, the different countries are moving at a very different pace: while 25 years ago Italy represented still a great power in fashion branch, they have now lost their position, which is also due to their inability to speed up and rationalize production processes. A good example of this is Spain, especially the Inditex group, who have exploded over the past 20 years by finding a very effective supply route from product design to the store.

In connection with the significant loss of Italian brands, we might recall the case of Nokia, which has been a global leader in mobile manufacturing for years, but its market-leading role in the two thousand years has been heavily influenced by the appearance of smart phones and some defective strategic decisions. The legendary phone manufacturer started to focus on its new activities, but the Finnish company reached only about half of the \notin 51.6 billion produced in the golden age of the year 2007 (Hlács 2018).

According to experts, environmental protection is becoming more and more important in the fashion industry, so it appears in several brands, both in the luxury and fast fashion sectors, but for the time it is only the buyers of the former category and especially the western societies who treat it as value. Based on the experience of the in-depth interviews, companies have to pay attention to the environmental protection, e.g. using organic cotton and more natural materials (A thinks), even if this makes the product a bit more expensive, as consumers will turn to this direction over time. B is less optimistic because, as she said, the practical application of environmental principles is not sustainable at all due to the constant change in fashion. She thinks companies should focus on packaging (especially luxury companies use a lot of unnecessary packaging materials), and while customers are getting more demanding on environmental grinciples includes products that are not sold or the fate of defective products, because they should not be burned but they should be outleted or donated. Unfortunately, in

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 150

many cases, this is a rule and violation, so companies are often forced to destroy wearable clothes. When buying fashion products, the image and the promise are even more important, as people who receive environmental awareness are gaining prestige.

The use of modern technology is also becoming increasingly important for the fashion industry. The latest systems are usually very expensive, but in order to remain competitive, they have to mix them with existing technologies (A). The leader in this field is the Inditex Group: the RFID (Radio Frequency) system is used for all products, which means that they put a small chip in every product filled with all the features of the product, which reads instant information not only about the item, but its current stock.

Distribution	Off-line channels are still important; Personal selling in on-line too
Environmental awareness	In case of products, processes, packaging, fair trade, waste, marketing message; Various views of its relevance
Fashion products (clothes)	Promise, prestige purchase
Role of internet	Collecting information, purchase, influencers
Communication	Traditional communication still important e.g. dress-show; Roles of influencers and bloggers
Technology	Active use of high tech tools, AI

Figure 1

Summary of survay

According to experts, the fashion industry has turned to the on-line distribution chains and solutions. In addition, B and C highlighted the role of influenzers and bloggers, while A says the industry has moved towards linking mobile applications with webshops. Looking to the future, A believes that, while Internet usage is all about simplifying, making it easier, the results of Internet marketing activities are still more difficult to evaluate than the efficiency of traditional routes, and the recent data management scandals make it questionable whether it is really the ideal channel for the future. According to B, there will be a justification for traditional communication, because it is still possible to present the brand's

values and the latest concept with traditional channels: fashion shows or newspaper advertisements. Marketing is driven by the ever-accelerating trend of fashion change and the need for personalization of customers.

While on-line interfaces can take a few minutes of custom-made gym shoes, and the customer can filter products as he / she feels, browsing the offline channels is either impossible or very time-consuming and demanding money. The most effective marketing tool is according to A - in case of offline distribution – the proper selection of store location and design. As an example of this, Inditex Group does not use any classical marketing tools (does not advertise, organize actions outside of seasonal discounts, etc.), but pursues a very powerful location strategy alongside its modern distribution channel. In the luxury category C has the view that catalogs still have a great deal of strength, as people who buy products of this category are still demanding on printed materials because they feel they give them exclusivity, and only a limited number of people can access it. In addition, the catalog can help both on-line and offline sales.

4. Conclusions

All in all, based on the research, it can be stated that both marketing communication and sales are slowly shifting towards the on-linr sphere. However, for all categories, offline channels remain key as personal sales are still a very strong factor. That's why every big company needs to integrate online interfaces to some extent, which can be a particular problem for an old, traditional brand. They should strive to give customers – especially in more expensive categories – the same care and service as they would go into the store personally. They need to provide the right size information on the web pages, but after a few minutes of watching a few luxury sites, for example, a chat window will pop up, on the other side of a person who will offer his or her help as if in person to meet the buyer in the shop.

In the fashion industry, customer feedback and interactive communication are essential, although in the increasingly digitalized and automated world, they are beginning to decline. Nowadays, most of the feedback (almost at fast fashion, and more and more at ready-to-wear) is based on the analysis of sales data, relying on digital platforms, not on the customer's personal opinion. However, according to experts, these feedbacks are very valuable.

Customers should be given name messages, not allowed to be lost. The strongest tools of online sales companies are the algorithms (which can help customers to buy products that match the customer's taste), the most effective offline tools of luxury and ready-to-wear categories are the sellers (who need to be supported and asked), fast fashion- and optimized product distribution channels.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 152

Studying the fashion industry has many advantages, because the solutions to the challenges of accelerated activity can be used by other industry due to the basic need for rapid adaptation. Further research could point to the successful implementation of customer-orientation today in different categories, as well as current issues of global connectivity and dependence on the textile, clothing supply chain.

References

- Baudrillard, J. (1987): Modellek és sorozatok. In: A tárgyak rendszere. Budapest, Gondolat Kiadó, pp. 161-183.
- [2] Csipes A. (2006): Divattükör. Budapest, Osiris Kiadó
- [3] Debreceni B. (2018): Egyéves a magyar piacon a GLAMI. 2018.10.25. https://markamonitor.hu/2018/10/25/egyeves-a-magyar-piacon-a-glami/ letöltve: 2019.03.22.
- [4] Hlács F. (2018): Így múlt el a Nokia okos-telefonos dicsősége, 2018.09.12. https://www.hwsw.hu/hirek/59359/nokia-microsoft-stephenelop-tortenelem-windows-phone.html letöltve: 2019.03.22.
- [5] Horváth L, (2012): Észak-Spanyolországból a világ tetejére A Zara története. https://player.hu/eletmod/divat/eszak-spanyolorszagbol-a-vilagtetejere-a-zara-tortenete/ letöltve: 2019.03.24.
- [6] Kovács K. (2009): A divattermékek fogyasztása és a divatterjedés racionális és emocionális mozgatói. Budapest, Akadémiai Kiadó
- [7] Simmel, G. ([1911] 1973): A divat. In Válogatott társadalomelméleti tanulmányok. Budapest, Gondolat Kiadó, pp. 473-507.
- [8] The State of Fashion 2018 The Business of Fashion and McKinsey & Company, 2017 https://cdn.businessoffashion.com/reports/The_State_of_Fashion_2018_v 2.pdf letöltve: 2019.03.23.
- [9] Szegedi, Z. Prezenszki, J. (2017): Logisztika menedzsment, Kossuth Kiadó, Budapest, pp. 383-431.

Innovativeness in higher education organizations

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Abstract: The main purpose of this paper is to highlight the role of innovativeness in higher education organizations. Innovativeness has been recognized as an important driver of organizational success in business organizations, while its importance in higher education organizations has not yet been fully recognized and capitalized. In this framework, we are outlining basic starting points for understanding the implication of concept of innovativeness in higher education organizations. Further we discuss various possible facets of innovativeness in higher education organizations and outline key challenges related to the identification of innovations in educational sphere and measurement of innovativeness in higher education organizations. We conclude the paper with some suggestions for further research in this area and provide key building blocks for survey instrument.

Keywords: innovativeness, higher education, research agenda, empirical examination, survey instrument.

1Introduction

Innovativeness has been during the decades recognized as an important driver of organizational success [1][2] and the cornerstone of organizational future development. Adjacently, the focus of the researchers was mainly on the innovativeness in profit oriented organizations [3], while there is paucity of the research about innovativeness, going beyond profit-oriented organizations, addressing innovativeness in public administration, higher education, non-governmental organizations, etc.

Narrowing down to the innovativeness in higher education organizations, the literature offers very general evidences about innovativeness in higher education, which are often presented on several case studies [4][5]. A deep insight into the current literature about innovativeness in higher education reveals that there are few commonly accepted definition of innovativeness in higher education, which will outline numerous possible facets of innovativeness [8], how innovative are higher education organizations [5], etc. In terms of higher education organization key stakeholders - namely students, managers/deans, teachers - at least focus in surveying innovativeness is based on student's perception of "what is innovativeness in higher education organizations" and especially "how innovative are higher education organization", as perceived by the students.

This paper addresses above outlined challenges and provides following contributions in the domain of innovativeness in higher education. First, outlining the starting points for broadening the definition of innovativeness in higher education, which will encompasses numerous facets of innovation and barriers for innovations. Second, outlining the basic components of the questionnaire for surveying innovativeness of higher education organizations, where the focus is on student's perception of innovativeness.

2Theoretical background

2.1 The role of innovativeness in modern society

As European Union Council of Education, Youth and Culture has pointed out, creativity and innovations are crucial to a sustainable economic and social development of Europe. In fostering creativity and innovation, not only higher education, but all levels of education play important role. It further means that higher education institutions and other educational institutions need to "combine the development of specific knowledge and skills with generic capacities linked to creativity, such as curiosity, intuition, critical and lateral thinking, problem solving, experimentation, risk taking and the ability to learn from failure, use of the imagination and hypothetical reasoning, and a sense of entrepreneurship" [1].

In order to maintain their relevance in contemporary society, higher education institutions need innovative responses to turbulent external and internal pressures. The key challenges facing traditional higher education institutions are as follows: the emergence of the knowledge-intensive economy, the need to train creative and innovative workforce, global trends in higher education: massification vs. world class aspirations, and decreased funding and resources for higher education [2].

In a knowledge-based economy, workers not only need to have specialized skills, but they must be creative, work in teams, and adapt to rapidly-changing technologies and innovations. This shift stresses the importance of creativity and innovation and presents an important transition which will dramatically change the nature of employment in the future. Actually, many jobs could be at risk due to exponential advances in computer-controlled equipment, sensory tools, algorithmic sophistication, and processing power. Therefore, workers will need to develop four types of proficiencies: (1) expert knowledge in a given field; (2) the ability to pursue research and development; (3) the ability to engage in interactive problem solving; and (4) the capacity to adapt to changes in communication technologies [2].

As it has been estimated that total number of students will globally increase, higher education institutions may be under the greatest pressure to develop massification strategies. This will particularly be case in developing countries. Without innovative ideas, these countries may find it impossible to build capacity while simultaneously funding research and other important institutional activities. It further means that the focus will be on the quality of higher education, rather than massification. At the same time, international and national ranking systems, along with other comparative indicators, have increased competition between higher education institutions. Thus, higher education institutions aspire to world-class status [2].

Despite the fact that higher education institutions are under pressure to expand opportunities for student enrollment while improving quality, national governments are allocating fewer resources for higher education. In fact, in most European countries, restrictive national budgets intended for higher education can represent another important barrier to innovative learning [3].

2.2 Innovativeness in higher education

With these challenges facing higher education institutions, many higher education institutions around the world strive for survival and seek for competitive advantages through innovations [4]. Innovation can be defined as the implementation not just of new ideas, knowledge and practices but also of improved ideas, knowledge and practices. Many definitions of innovation are used in different contexts and disciplines. However, the most widely accepted definition of innovation comes from the Oslo Manual [5]. According to this definition, innovation is "the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations".

Accordingly, innovation in higher education institutions refers to their ability to produce and implement a new or enhanced process, product, or organizational method which has a considerable effect on the activities of a higher education institution and or its stakeholders such as students, communities, and firms [6].

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 156

Actually, higher education institutions could introduce 1) new products and services, such as a new syllabus, textbooks or educational resources; 2) new processes for delivering their services, such as the use of ICT in e-learning services; 3) new ways of organizing their activities, such as ICT to communicate with students and parents; or 4) new marketing techniques, e.g. differential pricing of postgraduate courses [7].

According to [8] product innovation within the HE environment can be defined as accepting, developing, and implementing new products such as courses, research projects, teaching materials, and curricula. As process innovation introduces new items into an organization's operations, such as task input specifications, equipment, work, and information, it is focused on developing and using technology competently, good financial management, continuous improvement of skills, and implementing incentive reward systems for members of staff so as to stimulate innovation [8].

To overcome various challenges and in order to improve innovativeness, higher education institutions should transform themselves fundamentally. It could be done by strong institutional leadership coupled with policy reforms that promote innovation [9, 10]. Well-designed innovation strategies in higher education could be based on the following [7]:

- Improved measurement and efficient system of knowledge creation and diffusion must be foundation of innovation in education. Efficient system of knowledge creation and diffusion implies extending from scientific research into teaching and learning, to the more applied bodies of knowledge in the teaching profession and knowledge entities in the system.
- Although innovation in education is not synonymous with the introduction of digital technology, innovation strategies should include use of technology for better teaching and learning practices.
- Effective innovation strategies in education must include an appropriate governance model: identifying leaders of change, defining the roles of stakeholders, dealing with resistance, and conceiving effective approaches for scaling and disseminating innovations.
- Finally, innovation in education requires strong evaluation. Without a broad and widely shared culture of evaluation, innovation in education will remain stuck at the level of well-intended but isolated pioneering efforts.

National education sector innovation strategies integrate specific strategies for research, development, targeted innovation and knowledge management in the education system. For example, specific objectives of Hungarian National Education Sector Innovation System (NESIS) are [7]: developing regulatory, organizational and institutional frameworks (e.g. involving stakeholders,

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 157

reviewing specific regulations from the perspective of innovation, strengthening the links between research, practice and policy), improving human conditions (e.g. exploring the human resources which may help innovation, strengthening R&D professionals, developing career models and competence standards), ensuring quality (strengthening quality management and assessment functions, linking quality and innovation, exploiting the potential of international co-operation in the field of quality), improving knowledge management (e.g. activating communication and co-operation among the participants of the knowledge triangle, closing knowledge gaps, national and international co-operation of research and development capacities, supporting the exchange and dissemination of knowledge, sharing good practices, renewing the initial and in-service training of teachers), exploiting the potential for technology development (e.g. making new educational technologies accessible, providing support through funding, incentivizing the use of new applications, introducing an assessment and accreditation system for new technologies).

3Empirical approach for examining innovativeness of higher education organizations

To sum up, the current literature does not offer established and comprehensive instrument which will encompasses key elements and/of facets of innovativeness in higher education organizations, barriers and drivers of innovativeness of higher education, etc; which will be a starting point for measuring innovativeness of higher education organizations.

Based on the above outlined cognitions, we propose an instrument for measuring innovativeness of higher education, which will encompass following elements:

- Institutional framework (modern ICT, government "support", accreditation standards, etc.)
- Intellectual capital (knowledge, upgrading knowledge, in-service training, SOPs, etc.)
- Innovativeness in HE (e-learning, flexibility, students can choose subjects, on-line teaching materials, stimulating of students, mobility of students, co-developing the curricula, etc.)

As outlined in above sections of the paper, there is a substantial lack of studies about innovativeness in higher education in general, as well as those including students' perception about this phenomenon. The innovativeness of higher education has been mostly studied, using case studies [6, 9]. Thus, the innovativeness has not yet been frequently assessed by key higher education organization stakeholders - namely students. In our proposal, innovativeness of

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 158

higher education should be examined by surveying student's perception about various facets about innovativeness. One of the reasons for examination of innovativeness of higher education organizations using student's samples is also quick and inexpensive access to the student population.

Main benefits for using student's population for examining innovativeness in higher education organizations are mainly following: (1) addressing the innovativeness of higher education organizations, by focusing on students as one of the key stakeholders, which were not frequently included in the discussion about innovativeness in higher education organizations; and (2) assessment of current state of innovativeness in higher education organizations from "the customer viewpoint", not only from internal organizational stakeholders.

Assessment of innovativeness of higher education organizations, through the lenses of students, will be beneficial in various ways. For instance, the results will give higher education organizations precise insight into actual state of innovativeness, as perceived by higher education's key stakeholders. These results are representing valuable information for further actions of higher education organizations, in order to improve innovativeness and single elements of innovativeness. For instance, higher education organizations can first address those most tackling, or identify where the discrepancy in the perception of innovativeness between teachers/managers on one hand, and students on the other hand are the highest.

Using student's sample for assessing innovativeness of higher education organizations is certainly not without limitations. First, students, especially those in early years of study are may not well familiar with all the "activities" carried out by the higher education organizations. Consequently, their answers may be misleading, like does higher education organization include students in project work. Second, using student's population may also limit the insight into the "back-stage" activities of higher education organizations, like internal process, relations between employees, atmosphere in organization, etc., since students have limited insight into mentioned areas. Third, students may perceive innovativeness of higher education differently than other key stakeholders - like managers/deans and staff.

Conclusions

To sum up, it is evident that the innovativeness in higher education organizations has been significantly under-examined in comparison to the innovativeness in profit oriented organizations. Adjacently, there is less consensus about the definition of innovation and especially facets of innovativeness in higher education organizations. In terms of key stakeholders - namely managers/deans, teachers and students, the latest were given much less attention than other two groups, when discussing about innovativeness in higher education organizations. In line with outlined cognitions, the main challenges for researcher in the field of innovativeness in higher education organizations will be to (1) provide a

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 159

comprehensive definition of innovativeness in higher education organizations, (2) identify and/or determine facets of innovativeness, key areas of innovativeness, drivers and barriers for innovativeness, (3) provide reliable instrument for surveying innovativeness of higher education, and (4) conduct empirical examination of student's attitudes towards innovativeness in higher education organizations.

References

- Zlatko Nedelko and Vojko Potocan: Personal Values as Drivers of Managerial Innovation - Emerging Research and Opportunities. Hershey: IGI Global, 2019
- [2] Nicolai J. Foss and Tina Saebi: "Fifteen Years of Research on Business Model Innovation: How Far Have We Come, and Where Should We Go?," Journal of Management, vol. 43, 2017, pp. 200-227
- [3] A. Afuah; Business Model Innovations: Concepts, Analysis, and Cases. New York: Routledge, 2014.
- [4] Hong T.M. Bui, Hoa T.M. Nguyen, and Doug Cole; Innovate Higher Education to Enhance Graduate Employability - Rethinking the possibilities. New York: Routledge, 2019
- [5] John Brennan, Simon Broek, Niccolo Durazzi, Bregtje Kamphuis, Marina Ranga, and Steve Ryan; Study on innovation in higher education: final report. European Commission Directorate for Education and Training Study on Innovation in Higher Education. Luxembourg: Publications Office of the European Union, 2014
- [6] Frans A. Van Vught, "Creating Innovations in Higher Education," European Journal of Education, vol. 24, 1989, pp. 249-270
- [7] William G. Tierney and Michael Lanford; "Conceptualizing Innovation in Higher Education," in Higher Education: Handbook of Theory and Research, M. B. Paulsen, Ed., ed Cham: Springer International Publishing, 2016, pp. 1-40
- [8] Lloyd Armstrong; Barriers to Innovation and Change in Higher Education. New York: TIAA-CREF Institute, 2017
- [9] M. Valenčič Zuljan and J. Vogrinc; Facilitating effective student learning through teacher research and innovation. Ljubljana: Faculty of Education, 2010

- [10]EuropeanCommission; High Level Group on the Modernisation of Higher Education. Brussels: European Commission, 2014
- [11]Hamzah Elrehail, Okechukwu Lawrence Emeagwali, Abdallah Alsaad, and Amro Alzghoul; "The impact of Transformational and Authentic leadership on innovation in higher education: The contingent role of knowledge sharing," Telematics and Informatics, vol. 35, 2018, pp. 55-67
- [12]OECD; Oslo Manual Guidelines for Collecting and Interpreting Innovation Data. Paris: OECD Publishing and Eurostat, 2005.
- [13]OECD; Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills. OECD Publishing: Paris, 2016.
- [14]Sawasn Al-Husseini and Ibrahim Elbeltagi; "Transformational leadership and innovation: a comparison study between Iraq's public and private higher education," Studies in Higher Education, vol. 41, 2016, pp. 159-181.
- [15]ICW; College 2.0: Transforming Higher Education through Greater innovation and Smarter Regulation. Washington: Institute for a Competitive Workforce, 2011.

Analyzing Consumer Preferences for Honey: Empirical Evidence from Albania

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Abstract: The honey sector in Albania has experienced significant changes since the transition to a market economy, and the daily per capita consumption of natural honey is now among the highest in the Mediterranean area. A variety of forests and pastures makes possible the production of different types of honey. The main objective of this study consists in examining Albanian customers' buying habits with regard to natural honey in Tirana, Albania. For this purpose, an ordinal regression method is used to examine the relationship between the use of natural honey for medicinal purposes and a set of quality attributes of the same product such as taste, flavor, origin and color. In order to meet these objectives, a set of 353 questionnaires were implemented. Analysis shows that natural honey is clearly part of the diet of people from Tirana, and that the primary reason for consuming honey is to sustain health, not culinary purposes. Among the most important attributes considered in the buying process is the origin of the product, which is one of the attributes that has been demonstrated to generate expectations about other product attributes such as safety and nutritional value.

Keywords: Honey consumption, consumer preferences, safety attributes, ordinal regression

1. Introduction

Europe is the second largest producer of natural honey in the world. Among the largest producers within this area are Spain, Hungary and Romania. Albania produces quite modest amounts of honey compared to the largest producers in Europe, as well as other countries in the same region. The related level of production is also somewhat lower than in the vast majority of Mediterranean countries. Nonetheless, Albanian's per capita consumption of natural honey per

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 162

day is among the highest in the Mediterranean area, only being higher in Greece and Turkey (Table 1). However, consumer habits are notably different. In the latter countries, honey is frequently used for culinary purposes such as preparing traditional desserts, while in Albania honey is mostly used as a dietary product based on perceptions of its curative attributes.

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Attribute	Europe	ALB	СҮР	FRA	GRE	ITA	ESP	TUR
Production (tons in 2017)	390791	3614	515	12393	18000	9500	29393	114471
Consump- tion (g/capita/ day in 2013)	1.8	2.6	1.68	1.51	4.24	0.74	1.82	3.33
Change in production (2007- 2017%)	15	75	-28	-24	22	-21	-8	55

Production and Supply of Honey in selected Mediterranean Countries

Source: http://www.fao.org/faostat/en/#data [1]

The keeping of bees and the production of honey have become common among farmers in Albania, since relief and climatic conditions favor this activity. However, despite the huge potential this activity has in Albania, most production occurs in family businesses which typically cultivate a modest number of hives. Beekeeping is a profitable activity, capable of improving the livelihoods of individuals and rural communities [2]. Albania has long tradition of beekeeping, which is commonly considered a supplementary activity for increasing the revenue of rural families and improving their livelihoods. During the last decade a significant increase in the number of beehives and production of natural honey has occurred. By the end of 2017, the number of beehives in Albania was estimated at 290,000, while in 2006 Albanian beekeepers counted 171,000 beehives. Over the period 2007–2017, natural honey production in Albania continuously increased. In 2017, total natural honey production rose to 3614 tons compared to 2071 tons in 2007 (Figure 1).



Beehives number (hundred) and production of natural honey in Albania (2007 -2017) [1]

Albania's climate and landscape provide ideal conditions for beekeeping [3]. The most important types of honey in Albania are a mixed flower honey, based on mixed flowers and medicinal herbs, and chestnut honey. The production of natural honey is mainly concentrated in south-east Albania (around 50% of the total production). Despite its modest share of production (7% of total production), North Albania is noted for its chestnut honey, unique for its medicinal attributes [4].

2. Methodology

The main aim of the research described herein was to examine customers' purchasing habits in Tirana with regard to natural honey. Examination of the relationship between the consumption of honey for medicinal purposes, the demographic characteristics of the sample, and quality attributes (taste, flavor, origin and color) of the former was a further objective of the study. In order to fulfil these objectives, both primary and secondary data were used. For the primary data collection, a questionnaire was designed and developed with a set of questions targeting consumer habits and decisions in relation to the purchase of natural honey in Tirana. Three hundred and fifty-three face-to-face interviews were conducted with primary buyers (customers in charge of purchasing for a household). Furthermore, ordered regression was used to model the relationship between *response variables* and a set of *explanatory variables*. Our dependent variable was *honey consumption for medicinal purposes*.

The link function is a transformation of the cumulative probabilities that allows estimation of the model. Cauchit (inverse Cauchy) tan (π (x-0.5) was selected as the link function because the latent variable has many extreme values.

Ordinal regression was used to model the relationship between response variables and a set of explanatory variables: this approach was considered appropriate for measuring individual preferences [5].

Our dependent variable is an ordinal outcome with five levels (1, 2, 3, 4, 5), thus five logits were modeled: one for each cut point. $f_i(x_i)...f_k(x_k)$ was used to denote the response probabilities at values for a set of explanatory variables. Cumulative probabilities were formed as follows:

 $Fk = P(Y \le k/xi) = f_i(x_i) + ... + f_k(x_i), k=1,2....K-1(1)$

Cumulative logits were then formulated:

 L_k =Logit [($F_k(x_i)$]=log k=1,2....K-1 Let $L_k(x_i)$ =logit[($F_k(x_i)$], (2)

where $F_k(x_i)$ is the cumulative probability up to and including category k, thus the proportional odds model [6] can be expressed as follows:

 $L_k(x_i) = \alpha_k + \beta_k(x_i), \qquad k=1,2....K-1(3)$

The α parameters are the intercepts of cut-points. The parameter vector β expresses the regression coefficients for the covariate vector x_i . Inherent in this model is the proportional odds assumption, which states that the cumulative odds ratio for any two values of the covariate is constant across response categories. The interpretation of the estimates is as follows:

- for β >0 the odds ratio $e^{-\beta} < 1$, meaning that higher cumulative scores are more likely than lower cumulative scores;
- for $\beta=0$ the odds ratio $e^{-\beta}=1$, meaning that high cumulative scores are equally as likely as low cumulative scores, and finally;
- for $\beta < 0$ the odds ratio $e^{-\beta} > 1$, indicating that lower cumulative scores are more likely than higher cumulative scores.

Data analysis was carried out using the SPSS software package.

3. Literature review

3.1Customer preferences and attitudes toward traditional foods and honey

According to Guerrero et al. (2009, p. 348.): "A traditional food product is a product frequently consumed or associated with specific celebrations and/or

seasons, normally transmitted from one generation to another, made with care in a specific way according to the gastronomic heritage, with little or no processing/manipulation, that is distinguished and known because of its sensory properties and associated with a certain local area, region or country." [7]

Such foods include primary vegetables, fruits and animal products eaten in their natural form or after some basic processing techniques (cooking, drying or natural fermentation) [8]. Traditional food is often obtained through artisanal procedures so its production and commercialization is unlikely to follow the same criteria and rules as industrial food. Two of the most important characteristics of traditional food are local origin and the method of production (typically homemade, or on a farm) [9][10]. Nowadays, consumers increasingly value the origin of products. They associate food quality with a specific origin and consider this factor to be an attribute of products [11][12][13][14][15]. Traditional products constitute an important element of Balkan countries' culture and culinary traditions. Results of qualitative studies in six Balkan countries indicated that consumers in Balkan countries perceive traditional foods to be natural, domestic, healthy and tasty [16].

In recent years, many researchers have studied consumer preferences and attitudes towards honey [17][18][19]. A study conducted among Italian consumers showed strong positive preferences for locally produced honey [17]. Another piece of research conducted in Croatia showed that intrinsic attributes such as taste, aroma, and scent are most important to consumers when they choose honey. Based on the results of the same study it was claimed that Croatian consumers prefer domestic honey which they buy and consume primarily for its medicinal benefits [18]. Gyau et al. (2014) argue that price, packaging and color are the main attributes that strongly influence consumers' choice of honey in the Democratic Republic of Congo, while quality, taste and origin have a moderate influence on such choices [20]. Price and value for money are the key purchasing criteria among consumers in Western Australia [21]. Furthermore, a survey conducted with educated urban inhabitants in Romania revealed that the main motivation for purchasing honey was its perceived medicinal benefits and related dietary characteristics, such as healthiness, taste, and nutritional quality [22].

4. Results

4.1Socio-demographic characteristics of the sample

The socio-demographic characteristics of the sample are presented in Table 2. Each sample distribution factor converges to a normal distribution except for employment. About two-thirds of the respondents are female. Most of the participants (mode) may be classified into the age category 46-60 years old, who together with those 36-45 years old comprise 67% of the sample. Half of all

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 166

respondents report to have completed an undergraduate degree. With regard to monthly income, the majority of respondents claim to have a household monthly income of 50001 - 70000 ALL (ca. 400-570 euro) (34%). This category of respondents together with those who report to having a household monthly income of 30001 - 50000 ALL (ca. 245-400 euro) comprise 62% of the sample. More than half of respondents (58%) are full-time employees and 48% live in a family with 3–4 members. Taking into consideration all these factors, we assume that the average profile of the person in charge of food purchasing in households in Tirana is female, between 36-60 years old, a graduate, is full-time employed and lives in a family with 3–4 members with a household income of between 30001 and 70000 (ALL) (ca. 245-570 euro).

Variable	Category	Frequency	Frequency %
Gender	Male	85	24
	Female	268	76
Age	18 - 35	83	23
	36 - 45	102	29
	46 - 60	134	38
	over 60	34	10
Education	Primary + Secondary	41	12
	Undergraduate	177	50
	Graduate	135	38
Average household monthly income*	Up to 30,000 ALL/ month	59	17
	30,001 - 50,000 ALL/month	100	28
	50,001 - 70,000 ALL/month	121	34
	70,001 - 90,000 ALL/ month	48	14
	over 90,001 ALL/month	25	7
Employment	Full-time employed	204	58
	Part-time employed	40	11
	Seasonal Employment	16	4
	Unemployed	62	18
	Retired	31	9
Household size	up to 2 persons	34	10
	3-4 persons	173	49
	5-6 persons	128	36
	7+	18	5

Socio-demographic characteristics of the sample

Table 2.

*1EUR = 126 ALL

Source: Authors' construction (N=353)

4.2Consumption characteristics and buying habits in relation to natural honey

Natural honey is popular among consumers in Tirana (Albania). Seventy-nine percent of respondents stated that they had natural honey at home at the time of the interview. About 60% of interviewees and their families consume only natural (non-industrially produced) honey. However, the total share of consumers of both natural and industrial honey is 85%. Honey consumption within the household is not limited to a specific age group or type of household member (children, adults, or elderly people). Fifty-five percent of respondents report that all family members can be considered the primary consumers of honey. Among the reasons for consuming natural honey, the majority (74%) of respondents refer to its curative attributes. The rest (26%) use honey as a sweetener for tea, coffee etc., (21%) or as an ingredient in different dishes / desserts (5%). These results indicate that the consumption of honey in Albania is most strongly related to its dietary attributes and perceived health benefits. In terms of the frequency of honey consumption in the household, this varies from several times a week to once a week (79%).

Results of descriptive analyses show that short distribution channels dominate sales of natural honey (Table 3). Seventy-eight percent of the interviewees state that they buy natural honey directly from farmers who are either not known to them personally (21%) or who are known personally / have been recommended by relatives and/or friends (57%). It may be presumed that consumers are more confident with producers they know because they feel they have more of a guarantee that the product is locally produced and really natural. As per quantity and frequency of purchasing, it appears that quantity "compensates" partially for the low frequency of purchasing. The majority of food products are purchased quite frequently, even on a daily basis. However, this is not the case with natural honey in Tirana. More than half of respondents (56%) buy such products 2–4 times a year. Almost the same share (54%) of respondents confirm that they buy from 1 kg to 3 kg of honey per purchase.

Descriptive statistics for honey consumption characteristi	cs and purchasing	habits
	Frequency	%
Presence in the household of honev at the time of inter	•view <i>n=353</i>	
Natural honey (artisanal)	236	79
Type of honey consumed <i>n</i> =353		
Only industrial honey	41	11
Only natural / artisanal honey	212	60
Both	87	25
Do not consume honey at all	13	4
Frequency of consuming natural honey <i>n</i> =299		
On a daily basis	24	8
Several times a week	127	42
more or less once a week	110	37
Less frequently	38	13
Reasons for consuming natural honey in the household	d <i>n=299</i>	
For its curative attributes	221	74
As a sweetener for milk, tea, etc.	64	21
For cooking	14	5
Primary consumers of natural honey in the household	n=299	
Children	84	28
Mature people	29	10
Elderly people	22	7
All	164	55
Place of purchasing natural honey $n=299$		
Unknown bee-keepers	63	21
Bee-keepers known personally / suggested by friends	169	57
Grocery stores	66	22
Frequency of purchasing natural honey $n=299$		
Every month	54	18
Every 3 months	76	25
Every 6 months	91	31
Once a vear	63	21
Less frequently	15	5
Quantity purchased $n=299$		
250 - 500 gr	22	8
501 gr - 1 kg	96	32
1.001 kg - 3 kg	161	54
More than 3kg	20	6
Characteristics considered while buying natural honey	$v n = 299^{-2}$	-
Color	41	14
Origin	143	48
Smell	38	12
Taste	77	26

Table 3

Source: Authors' construction (N=353)

4.3Ordered regression model results

Our dependent variable is: *Honey consumption for medicinal purposes*; the independent variables are demographics, consumption patterns, and the importance of honey attributes. The question addressed to consumers was the following: "Do you agree with the statement that 'I consume honey because of its medicinal features'?" Agreement with this statement was based on responses using a 5-point Likert scale (totally do not agree – totally agree).

Ordinal regression was used to model the relationship between response variables and a set of explanatory variables. Our dependent variable is an ordinal outcome with five levels (1, 2, 3, 4, 5) thus five logits were modeled, one for each cut point. fi (xi)...fk (xk) denoted the response probabilities at values for a set of explanatory variables:

 $Y=\beta_{0}+\beta_{1}Gender+\beta_{2}Age+\beta_{3}Education+\beta_{4}Income+ \beta_{4}Household+ \beta_{5}Consumption frequency+ \beta_{6} Purpose of use+ \beta_{7}Consumer+ \beta_{7}Place of purchase+ \beta_{8}Buying frequency ++\beta_{9}attribute importance (5)$

The test of parallel lines is designed to help with judging the adequacy of the model. The null hypothesis is that the corresponding regression coefficient is equal across all levels of the response variable. The results -2 Log Likelihood=284.994, Chi-square=205.695, p(value)=.000 show that the parameters differ across the levels of the response variable.

In addition, the significant Chi-square statistic (Chi-square =167.166; p(value)=.000) indicates that the model is a significant improvement over the baseline intercept-only model. Chi-square describes the difference between -2 times the log-likelihood for the intercept-only model and that for the final model.

The R^2 Nagelkerke coefficient of determination is about 53%, even though this does not have the same meaning as R^2 in the linear regression model; the approximated R^2 shows the important variation that is explained by the variables of the model.

The parameter estimates table (Table 4) summarizes the effect of each predictor. While interpretation of the coefficients in this model is difficult due to the nature of the link function, the signs of the coefficients for covariates and relative values of the coefficients for factor levels give important insight into the effect of the predictors in the model. For covariates, positive (negative) coefficients indicate positive (inverse) relationships between predictors and outcomes. An increase in the value of a covariate with a positive coefficient corresponds to an increase in the probability of it being in one of the "higher" cumulative outcome categories. For factors, a factor level with a larger coefficient indicates a greater probability of it being in one of the "higher" cumulative outcome categories. The sign of a coefficient for a factor level is dependent upon that factor level's effect relative to the reference category. Demographic variables did not appear to have any

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 171

statistical significance in terms of the dependent variable; those variables that had significant effects are presented in Table 4.

The parameter estimation					
Variables	Parameters estimates	Sig.			
Color	-144,391	,000			
Flavor	-138,535	,000			
Taste	-137,438	,000			
Origin	-4,308	,031			
Consumption frequency	6,233	,003			
N° of children in household	5,333	,001			
Standardized packaged traditional honey is sold in supermarkets	3 664	030			
Neutral	3,004	,050			
Standardized packaged traditional honey is sold in supermarkets	4.600	.011			
Do not agree	.,	,011			
Bulk traditional honey is better than standardized traditional honey	3,366	.065			
Do not agree	-,	,			
Solid traditional honey is better					
Strongly agree	-3,151	,025			
Solid traditional honey is better					
Agree	-5,927	,001			

Table 4

Source: Authors' construction (N=353)

The results of the model for attributes such as color, flavor and taste show that consumers that consider these attributes very important in their buying decisions do not buy traditional honey for health reasons. Those that consider the abovementioned as less important are more likely to consume traditional honey for medicinal reasons.

Consumers with a higher consumption frequency and large households with children are more likely to buy traditional honey because of its medicinal properties.

In relation to the origin attribute, there is a strong link with propensity to consume honey because of its medicinal properties: those who consider origin as the second most important attribute are less likely to consume honey for health reasons. Those who consider this attribute to be the most important attribute in honey buying decisions are more likely to focus on the product's health properties.

Those consumers who are neutral in relation to the statement *Standardized* packaged traditional honey is sold in supermarkets are 3.6 times more likely to buy traditional honey because of its medicinal properties than those who agree with it. This result implies that those whose focus is the medicinal properties of honey do not buy honey in supermarkets. Consumers that agree/strongly agree with the statement: "Solid traditional honey is better" are less likely to buy honey because of its health properties.

Consumers that do not agree with the statement *Bulk traditional honey is better than standardized traditional honey* (1=strongly agree, 5=strongly disagree) are 4.6 more likely to buy traditional honey for medicinal purposes than those who agree with this statement. This result suggests that standardized honey cannot be used for medicinal properties and implies that consumers think that bulk⁵ honey is better in terms of health. This may be because of the lack of information that consumers have about honey production process and the meaning of the term "standardized."

Conclusions

Traditional honey production in Albania is mainly linked with specific ideas about origin, which is one of the attributes that has been shown to generate expectations about other product attributes, such as safety and nutritional value [12][23].

The most important consumption-related driver for buying honey is better health, not culinary reasons. Natural honey is strongly present in the diets of consumers in Tirana and domestic market demand is the only driving force behind the increase in domestic production. Direct sales are dominant in terms of marketing traditional honey in Albania. This result shows that direct selling is preferred by consumers because of the trust that they display in honey producers.

 $^{^{5}}$ A bulk product is a product which is not packaged in any type of container and is stored, transported, and sold in large quantities. Natural honey commercialization in Albania mainly uses short channels of distribution (farmer/producer – final consumer) and it is sold with minimal packaging (farmers put it in plastic containers of 1.5 - 21 formerly used as containers for beverages such as Coca-Cola, or bottled mineral water).

Concerning the practical implications of the study, the results suggest that in order to achieve a shift in consumer thinking and buying habits with regard to packaged goods and enhancing retailing, significant marketing activity is required, whereby the emphasis should be put on personal persuasion and tasting.

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References

- [1] FAO (2019): available at: http://www.fao.org/faostat/en/#data, downloaded: 30. April 2019.
- [2] Lietaer, C. (2009). Impact of beekeeping on forest conservation, preservation of forest ecosystems and poverty reduction. Paper presented at the XIII. World Forestry Congress. Buenos Aires, Argentina.
- [3] Mullin, C.A., Frazier, M., Frazier, J.L., Ashcraft, S., Simonds, R., Vanengelsdorp, D., Pettis, J.S. (2010). High levels of miticides and agrochemicals in North American apiaries: Implications for honey bee health. PloS one, 5(3), e9754. doi: 10.1371/journal.pone.0009754
- [4] INSTAT, (2018). Livestock Statistical Year Book, 2017.
- [5] McCullagh, P., J.A. Nelder. 1989. Generalized Linear Models, 2nd ed. London: Chapman & Hall.
- [6] Spais, G.S., Vasileiou, K.Z. (2006). An ordinal regression analysis for the explanation of consumer overall satisfaction in the food-marketing context: The managerial implications to consumer strategy management at a store level. Journal of Database Marketing & Customer Strategy Management, 14(1), 51–73.
- [7] Guerrero, L., Guardia, M.D., Xicola, J., Verbeke, W., Vanhonacker, F., Zakowska, S., Hersleth, M. (2009). Consumer-driven definition of traditional food products and innovation in traditional foods. A qualitative cross-cultural study. Appetite, 52(2), 345–354.
- [8] Prakash, V. (2016). Introduction: The Importance of Traditional and Ethnic Food in the Context of Food Safety, Harmonization, and Regulations. In V. Prakash, O. MartinBelloso, L. Keener, S.B. Astley, S., 1–6.
- [9] Ricketts, H.J., Ilbery, B., Kneafsey, M. (2006). Distribution of Local Food Activity in England and Wales: An Index of Food Relocalization, Regional Studies, 40(3), 289–301.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 174

- [10]Vogt, R.A., Kaiser, L.L. (2008). Still a time to act: A review of institutional marketing of regionally grown food, Agriculture and Human Values, 25, 241–255.
- [11]Kokthi, E., Gonzàles Limon, M., Vàzques Bermudez, I. (2014). Analysing Albanian consumer preferences for origin using cluster analyses (The case of cheese). International Journal of Innovative Research in Science and Engineering, 2(10), 718–729.
- [12]González Limón, M., Vázquez Bermúdez, I., Kokthi, E. (2015). Origin or Food Safety attributes? Analysing consumer preferences using Likert Scale. Empirical evidence from Albania. New Medit, 14 (4) 50–57.
- [13]Kokthi, E., Kruja, D. (2017). Customer Based Brand Equity Analysis: An Empirical Analysis to Geographical Origin. Management, Enterprise and Benchmarking in the 21st Century, Óbuda University, Budapest, 171– 182.
- [14]Kokthi, E., Kruja, D. (2017). Consumer Expectations for Geographical Origin: Eliciting Willingness to Pay (WTP) Using the Disconfirmation of Expectation Theory (EDT). Journal of Food Products Marketing, 23 (8), 873–889.
- [15]Durante, C., Bertacchini, L., Bontempo, L., Camin, F., Manzini, D., Lambertini, P., Paolini, M. (2016). From soil to grape and wine: Variation of light and heavy elements isotope ratios. Food Chemistry, 210, 648–659.
- [16]Focus Balkans (2011). The market of organic products and traditional foods in the Western Balkan Countries (WBC) – Results of qualitative analyses in six WBCs. 5th Newsletter, November 2011, available at: http://www.focus-balkans.org, downloaded: 12 April 2019.
- [17]Cosmina M., Gallenti G., Marangon F. Troiano S. (2016). Attitudes toward honey among Italian consumers: A choice experiment approach. Appetite, 99: 52–58.
- [18]Brščić K., Šugar T., Poljuha D. (2017). An empirical examination of consumer preferences for honey in Croatia. Applied Economics, 49 (58), 5877–5889.
- [19]Murphy, M., Cowan, C., Henchion, M., O'Reilly, S. (2000). Irish consumers' preference for honey: A conjoint approach. British Food Journal, 102, 585–597.
- [20]Gyau A., Akalakou C., Degrande A. (2014). Determinants of consumers preferences for honey in the Democratic Republic of Congo. Journal of Food Products Marketing, 20, 476–490.

- [21]Batt P.J., Liu A. (2012). Consumer behavior towards honey products in Western Australia. British Food Journal, 114 (2), 285–297.
- [22]Arvanitoyannis I., Krystallis A. (2006). An empirical examination of the determinants of honey consumption in Romania. International Journal of Food Science and Technology, 41, 1164–1176.
- [23]Kokthi, E., Vázquez Bermúdez, I., González Limón, M. (2016). Predicting willingness to pay for geographical origin in Albania: A logistic approach. New medit: Mediterranean Journal of Economics, Agriculture and Environment, 15 (2), 63–69.

Facebook use for academic purposes

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Abstract: Social networks are one of the essential factors that impact the creation of an individual's social environment. Facebook is especially popular among young people, and they use it, not only for entertainment, but for education purposes as well. It offers a new learning environment and it can be used for online academic discussions between students. The aim of this paper is to present the application of Facebook for education purposes among students at the Technical Faculty in Bor. The determinants analysed in this research are academic purpose, communication, cooperation, and resource/material sharing on Facebook. Each determinant comprises a set of indicators which are used for the analysis of the overall situation. The results indicate that the students have positive attitude about the use of Facebook for educational purposes, and they actively use it as an addition to the traditional learning process.

Keywords: Facebook, Education, Students.

1. Introduction

Communication has been integral part of human society since its beginning. The worldwide occurrence of computers and the Internet has offered online mediums where people can communicate. With the advancement of technology, communication became easier (Kaya & Bicen, 2016). The phenomenon of social media introduced significant changes in the ways of communication and interaction as well as in learning methods. The use of social media in the university classroom is growing in popularity and it is transforming learning and teaching in significant ways (Foster et al., 2016). Social networks offer students more possibilities to communicate, learn, discuss, exchange information, reflect, judge and rate downloaded study materials, give feedback, and acquire new knowledge through the Internet (Đurica et al., 2018).

Today, students observe social media not only as a means of networking, but for educational purposes as well. The aim of this paper is to investigate students' perception of Facebook use for academic purposes. The determinants analysed in this research are academic purpose, communication, cooperation, and resource/material sharing on Facebook. These determinants have proved to be dominant when Facebook is used as an additional tool to traditional way of teaching and learning. This research aims to show the extent to which students actually use Facebook as additional learning tool, as well as the statistical significance of these determinants.

2. Theoretical Framework

2.1. Social networking sites use in education

Social networking sites (SNSs) are well-known today, not only among the younger population, but among adult Internet users as well (Junco, 2012a; Junco 2015). SNSs enable students to ask questions, share their knowledge and ask for help (Ooi & Loh, 2010; Rambe, 2012; Lambić, 2016). They can also be useful to teachers because they offer them the opportunity to reach their students more easily even when they are outside of school (Mazer et al., 2007). Teachers can use SNSs as a blog where they can share content of the courses, or a discussion forum where they can discuss various topics with their students, with options which offer easy communication with students (Barczyk & Duncan, 2013; Lambić, 2016).

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 178

Greenhow (2011) suggested that SNSs like Facebook can be used to support learning, but also as places where younger users can be civically and academically engaged. The motivation is also very important for the use of SNSs in education. Its use directly depends on its purpose, and indirectly on its adoption. Social networking sites can improve students' involvement in a course and it can make them feel more connected with their colleagues. SNSs can enhance and make easier knowledge sharing, interaction and collaboration between students, thus providing the opportunity for students to be in contact with course materials more often (Barczyk & Duncan, 2013; Lambić, 2016). Ziegler (2007) found that SNSs offer better motivation for students, making them become more engaged in the process of learning, as opposed to being passive observers of the same process.

2.2. Facebook use in education

Facebook (FB) is, without a doubt, the most popular SNS in both Europe and the United States (Junco, 2015). It has changed the way people interact as it provides its 2.32 billion monthly active users on Facebook as of December 31, 2018 (Facebook, 2019) with a personal profile where they are able to add friends, upload photos and communicate through personal messages, comments on the photos, status updates, wall posts and other applications (Bicen & Cavus, 2011). Kaya and Bicen (2016) found that FB can be used as a communication tool between students and their classmates, as well as their teachers. It could be used for consulting students after school hours or for creating groups where they can exchange opinions about their homework or projects (Kaya & Bicen, 2016). Some studies also showed that FB provides a higher level of interaction, and facilitates communication, not only among students, but between students and teachers as well (Mazer at al., 2007; Lambić 2016).

Manca and Ranieri (2013) noted that FB was the most researched platform for learning and teaching. They discovered more than 20 empirical studies of using FB for learning and identified 5 main educational uses of Facebook (Manca & Ranieri, 2013; Junco, 2015): 1) Support of class discussions and help for students' engagement in collaborative learning; 2) Content development; 3) Sharing educational resources; 4) Delivering content to offer students extra-curricular resources; and 5) Support for self-managed learning.

Some studies were carried out in order to assess the use of FB for personal use and for teaching purposes between faculty members. Moran, Seamen and Kane (2011) carried out a study which indicated that 77% of respondents at the faculty had social media engagement and 60% of them stated they used it in the classroom.

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 179

And reported that 57% of faculty members visited Facebook monthly, which shows that FB is used by higher education faculty members for personal purposes. Only 8.4% reported using FB for teaching purposes, which was more than Twitter, but less than LinkedIn or blogs. Junco (2012a, 2015) reported that some scholars indicated that using FB for teaching and learning can be beneficial for active learning and student engagement, and it can also be used as a tool for communication.

2.3.Facebook use and educational outcomes

The research on the relation between Facebook use and educational outcomes has offered mixed results. Kirschner and Karpinski (2010) found that non-users of FB had higher grades and studied more hours per week than users. Junco (2012b) reported that sharing links and checking up on friends was positively related to the grades, but a relation between spending time on FB and preparing for classes was negative. Junco (2015) reported that bad results were predicted only for freshmen students. On the other hand, Pasek at al., (2009) found there was no connection between grades and FB use, and Kolek and Saunders (2008) observed that there were no differences between users and non-users' grades. Ainin at al., (2015) reported that there was no significant difference in educational outcomes between students who spent different number of hours daily on FB.

However, Manca and Ranieri (2013) observed that 4 studies examined how FB related to the outcomes of learning and found positive impact on the outcomes such as vocabulary, writing skills and acquired knowledge. Kaya and Bicen (2016) also noted that students, who spent more time on Facebook, participated more in academic activities. Nevertheless, they also noticed that students' use of FB could decrease their concentration, depending on their interest and mood. Lambić (2016) found a positive correlation between the students' academic performance and frequency at which they used FB as an educational tool. He also noticed that FB use had positive effect on students' knowledge and their performance at the end of the course.

3. Methodological Framework

In order to investigate the impact of demographic factors on students' perception of Facebook use for academic purposes, the data was collected by a questionnaire. The questionnaire was created based on the available relevant literature and numerous researchers' attempts to create an appropriate instrument for the

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 180
analysis and evaluation of respondent's demographic factors impact on the perception of Facebook use. It consists of two parts. In the first part of the questionnaire, respondents provide answers to questions related to demographic data. The second part of the questionnaire consists of 44 questions related to different aspects of using Facebook. The survey was anonymous and it was conducted among students at the Technical Faculty in Bor, University of Belgrade. Likert-type scale with selections ranging from "strongly agree" (5) to "strongly disagree" (1) was used in the questionnaire.

A total of 115 students participated in the survey. The results show that out of the total number of respondents, 108 students completed the questionnaire correctly, that is, the response rate was 93.91%, which represents an excellent result. The obtained data was anlysed using the IBM SPSS Statistics 18 software package.

3.1. Demographic characteristics of the sample

For the purpose of a comprehensive analysis, it is important to present the respondents' demographic data in order to investigate their impact on students' perception of Facebook use for academic purposes. The demographic characteristics of the respondents are shown in Table 1.

Demographic parameter	Category	Frequency	Percentage %
	Male	37	34.3
Gender	Female	71	65.7
	18 - 20	65	60.2
	21 -23	36	33.3
Age	24 - 26	4	3.7
	Over 26	3	2.8
	Once a day	38	35.2
	2-5 times a day	40	37.0
	6-10 times a day	14	13.0
Frequency of using Facebook	11-15 times a day	5	4.6
	16-20 times a day	5	4.6
	Over 20 times a day	6	5.6
Purpose of using Facebook	To be in contact with my friends	69	63.9
	To communicate with my colleagues about the Faculty	20	18.5
	To let others know about my life	2	1.9
	To communicate with people I haven't seen in a while	10	9.3
	To establish professional relationships	4	3.7
	To flirt Other	30	2.8

Table 1 Demographic characteristics of the respondents

	1-100	8	7.4
	101-300	14	13.0
Number of friends on	301-500	26	24.1
Facebook	501-1,000	26	24.1
	Over 1,000 friends	34	31.5
	Facebook is suitable for	27	25
	academic purposes		
	Facebook can be suitable for	63	58.3
Opinion on using Facebook for academic purposes	connecting with colleagues		
		_	
	Facebook should be used only	5	4.6
	for personal purposes, not academic		
	My privacy can be disturbed	2	1.9
	T de met hanne en entieten	11	10.2
	I do not nave an opinion	11	10.2
	Other	0	0
	I log in to Facebook on my	10	9.3
Way of using Facebook	computer		
	I log in to Facebook on my	55	50.9
	mobile phone		
	Both	43	39.8

The results show that the majority of respondents were female (65.7%). Most of the students were 20 years old (60.2%). When it comes to the purpose of using Facebook, the highest percentage of respondents said they used this social networking site (SNS) to be in contact with their friends (63.9%). The interesting fact is that the second rated response was that Facebook was used to communicate with colleagues about the Faculty (18.5%). The popularity of this SNS is indicated in the fact that almost one third had over 1,000 friends on Facebook (31.5%), which is important for its wide application as well. Majority of students had positive attitude toward Facebook use for academic purposes, that is, 58.3% of them agreed with the statement that this SNS can be suitable for connecting with other students. Moreover, the use of smart phones increased the popularity of Facebook, therefore, most of the respondents stated that they logged in to Facebook on their computer and mobile phone (50.9%).

3.2. Discussion of results

3.2.1. Reliability Analysis

In order to perform a detailed and optimal data analysis, it is necessary to determine the reliability and validity of scales of measurement, or of the obtained results based on gathered and processed data. The internal consistency of the instrument was assessed by Cronbach's alpha test. Cronbach's alpha formula is used to calculate the average correlation values of the measuring instrument (α

coefficient) when the responses are estimated based on a scale (in this case the Likert-type scale). Based on this test, α coefficient is higher than 0.70, which represents a good possibility for modeling the survey's results in the considered population (Kupermintz & Lee, 2003). Table 2 shows the coefficients of internal consistency of groups of questions in the questionnaire.

Variables	N of Items	Cronbach's Alpha
GP1 (Academic Purpose)	2	0.737
GP2 (Communication)	5	0.775
GP3 (Cooperation)	3	0.725
GP4 (Resource/Material Sharing)	2	0.757

Table 2 Coefficients of internal consistency of groups of questions in the questionnaire.

Based on the obtained Cronbach's alpha coefficients of internal consistency of groups of questions in the questionnaire, it can be concluded that the possibility for modeling the survey's results is very good for all groups of questions (GP1, GP2, GP3, and GP4). Overall analysis of the Cronbach's alpha coefficient shows that reliable results can be expected in the analysis.

3.2.2. Descriptive Statistics

After calculating the Cronbach's alpha coefficients, the descriptive statistics of the sample was carried out. The descriptive statistics is very important as it describes in more detail the respondents' responses to the questions related to the analysed factors (academic purpose, communication, cooperation, and resource/material sharing). The obtained results are shown in Table 3.

	Ν	Mean	Std. Deviation	Variance
Academic Purpose				
WR_1	108	4.2037	0.87284	0.762
WR_2	108	3.6574	1.18528	1.405
Communication				
CM_1	108	3.4074	1.05933	1.122
CM_2	108	2.5463	1.31408	1.727
CM 3	108	3.1944	1.10613	1.224
CM_4	108	3.3333	1.26786	1.607
CM 5	108	3.2685	1.17295	1.376
Cooperation				
C_1	108	3.3981	1.02255	1.046
C_2	108	3.5833	1.00582	1.012

Table 3 Descriptive Statistics

C_3	108	3.4630	1.01784	1.036
Resource/Material Sharing				
RMS_1	108	2.8981	1.02255	1.046
RMS 2	108	2.8611	1.02728	1.055

While carrying out the descriptive analysis, standard statistical parameters for all four groups of questions were calculated: mean value, standard deviation, and variance. For the first examined factor, Academic purpose, the greatest importance for students lies in the statement "I use Facebook to communicate with colleagues about the Faculty" (M=4.21; SD=0.87). For the other factor, Communication, the highest mean value is obtained for the variable "I use Facebook to improve communication with my colleagues at the Faculty" (M=3.41; SD=1.06). For the next analysed factor, Cooperation, variable "Facebook is suitable platform for exchanging information" has the highest mean value (M=3.58; SD=1.00). All variables for the Resource/Material Sharing factor, "Facebook provides a wide range of learning materials" (M=2.90; SD=1.02), and "Facebook provides rich multimedia content and learning enhancement support" (M=2.86; SD=1.03), have low mean values, and they are the lowest in the entire model for Facebook use. These results show that the Facebook's influence as a resource, that is, as a relevant material sharing database, is relatively low. All the statements related to this factor had rather low mean values (less than 3). The results indicate that students consider Facebook as an important tool for academic purposes since all the variables related to this factor (Academic purpose) have high score (the mean value is higher than 3.5).

4. Conclusion

The obtained results show that students mostly use Facebook for social purposes. Regarding the use for educational purposes, Facebook is the most respected platform for the exchange of materials and information related to lectures, communication with colleagues, and creating academic groups. There has been the growing popularity of social networks among students in the recent years, and they have the potential to become an important source of support for communication related to education, and cooperation with the Faculty as well. The results of numerous studies have shown the importance of using social networks in various fields, while the scope of the research is focused on higher education. Students in higher education institutions have seen a significant advantage from using social networks such as Facebook. The results show that students mainly use Facebook for social interactions, primarily to communicate with friends. Moreover, the obtained results also indicate that students at the

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 184

Technical Faculty in Bor have positive attitude toward Facebook use for academic purposes as an additional tool for studying, since this way of learning provides the opportunity to exchange multimedia content as addition to the traditional content. It is desirable to extend the research in the future to other higher education institutions in Serbia in order to obtain more reliable results and examine the attitude of greater number of students.

Refernces

- Ainin, S., Naqshbandi, M.M., Moghavvemi, S., Jaafar, N.I. (2015). Facebook usage, socialization and academic performance. Computers & Education, 83, 64-73.
- [2] Barczyk, C.C., Duncan, D.G. (2013). Facebook in higher education courses: an analysis of students' attitudes, community of practice, and classroom community. International Business and Management, 6(1), 1-11.
- [3] Bicen, H., Cavus, N. (2011). Social network sites usage habits of undergraduate students: Case study of Facebook. World conference on educational technology Researches, 28, 943-947.
- [4] Đurica, N., Soleša, D., Šimović, V., Đurica, M. (2018). Students' Perception of the Importance of Using Facebook for Academic Purposes. Croatian Journal of Education, 20(4), 1059-1087.
- [5] Facebook, (2019). Newsroom: Company Info. (Retrieved from: https://newsroom.fb.com/company-info/).
- [6] Foster, T., Farshid, M., Juena, S., Wallström, A. (2016). The use of social media in higher education. Celebrating America's Pastimes: Baseball, Hot Dogs, Apple Pie and Marketing? Springer International Publishing, 789-790.
- [7] Greenhow, C. (2011). Online social networks and learning. On the Horizon, 19(1), 4-12.
- [8] Junco, R. (2012a). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. Computers & Education, 58(1), 162-171.
- [9] Junco, R. (2012b). Too much face and not enough books: the relationship between multiple indices of Facebook use and academic performance. Computers in Human Behavior, 28(1), 187-198.
- [10]Junco, R. (2015). Student class standing, Facebook use, and academic performance. Journal of Applied Developmental Psychology, 36, 18-29.
- [11]Kaya, T., Bicen, H. (2016). The effects of social media on students' behaviors; Facebook as a case study, Computers in Human Behavior, 59, 374-379.
- [12]Kirschner, P.A., Karpinski, A.C. (2010). Facebook and academic performance. Computers in Human Behavior, 26(6), 1237-1245.
- [13]Kolek, E.A., Saunders, D. (2008). Online disclosure: An empirical examination of undergraduate Facebook profiles. NASPA Journal, 45(1), 1-25.

- [14]Kupermintz, H., Lee, J. (2003). Cronbach's contributions to educational psychology. In B.J. Zimmerman and D.H. Schunk (Eds.). Uducational psychology: A century of contributions. Mahwah. NJ. US: Erlbaum, 289-302.
- [15]Lambić, D. (2016). Correlation between Facebook use for educational purposes and academic performance of students, Computers in Human Behavior, 61, 313-320.
- [16]Manca, S., Ranieri, M. (2013). Is it a tool suitable for learning? A critical review of the literature on Facebook as a technology-enhanced learning environment. Journal of Computer Assisted Learning, 29(6), 487-504.
- [17]Mazer, J.P., Murphy, R.E., Simonds, C.J. (2007). I'll see you on Facebook: the effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. Communication Education, 56(1), 1-17.
- [18]Moran, M., Seaman, J., Tinti-Kane, H. (2011). Teaching, learning, and sharing: How today's higher education faculty use social Media. Babson Survey Research Group. (Retrieved from: http://eric.ed.gov/?id¼ED535130)
- [19]Ooi, C.Y., Loh, K.Y. (2010). Using online web 2.0 tools to promote innovative learning. In Q. Y. Wang, & S. C. Kong (Eds.), Workshop Proceedings of the 14th Global Conference on Computers in Education, 72-76.
- [20]Pasek, J., More, E., Hargittai, E. (2009). Facebook and academic performance: Reconciling a media sensation with data. First Monday, 14(5).
- [21]Rambe, P. (2012). Activity theory and technology mediated interaction: cognitive scaffolding using question-based consultation on Facebook. Australasian Journal of Educational Technology, 28(8), 1333-1361.
- [22]Ziegler, S. (2007). The (mis)education of Generation M. Learning, Media and Technology, 32(1), 69-81.

Professional Technical Evaluation of Workers for their Incorporation in the Industry 4.0

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Abstract: At present the global and economically volatile world there is a set new requirements for the acquisition of new workers who are able to share professionally skilled work for progressive European manufacturing companies. For their degree of automation, the condition of effective skills and skills of workers is very important. In attracting workers from other countries outside of Slovakia is the condition of professional quality and technical skill still primordial. Technical skill is to be understood as the conditions and quality of the technical observation of the worker's growth from the introduction to the work process to the complex working activity in the process chain [2]. Creating significant limits for worker selection often precedes the verbal observation of the environment that was given to him to realize his own implementation into the working environment. The solution is the renewal of the three-part education with the technical output of observing the skill level of the worker. The paper presents the idea of possible technical solutions for observing the status of technical excellence of workers in automated and semi-automated manufacturing corporation.

Keywords: evaluation, technical skill, model performance, identification, employment act

1. Work habits and skills of job-seeker

Employee self-consciousness itself needs to be built on work and not only to engage in work. Professional training of work staff shows on the adequate realization to operate the complex technical systems, prone on automated technical control. Because of this awareness, educational models are created for workers that can be used to test for engineering work so that the employee does not feel the job insecurity of preserving work that is important to an enterprise. Therefore, the systematic educational pressure is the result of our workforce being stimulated to work and creating habits that make the work process more visible through their

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 187

own skills. The complexities of technical skills are identifiable for workers from other countries where they are missing or their differences in work habits differ. It is necessary to understand that at the moment of the occurrence of bad habits that may have an impact on profit, another aspect of work must be created in order to preserve the balance in the working environment [3][9][10].

The idea of a three-tier education (three-tier means the process-based educational and technical growth of a secondary technical force with a view to the development of engineering forces demanded by newly created technical action enterprises) aims to create an area in which the selected worker learns to understand the technical habits for a specific area of production. The area in which a worker learns to understand the importance of individual work in the construction of the entire corporate order has a range of individual work activities. Such a worker creates incentives to develop individual abilities and habits and will provide the necessary impulses for willingness to work. The willingness to work for a given company can ignite the actual relationships that will create a worker who is able to regulate his / her rights to all other workers where he / she needs to know a series of social habits. One should think that such relationships create a willingness to work [11][12][13].

2. Performance evaluation workers with implications for environmental workload

The long-term viability and competitiveness of any work institution depends on its ability to effectively evaluate employees and examine their ability to achieve the desired goals assigned to their managers. Therefore, it is necessary to be able to evaluate the performance of employees, which is always important when entering management tasks [5]. Employee assessment is also a valuable tool and an indispensable element in the functioning of any company. Ratings that managers use as an incentive tool for the expected performance of employees give them feedback. The evaluation process is also the ability to identify exact employee work for improvement needs. The evaluation provides opportunities for recognition, positive reinforcement and improved employee performance. Performance models can be presented in the form of employee outputs to evaluate the quality achieved in a specific product creation [12].

There are many models and procedures for staff performance ratings that are described in h professional journals. Many of them describe performance from different perspectives. As a practical example of the Employee Performance Assessment Model, it can be used for employee review. On the other hand, new workers provide this additional information to support and complement the practical model for its improvement [1][4].

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 188

Employee performance quantifies the level of achievement of the goals. This should be a definition for managers and other employees who are responsible for the achievement of the objectives in accordance with the organizational regulations and standards of the fund. [7][9].

Evaluation of employees in organizations has two general tasks:

- Administrative decisions on employees (compensation, promotion, dismissal, reduction, etc.).
- Identify and plan oportunities for the employee growth (identify strenghts and weakness, or area for growth, develop careeer etc.).

Employee Performance Assessment is part of Performance Management, which consists of the following five activities[7]:

- 1. Setting performance and development goals,
- 2. Providing continuous feedback and recognition,
- 3. Employee development management,
- 4. Perform mid-year and end-of-year assessments.

Employee performance models can use methods that classify them as individual assessment methods, multiple ratings, and methods based on individual and multiperson ratings. These include performance tests [9][10].

Subjective assessments are about evaluating the performance model itself, which consists of steps such as measuring actual performance, analyzing measured data, interpreting the results of analyzes, and returning these results to improving current performance and target stage model. Evaluation of the performance model itself consists of five steps: preparation, measurement, analysis, interpretation and feedback. Effective and fair performance evaluation is a process based on key building blocks that include an agreed set of competencies, accurate declaration of responsibilities and consistent standards of practice [14].

The first component in the evaluation process is competence, which is a set of complementary skills, knowledge and attitudes that enable the employee to perform the job. Competence is the use of the knowledge and skills necessary to perform the work. The expected level of competence of the individual employees is determined by their profession, the role of their manager, management body and the responsibility of their department within the organization [8][15].

The second part of the evaluation process is practice standards, also known as performance expectations. The standard is a description of the competent level of performance for a particular employee's duty. Practical standards are necessary to reduce subjectivity in the performance of the evaluation process. Each standard contains measurement criteria. The standard to be fulfilled by these criteria must be met. Working standards that are left over during working hours may be revised

¹⁷th International Conference on Management, Enterprise, Benchmarking. Proceedings 189

more frequently to reflect progress in working arrangements and practice. These standards often talk about what is to be done and what the working time (normohour) should be done. Obligations that are brief and clear list of the essential elements of the tasks or areas of work done for a given position are performed according to standards. Statement of duties speaks of what is to be done, not how it is to be done and describes the employee's expected working behavior. Work operations are listed in order of importance [8]. The model is identified in the MATLAB program environment [16][17].

Heuristic model of worker efficiency:

Relation of the worker's burden to solving technical problems is their skill: "workload (x) - resistance (y)". N=[1:1:20], order of gradual observation of worker's activity, Relation: "Workload (x) - Resistance (s)".

N=[1:1:20]; the order of progressive adjustment of the workload of the worker presented with the probability of success of the solved tasks according to the work standard (performance of the task),

x=[1.87 2.02 1.92 2.15 1.9 2.04 2 1.88 2.08 2.13 1.86 2 1.94 1.79 2.06 2.1 1.96 1.12 2.06 2.14];

y=[3.28 3.06 3.42 3.36 3 3.2 3.08 3.02 3.4 3.3 3.13 3.4 3 3.41 3.02 3 3.12 3.2 3.08 3.5];

Rank (N) of determined workload values (x) [bar], resistance estimate (s) [bar].

[N;x;y],

According to the data x, y, and commands in the Matlab environment, we find distributive functions (F) and probability density (f) of the file.

Fxcdf=cdfplot(x), the experimental distribution function (eF)
of the file,

[h,stats] = cdfplot(x), Statistical data eF.

xnorm=norm(1.951,0.2210), view eF normal distribution,

[f,xf]=ecdf(xnorm),

xx=linspace(1.12,2.15,100); the smallest, the largest data in the file, the number of displayed checkpoints.

FXX=normcdf(xx,1.9510,0.2210); expression of eF by normal
distribution,

```
n=1:1:100; number of points displayed for standard.F;
plot(n,FXX,'k'),
hold on,
Set function f:
fXX=normpdf(xx,1.951,0.2210); show the normal probability
density.
plot(n,fXX,'k+'),
Y - resistance.
y=[3.28 3.06 3.42 3.36 3 3.2 3.08 3.02 3.4 3.3 3.13 3.4 3 3.41
3.02 3 3.12 3.2 3.08 3.5];
Fycdf=cdfplot(y), an experimental distribution function of a
worker's resilience file,
[h,stats] = cdfplot(y), statistical data of the experimental
distribution function.
ynorm=norm(3.1990,0.170), cdfplot view (s) normal
distribution.
[f,yf]=ecdf(ynorm),
yy=linspace(3,3.5,100);
FYY=normcdf(yy, 3.1990, 0.170);
plot(n,FYY,'r'),
hold on,
Density of probability of worker's resistance at specified
workload.
fYY=normpdf(yy, 3.199, 0.17);
plot(n,fYY,'r+'),
xlabel(' Number of displayed argument points F,f'),
ylabel( 'Value distribution of F, f, workload resistance, the
worker'),
hold off,
```



The statistical reciprocity: workload - resistance

Workload - Resistance. Condition: Y >X.

plot(n,(fYY-fXX),'g+'),

hold on,

xlabel('Number of observed inspection points of the observed technical system Workload - resistance'),

ylabel(' difference: workload - resistance),

hold off,



The evaluation of the worker workload by operating a technical device

In this case, it is possible to predict the possibility of loading a worker in the technical equipment to check the state of the complex systems with a specified erudition rate (completed training) and the condition: Y > X.

Ignoring the condition requires a worker's quality control, which implies the spending of funds for the company. For this reason, it is possible to set simulation conditions in a company environment that is willing to employ workers from other countries and evaluate their technical skills. The number of performed actions can be seen in their success in the work process, where it is possible to determine with precision the data that will a priori prove that the given person can handle the technical work [3][1][1].

Conclusions

Slovakia companies has the potential to leave two components in the EU, namely a component of precision and technical skills. Such a development can not only be seen from the past but developed into concrete conclusions that are already recognized by Europe today. The unequivocal need of technicians is mainly due to the current need to put in place accurate, efficient work in companies of major importance with market enforceability. Their technical skills are observed and often not fulfilling the exact question but quantitative work operations. Obviously, by introducing new methods into technical practice, it will also require the establishment of upper and lower technical limits of skill for recruiting workers from other countries outside Slovakia. Their output may be a routine of work when it is possible to learn many tasks without understanding the continuous processes. Colliding technical skills and technological awareness activities can result in the imperfections and also a decrease in fusing safety. In figure 1 is a visible heuristic model of operations without a higher potential technical skill, where in a non-varied work there is a drop in technical skill in 35 different operations. The model was applied to technical operations in the aircraft components and components construction of a small aircraft manufacturing plant. This model shows only a multilevel character of the decline in skill. In addressing the correctness and technical accountability that may be high in the aeronautical industry requires that aeronautical workers go through minimum technical threepart training in aeronautical engineering. These problems can be avoided in a stepby-step selection of tasks by identifying their demanding technical application. It is also the intention of further research of assigning workers to intelligent smart factories.

References

[1] Fekete, M., Rozenberg, I.: The practical model of employee performance evaluation, 2014,Portorož, Slovenia.

- [2] Stefanska, R.: Subjcive discrimination Warsaw University Centre of Migration Research
- [3] Eonomicka univerzita v Bratislave, Fakulta medzinárodných vztahov, 2016 zbornik z workshopu
- [4] Huang, J.L., Ryan, A., M., Zabel, K.L.: Personality and adaptive at work, meta analyticInvestigation, Journal of Applied Psychology © 2013 American Psychological Association, 2014, Vol. 99, No. 1,162–179 0021-9010/14/\$12.00 DOI: 10.1037/a0034285
- [5] Migration Advisory Committee Full Report July 2014
- [6] Ekonomika práce, Československý výzkumný ústav práce a sociálnych vecí, 1989, Cornellova univerzita,
- [7] Okalí, I.: Ekonomika Slovenska na začiatku transformačného procesu, Slovak Academic Press, 1992
- [8] Stanek, V., Krausová, A.: Transformácia sociálnej sféry v Slovenskej Republike: nezamestnanosť sociálna práca, ISBN 8088848164
- [9] Štefančík,R., Lenč, J.: Mladí migranti v slovenskej spoločnosti: Medzinárodná migrácia, moslimovia, štát a verejná mienka, ISBN 8026303113
- [10]European Commission. Directorate-General Communication: Migrácia a azyl: budovanie otvorenej a bezpečnej Európy, ISBN 9279241567
- [11]Csámpai,O., Haládik, J: Medzinárodná migrácia: (sociálny problém a bezpečnostné riziko), Akadémia policajného zboru, 2002, ISBN 8080542309, 9788080542306
- [12]Stanek, V., Krausová, A.: Transformácia sociálnej sféry v Slovenskej Republike: nezamestnanosť sociálna práca, ISBN 8088848164
- [13]Kozár, F. Zeman: Otázky vývoja zamestnanosti v ČSSR a osobitne na Slovensku, VPL, t. Pravda, 1968
- [14]Steiner, R.: Schopnosť pracovať, ochota pracovať a trojčlenný sociálnyorganizmus.Uverejnenénainternete http://referaty.aktuality.sk/diagnostika-pohybovych-zrucnosti/referat-24780
- [15]Ekonomická fakulta TU KE: Podoby regionálneho a miestneho rozvoja, ISBN 8055301174
- [16]Duleba, A.: Ukrajina a Slovensko: geopolitické charakteristiky vývinu a medzinárodné postavenie Ukrajiny; implikácie pre Slovensko, Veda, 2000, ISBN 8022406562
- [17]Jurečková, J.: Slovenská spoločnosť pre zahraničnú politiku: Slovenská republika: štúdia o životnej úrovni, zamestnanosti a trhu práce, ISBN 8096815547

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