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Measurement of Digital Intelligence (DQ)

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***Abstract**: Our present society is permeated by the Internet and the rapidly evolving technology that presents us with new challenges. Both our way of working and entertainment has changed. We had to learn and acquire many new things. Such new knowledge and skills are digital competence (DQ), to which the European Union pays special attention, which is proved by nothing better than the fact that in 2006 the European Parliament and of the Council ranked it among the 8 key competences for lifelong learning. There are several definitions of DQ in the literature that approach digital competence from different perspectives, and there are also differences in its name, but relatively few researchers have tried to measure it. The aim of the study is to assess the digital competence of the population aged 14 to 75 with a validated measurement tool and to present different aspects of DQ.*

***Keywords**: DQ, internet, technology, digital competence*

1 Introduction

Our present society is characterized by digital technology, the internet and rapid development. The achievements of the digital age allow users to obtain and exchange information quickly, but owning new tools does not mean that we can use them correctly [1]. Their proper use requires so-called digital intelligence (DQ) [2], the importance of which is supported by many factors, such as the fact that more and more international organizations are developing programs for it [3; 4], online education and online working well [5]. The need for DQ is further reinforced by job expectations [6], which are set against employees [7; 8], but the knowledge acquired at the desk is often not the same as the skills and abilities expected in the workplace [9; 10].

Information and communication technology (ICT) is the foundation of our time and the engine of innovation [11], but lifelong learning [12] may have never been more relevant to the development of a knowledge-based society and the rapid uptake of innovations. Despite the growing recognition of the importance of acquiring competencies related to digitalization and ICT tools [13] and the nearly 20-year history of the digital competence literature [14], no universal definition has been developed to date [15].

2 Digital intelligence (DQ)

In the field of digital competencies, we can come across several terms by which the authors mean the same phenomenon or approximately similar. There are many reasons behind the different names and definitions, which can be traced back to the field of science represented by researchers and the content of digital competence. As a result, the following terms can be found in the literature regarding digital competence: ICT literacy, digital literacy, computer literacy or even media literacy [16; 17]. The reason for this is to be found in the fact that the phenomenon is addressed from many different disciplines, and that digital knowledge is also interpreted in different depths [18; 19; 20].

Previous empirical studies pointed to differences inbetween different segments of the population regarding the digital knowledge and skills (based on gender, age, education, and ethnicity). Younger generations, or so-called "digital natives," have higher digital literacy because they live their entire lives in the age of the Internet and digitalization, whether at home or school [21]. However, significant differences in digital skills, digital use, and content production among members of the young group have also been reported in the literature [22; 23]. In addition, some studies have found that while young people have advantages in operational and formal digital skills, older generations outperform them in terms of content (information and strategic) digital skills. [24].

3 Research Method

The data collection took place between 01-15.06.2020 online, on the QuestionPro platform. Snowball method has been used during the distribution of the questionnaire. It consisted of two main sections, the socio-demographic questions and the section measuring digital knowledge. As the questionnaire could only be accessed and completed online, the sample could not be considered representative.

For measure digital knowledge, the Internet Skill Scale (ISS) has been used, which was developed and validated by Van Deursen et al. [25], and consisted 35 questions and 5 factors, respectively. The 5 factors of ISS are Operational, Information Navigation, Creative, Social and Mobile. Fillers had to use a 5-point Likert scale to decide for each statement how much they considered it true for themselves (1 = strongly disagree, 5 = strongly agree).

In my research, I sought answers to three research questions and related hypotheses. In the following, I present the research questions and hypotheses and then the results.

Q1: How much digital knowledge does each generation have?

Q2: Is there a relationship between age, gender and the level of digital literacy?

Q3: Is there a significant difference in the level of digital literacy between men and women?

For the research questions presented, have we formulated the following hypotheses?

H1: There is a significant difference in digital knowledge between each generation.

H2a: There is a negative, strong relationship between age and digital knowledge.

H2b: Digital knowledge does differ by gender.

H3: Digital knowledge is higher for men than for women.

4 Results

The questionnaire was completed by 187 people (131 women and 56 men; mean age: 27,214; SD = 9,938), and nearly 63% of the respondents were young people of generation Z. In terms of age, the youngest filler is 16 years old, while the oldest is 75 years old.

4.1 Internet Skill Index

To properly analyze the data, it is essential to test the reliability of the measurement scales, for which I calculated the Cronbach's alpha values for each dimension based on the responses obtained. According to the test, the α coefficient is greater than 0.70 everywhere except for one factor, which is a good opportunity to model the results of the survey in the considered population [26], however, the exception factor in our case is above 0.6, which it is still within the acceptable range. Table 1 shows the Cronbach's alpha factors obtained for the groups of questions in the questionnaire.

Table 1 Coefficient of Reliability of the Cronbach Alpha by the 5 Sub-Dimension of ISS

Dimension	Cronbach Alfa	Number of Items
Operational	0,858	10
Information Navigation	0,606	8
Social	0,812	6
Creative	0,864	8
Mobile	0,757	3

Based on the Cronbach's alpha coefficients of the internal consistency of the groups of questions in the received questionnaire, it can be concluded that the possibility of modelling the results of the survey is very good for all factors. A comprehensive analysis of the Cronbach's alpha coefficient shows that reliable results can be expected from the analysis.

4.2 Correlation analysis

Table 2 Correlation between age and Internet Skill Scale score

		Age	Gender	SzumISS score
Age	Pearson Correlation	1	-,065	-,261**
	Sig. (2-tailed)		,378	,000
	N	187	187	187
Gender	Pearson Correlation		1	-,261**
	Sig. (2-tailed)			,000
	N		187	187
SzumISS score	Pearson Correlation			1
	Sig. (2-tailed)			
	N			187

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 2, there is a weak, negative significant relationship between age and measured digital knowledge ($r = -0.261$, $p < 0.01$). It means that with increasing age, the rate of digital knowledge decreases slightly. Furthermore, there is a weak and negative significant relationship between gender and measured digital knowledge. ($r = -0.261$, $p < 0.01$).

4.3 Average scores of dimensions of Internet Skill

Because the ISS has a proper Cronbach's alpha value for both the factors and as a whole, it was possible to generate scores for each factor and the instrument as a whole. In the following, I present the development of the scores obtained in this way. The maximum score that can be achieved with the measuring tool is 175, the total scores achieved by the respondents ranged between 74 and 171 (Mean = 141,412; SD = 11,552). By gender, the average score for men is 146.43, while for women, it is 139.29.

Table 3 The average scores of dimensions of IS

Dimension	Mean - Male	SD - Male	Mean - Female	SD - Female
Operational	4,896	0,327	4,818	0,340
Information Navigation	2,841	0,413	2,751	0,375
Social	4,735	0,523	4,725	0,415
Creative	4,000	0,777	3,388	0,931
Mobile	4,744	0,589	4,534	0,762

Table 3 shows the average scores achieved by each factor by gender. The results show that the fillers performed worse in two dimensions (Information Navigation and Creative). In the Creative dimension, the respondents encountered statements about the creation and editing of files and various digital contents. In the Information Navigation dimension, respondents encountered statements about navigating websites and searching the Internet. To examine the gender differences, Mann-Whitney U test has been performed, according to which there is a significant difference in the digital knowledge of men and women based on the scores obtained ($U = 2324.5$, $p = 0.00$).

Conclusions

The present research aimed to test the Internet Skill Scale in Hungary and to assess the level of digital knowledge. The significance and novelty of the research lie in the fact that it has not been used in Hungary yet as a measurement tool. A supplement to the Digital Economy and Society Index (DESI) [27] used at the European Union level, as I examined digital competence from a relatively different perspective than DESI.

Two of my hypotheses formulated at the beginning of the research were confirmed, but one was not confirmed.

H1: There is a significant difference in digital knowledge between each generation. This hypothesis was confirmed because there was a significant difference between the scores achieved by each generation.

H2a: There is a negative, strong relationship between age and digital knowledge. The first part of the second hypothesis proved not to be true, as it was confirmed that the younger ones scored higher; however, age has only a weak influence on digital knowledge.

H2b: Digital knowledge does differ by gender. The second part of the second hypothesis proved to be true, as it was confirmed that there is a difference between digital knowledge by gender. This difference is weak but significant.

H3: Digital knowledge is higher for men than for women. The last hypothesis was also confirmed, as they scored higher on average for men, and the Mann-Whitney U test showed a significant difference between the two sexes in terms of digital literacy.

The present research is based on an online survey, but in the future, it will be extended offline to achieve a larger sample size. The measurement tool used does not cover all segments of digital knowledge, which I intend to remedy by adding additional elements later. To this end, the ISS is also compared with other measuring instruments.

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Exploring factors affecting profitability in SME: Evidence from Albania

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Abstract: *Companies who operate in bank based financial system countries tend to be more sensitive to working capital management. In this context working capital takes a special attention from academic point of view and economic stability as well of the private companies. That's the reason why we develop this study since 90% of the companies which operate in Albania are classified as SME. According to literature review profitability is a wide concept since it can be expressed as an accounting measure, usually ROA. In this study we refer to the accounting measure ROE and it is considered our dependent variable. Independent variables are classified in two groups: internal indicators and external indicators. Internal variables are: Working capital measures, size of the company, sales growth, financial leverage. The country specific variables are: GDP growth, Ease of doing business.Working capital represented by CCC has an insignificant relationship to company profitability, but variables like Days Acc. Receiv and Days Invent. seem to have a significant impact. Size seems to not have any significant effect on profitability, perhaps the reason behind this is that these are all SME and their size does not differ regarding to profitability. While sales growth and has a significant positive relationship. Sales growth increases the profitability while leverage decreases it. Also the indicators of total asset turnover and acc. receivable turnover have a significant positive impact on profitability. What about country specific? Since GDP growth represents the economy cycle, it should have a positive significant relationship to profitability, but in our study the country specific indicators does not have any significant impact.*

Keywords: Debt ratio, Profitability, Turnover ratios, Size, Working capital, Country specific indicators
Jel codes: M40, G3, G3

1 Background

Companies who operate in bank based financial system countries tend to be more sensitive to working capital management, basically banks represent their main financing source after internal financing. In this context working capital takes a special attention from academic point of view and economic stability as well of the private companies. That's the reason why we develop this study since 90% of the companies which operate in Albania are classified as SME and their existence represents the economy wellbeing. Studies regarding the identification of factors that affect profitability in Balkan Countries are not as evident as the importance of the issue. Even in Albania there are some studies that relate to specific sectors, on a small number of companies. Through this study we are focusing in manufacturing and merchandising companies that operate in Albania, spreading more the sample than in previous studies.

2 Literature review

Liargovas and Skandalis (2010) identified the factors affecting financial performance of Greek industrial firms ,using a sample of 102 listed firms in the Athens Stock Exchange over the period 1997-2004. Return on sales reveals how much a company earns in relation to its sales, return on assets determines an organization's ability to make use of its assets and return on equity reveals what return investors take for their investments. The study shows that leverage, export activity, location, size and effective management significantly affect firm performance in Greece. Profitable firms in Greece are large, young, exporting firms with a competitive management team, which have an optimal debt-equity ratio and use their liquidity to finance their investments.

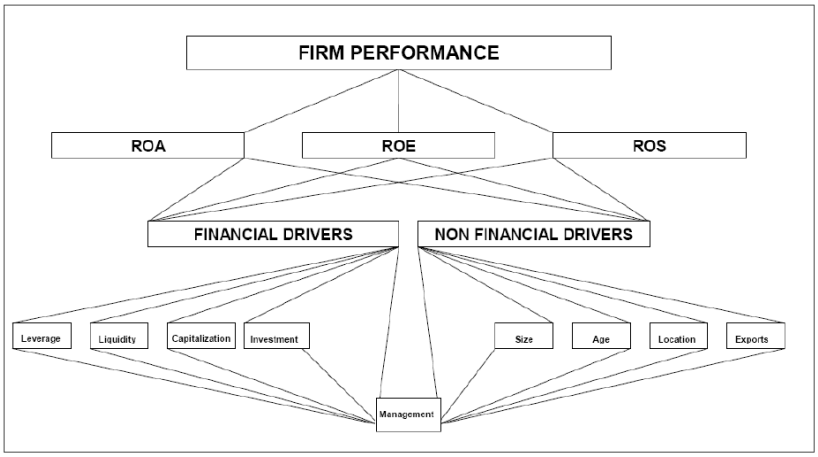

Figure 1: Factors affecting firm performance
Source: Liargovas and Skandalis (2010)

Mijić, Nuševa and Jakšić (2018) investigate the determinants of profitability for small and medium-sized enterprises (SMEs) in the wholesale and retail sector in the Republic of Serbia.The data was collected from the financial statement of enterprises. For this purpose, 9,005 observations of 1,801 SMEs and 1,605 observations of 321 large trade companies over the period of 2010-2014 were included. The results indicate that SMEs achieve statistically significant better profitability than large wholesale and retail companies. The findings indicate that leverage, liquidity, sales growth and lagged profitability positively influence the profitability of SMEs. Furthermore, the results show an inverse relationship between the size and tangibility on one side and profitability on the other side.

Batrancea, Morar, Masca, Catalin, Bechis (2018) analyzed the financial equilibrium factors that have an important effect on SME financial performance, as this performance is considered to have played a vital role in Romania's recovery from the economic crisis. Romanian SME' performance was influenced by the independent variables like: fixed assets, current assets, inventory, receivables, equity and liabilities. The study's results indicate that return on assets is influenced by the current assets ratio and the inventory ratio in all models, as well as by the equity-to-total liabilities ratio in 80% of the models. Assets ratios have the highest influence on performance evaluation, namely inventory ratio in all models and current assets ratio in 87.5% of the models. The study shows that liabilities ratios influence performance as follows: equity-to-total liabilities ratio in 80% of the models and total debt-to-assets ratio in 35% of the models.

Popa and Ciobanu (2014) indicate that the profitability of a company cannot be explained only by microeconomic factors or the tendency of a particular industry. It should be considered some macroeconomic factors such as inflation, unemployment, economic crises, changes in GDP, etc., and qualitative factors such as innovation capacity of companies, the knowledge embedded in the business, etc. Return on equity and the return on invested capital rations measures better the performance. The study verified the influence of fixed assets, turnover, price earnings ratio, duration of current assets by turnover and leverage on return on equity and the return on invested capital. The results were significant for most of them, and the regression models were valid with a coefficient of determination of more than 60%.

Govori (2013) showed that external factors such as access to finance, competition, corruption, and government policies have very important impact in the development of SMEs in Kosovo. Facilitating access to finance is important to set up a favorable environment to develop SMEs. SMEs in developing countries deal with numerous barriers to funding, although this problem is not unknown even in developed countries. Barriers that face SMEs usually relate to high administrative costs, high collateral requirements and the lack of willingness of banks to lend to SMEs. Raising the level of awareness of their role and availability of access to finance for SMEs can improve economic conditions in developing countries by promoting innovation, growth of GDP and reduce unemployment.

Puci (2018) examined 264companies from different sectors of the economy between 2010 until 2017. ROA, ROE and PM as depended variables; whereas the independent variables include: capital structure, liquidity, company's size, company's risk, management efficiency, GDP growth, exchange rates, inflation and interest rates. The results indicates that liquidity, GDP growth, and inflation rate were proved to be statistically insignificant.The results indicated that size, risk, and exchange rates negatively affect ROA, ROE and PM. Differences are with regard to capital structure use and interest rates impact on ROA, ROE and PM.

3 Data, methodology and results

This study is based on 100 SME data from merchandising to manufacturing companies, in the period interval 2005-2017.. The companies that operate in financial intermediaries, insurance, financial services, construction companies, educational institutes etc. are excluded due to their size and features of their specific activity. According to literature review profitability is a wide concept since it can be expressed as an accounting measure, usually ROA, or can be expressed as an economic measures.

In this study we refer to the accounting measure ROE and it is considered our dependent variable. Independent variables are classified in two groups: internal indicators (company specific data) and external indicators (country specific data).

Internal variables are: Working capital measures, size of the company, sales growth, debt ratio, measures of turnover . The country specific variables are: GDP growth, ease of doing business (more specific on fiscal policies perspective).

Working capital can be measured from Days Accounts Receivable, Days Inventory, Days accounts payable which can be switched to cash conversion cycle indicator. The reason we used CCC as an independent variable instead of traditional liquidity ratios lies in the meaning that we want to measure an ongoing process. This feature is specifically offered from CCC indicator, while liquidity ratios are considered a one time position of liquidity.

Size of the company can be expressed by the number of employees, asset size or sales turnover. In our study we chose asset size. The turnover ratios refer to: asset turnover, inventory turnover, accounts receivable turnover, accounts payable turnover. Country specific variables include the GDP growth rate in Albania from 2005-2017 published by Bank of Albania and DB indicator can be accessed from Doing Business Issues.

Table 1- Variable description and selection

	Variables	*Variable description*
Dependent variable	ROA	Net Profit/ total Assets
Independent variables		
Company specific factor	D.Acc.R	(Acc. R * 365)/ Sales
	D.Inv	(Inv * 365)/CGS
	D.Acc.P	(Acc.P *365)/CGS
	CCC	D.Acc.R+ D.Inv- D.Acc.P
	Size	Ln Total Assets
	Net Sales growth	$(S_2 - S_1)/ S_1$
	Asset turnover	Net Sales/ Total Assets
	Acc. R. T	365/ D.Acc.R
	Acc.P.T	365/ D.Acc.P
	Inv. T	365/ D.Inv
	Debt ratio	Long term debt/ total Assets
Country specific indicators	GDP growth	
	Doing Business Indicator	

Source: Authors calculations

The data for this study is collected from financial statements of the companies which upload them on a yearly basis on the National Registering Center website. This is a government body which companies that operate in Republic of Albania are obliged to be registered and upload any financial or legal change and activity during each fiscal year ended on 31 December.

Companies under study operate almost in every city of Albania, but mainly in Shkodra, Lezha, Tirana and Durres. This area can by sure be selected to represent the biggest number of businesses operating in Albania.

Below are represented the descriptive statistics of the variables selected for this study.

Table 2-Summary Statistics, using the observations 1 – 940 (missing values were skipped)

Variable	Mean	Median	S.D.	Min	Max
ROA	0.0582	0.0350	0.137	-0.296	1.88
DLLA	9.18e+005	28.0	1.48e+007	0.000	2.38e+008
DINV	2.58e+005	157.	4.41e+006	0.000	9.14e+007
DLLP	2.05e+005	128.	4.53e+006	0.000	1.00e+008
CCC	1.02e+006	76.4	1.49e+007	-5.59e+004	2.38e+008
RrSH	2.02e+004	0.0168	4.37e+005	-1.00	9.56e+006
Madh	17.8	17.8	1.78	0.000	22.0
RBorxhit	0.126	0.00115	0.236	0.000	3.06
QAT	1.13	0.673	1.74	0.000	16.6
QLLA	8.86e+005	6.96	1.11e+007	1.53e-006	1.57e+008
QLLP	41.6	2.32	337.	3.64e-006	4.93e+003
QINV	41.6	2.32	337.	3.64e-006	4.93e+003
DB	0.527	0.481	0.133	0.319	0.747
GDP	0.0339	0.0353	0.0160	0.0100	0.0590

Source: Authors Calculations

The regression analysis from this database was performed by Stata software. The data was tested before regression for multicolinearity, heteroscedasticity,

collinearity, and normality of residual. The final results after some alterations are as below:

Table 3- Regression results using OLS, Pooled OLS, using 940 observations
Included 100 cross-sectional units. Time-series length: minimum 1, maximum 7

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.00370330	0.0902904	0.04102	0.9675	
D. Acc.Receiv.	**−1.76610e-05**	**8.83001e-06**	**−2.000**	**0.0512**	*
D.Invent.	**2.52203e-06**	**1.11728e-06**	**2.257**	**0.0286**	**
D.Acc.Pay.	−2.88084e-06	1.95866e-06	−1.471	0.1479	
Sales Growth	**0.00482928**	**0.00156522**	**3.085**	**0.0034**	***
Size	0.000226725	0.00497919	0.04553	0.9639	
Debt Ratio	−0.105229	0.0857933	−1.227	0.2260	
TA.Turn.	**0.0466072**	**0.0128324**	**3.632**	**0.0007**	***
Acc. Rec. Turn.	**0.000201693**	**8.41938e-05**	**2.396**	**0.0205**	**
Acc. Pay.Turn	−1.04891e-06	8.74345e-06	−0.1200	0.9050	
DBI	0.000519981	0.000531774	0.9778	0.3331	
GDP Growth	−1.03350	1.18216	−0.8742	0.3863	

Source: Authors calculation

We note that CCC variable which measures the ongoing working capital is omitted from the regression. That's due to the unsignificant status of this variable. Since it is calculated from the days of account receivable, days of inventory and days of accounts payable, its effect is not so clear in our sample. Also Inventory turnover is omitted due to high collinearity.

So the results of the table above can be expressed as below:

ROA = 0.0037* D.Acc.Rec + 2.522*D.Inv + 0.005 *S.Growth + 0.047 *Total Asset Turn. + 0.0002* Acc. Rec. Turn

The coefficient of determination, R-squared, measures the percentage (29.35%) of ROA variation explained by Accounts Receivable Days (D.Acc.Rec), Days Sales of Inventory (DInv), Sales Growth(S.Growth), Total Assets Turnover ratio (T.A.Turn.) and Receivable Turnover Ratio (Acc.Rec.Turn). Since p value of these variables are less than α(0,05) they are considered to be statistically significant for the analysis. The other part (not explained by R-square) is explained by factors not taken into consideration in this study.

We can conclude that only Accounts Receivable Days (the number of days that a customer invoice is outstanding before it is collected) have negative significant impact on ROA in Albania. An increasing in this ratio will decrease ROA of the company.

The days sales in inventory ratio shows how many days a company's current stock of inventory will last, increasing this ratio will affect positively ROA of the company.

Sales growth is used in the context of company's future perspective and long run health. The impact of sales growth is significantly positive on ROA .

The asset turnover ratio is usually used as an indicator of the efficiency, increasing asset turnover ratio will result in increasing ROA of the company.

The accounts receivable turnover ratio is a measure used to identify a company's effectiveness in collecting its receivables. According to the equation, an increase in receivable turnover ratio will result in increasing ROA.

Conclusions

Through this study we tried to estimate the effect on profitability of SME's in Albania of company specific accounting indicators and country specific indicators. The data retrieved from financial statements of the SME under study showed some key features that influenced the results and in the same time represent the restrictions of this study. We are listing them below:

-the data quality is a key issue regarding our study,

-the financial statements were not submitted on regular basis, so missing values is a consistent phenomenon,

-are observed extreme fluctuations on the values of some variables, especially on accounts receivable, inventories and accounts payable. These values affected especially their respective turnover ratios, and narrowed the sample size and number of observations.

We found that due to days of accounts payable, CCC is not significant so that's the reason that we switched to basic working capital indicators.

Company's size even showed a positive relationship does not have a significant impact on profitability. It is interesting why the same result is observed for the debt ratio. Theoretically it should affect negatively the profitability. It is observed from the data that up to 2013-2014 mostly the long term debt account reported on 31 December showed lower levels. After 2014 it is noticed a positive change on the way reporting financial accounting data from companies.

The issue related to debt is related to the level of informal debt companies have, which there are not reflected on financial statements.

Further, in order to improve the results of the relationship between profitability and explanatory variables, we should increase the number of selected companies.

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Management of the Patents, an important part of the small and medium sized businesses, in Albania

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Abstract:
From early writing in Mesopotamia, the Chinese abacus, the Syrian astrolabe, and countless other discoveries and innovations, it has been the imagination of the world's creators that has enabled humanity to advance to today's levels of technological progress.
Patent/s management is seen as one of the most important issues in the strategic management of the business organisations. Under this general framework, it is important for us to understand the level of importance of the patent/s and their management (as expressed by the activities pertaining to the management of the patent/s), in Albanian small and medium sized businesses. Many companies in Albania see the patent/s as important asset/s, so the conduction of a research with the focus on patent/s and their management, in some companies of this country, adds value to their management strategies.
The aim of this research is to investigate the level of importance of the patent/s in small and medium sized business organizations in Albania. The methodology used for the research is unfolded with its own dimensions like: specification of the research subjects, tools used for the research, sampling, implementation plan, ethical issues and presentation of the research findings. The research is based on primary and secondary data collection.
*The research is based on the testing of the main Hypothesis, H0**, and some other Sub-Hypotheses**, and the results of the analysis indicate that hypothesis H0: "Patent is not an important asset for the small and medium sized business organizations in Albania", is invalidated. Some important conclusions are given at the end of this paper.*

Keywords: *Patent/s, Patent as an Important Asset, Management of Patent/s, Albanian Small and Medium sized Business Organizations*

1 Introduction

Few will disagree that today's science, technology, and creative arts shape our day-to-day lives. Early technological breakthroughs catapulted the human race out of feudal systems of society. In the last 100 years or so, technological leadership has become a determining factor in wealth creation and has fueled the growth of nations.

Indeed, as the former Director General of WIPO, Arpad Bogsch. stated: "The search for new technological solutions and cultural creative activities deserves constant encouragement because as the history of nations has shown, in addition

to spiritual development, inventions and cultural creations are the main sources of social and economic development of mankind. Food, health, communications and other fundamental needs for the survival of the human race, have improved, are improving and will continue to improve because of inventions and creations. "

In the second half of the 19"' century, goods and workers crossing national borders brought a wave of globalization to industrial powers. Although patent laws had been enacted in several countries, the demand for international protection of inventions began to be felt. In fact, foreign exhibitors refused to attend the International Exhibition of Inventions in Vienna in 1873 because they were afraid their ideas would be stolen and exploited commercially in other countries. This incident resulted in the birth of the Paris Convention for the Protection of Industrial Property in 1883, the first major international treaty designed to help the people of one country obtain protection in other countries for their intellectual creations. Such protection took the form of industrial property rights, in the form of patents (invention), marks, and industrial designs.

"A patent may be granted for a new, useful, and non-obvious invention, and gives the patent holder an exclusive right to commercially exploit the invention for a certain period of time (typically 20 years from the filing date of a patent application) An invention is any new and useful process, machine, manufacture, or material composition, or an improvement to one of this, developed by a human". (Pressman, 2018).

A patent is a set of exclusive rights granted by a state to a patentee (the inventor or assignee) for a fixed period of time in exchange for the regulated, public disclosure of certain details of a device, method, process or composition of matter (substance) (known as an invention) which is new, inventive, and useful or industrially applicable.

"A patent is a grant from a goverrment that confers upon an inventor the legal right to exclude others from making, using, selling, importing or ofering an invention for sale, for a fixed duration". (Pressman, 2018).

Governments expect that with new, patented information in the public domain, more scientists will be encouraged to innovate with knowledge of these technological and scientific advancements. This fact may be counterintuitive at first.

"You might argue that the public would actually benefit more if the inventor published their findings and shared their knowledge through the literary community. After all, the process would take less time and it is free. However, considering for example the patenting that occurs in biotechnology and the patenting of drug formulations, a company needs some assurance that they will have the exclusive right to a technology before they will invest millions in its development. Only a patent can give them this right". (Hunt, Nguyen & Rodgers, 2010)

The exclusive right granted to a patentee in most countries is the right to prevent or exclude others from making, using, selling, offering to sell or importing the claimed invention. The patentee may have to comply with other laws and regulations to make use of the claimed invention. So, for example, a pharmaceutical company may obtain a patent on a new drug but will be unable to market the drug without regulatory approval.

In most countries, both natural persons and corporate entities may apply for a patent. The entity or entities then become the owners of the patent when and if it issues. The ability to assign ownership rights increases the liquidity of a patent as property.

The grant and enforcement of patents are governed by national laws, and also by international treaties, where those treaties have been given effect in national laws. Patents are, therefore, territorial in nature.

2 Economic Rationale For Patenting

“Without a patent another company would be under no obligation to respect your idea. That is, they would be able to copy your idea without any compensation to you. With a patent you can stop other companies from marketing and selling your invention“. (Yang, 2017).

There are four primary justifications for granting patents: disclosure, innovation, production investment, and designing around.

First, in accordance with the original definition of the term "patent," it is argued that patents facilitate and encourage disclosure of innovations into the public domain for the common good. If inventors did not have the legal protection of patents, they may prefer or tend to keep their inventions secret. Awarding patents generally makes the details of new technology publicly available, for exploitation by anyone after patent protection ends, or for further improvement by other inventors. Furthermore, when a patent's term has expired, the public record ensures that the patentee's idea is not lost to humanity.

Second, it is broadly believed that patents provide incentives for economically efficient research and development (R&D). Many large modern corporations have annual R&D budgets of hundreds of millions or even billions of dollars. Without patent protection, R&D spending would be significantly less or eliminated altogether, limiting the possibility of technological advances or breakthroughs. Corporations would be much more conservative about the R&D investments they made, as third parties would be free to exploit any developments. This second justification is closely related to the basic idea underlying traditional property rights: why build a house if another person could freely occupy it?

Third, in many industries, once an invention exists, the cost of commercialization (testing, tooling up a factory, developing a market, etc.) is far more than the initial conception cost. Unless there is some way to prevent copies from competing at the

cost of production, companies will not make that productization (the act of modifying something) investment.

Fourth, many believe that patent rights create an incentive for companies to develop workarounds (a method for overcoming a problem or limitation in a program or system) to patented inventions, thereby creating improved or alternative technologies that might not otherwise have been developed.

One interesting side effect of modern day patent usage is that the small-time inventor can use the exclusive right status to become a licensor. This allows the inventor to accumulate capital quickly from licensing the invention and may allow rapid innovation to occur because he/she may choose to not manage a manufacturing buildup for the invention. Thus the inventor's time and energy can be spent on pure innovation, allowing others to concentrate on manufacturability.

3 Methodology Of The Research

Patents and the rights they grant, are seen as one of the most important issues in the strategic mangement of the business organizations. Under this general framework, it is important for us to understand the level of importance of the patents and the level of their management, in small and medium sized business organizations in Albania.

The aim of this research is *to investigate the level of importance of the patent/s in small and medium business organizations in Albania, as well as to find out if relationships between importance of the patent/s and other specified managerial issues related to the patent/s, are present in such organizations***.**

The objectives of the research are:

To indicate the importance of the patent as an asset for the business organizations

To indicate the level of management of the patents within companies

To indicate any presence of relationship between the "importance of the patent" and "other specified variables" like: change in the attention of company management, existence of the policy of the company to manage patent, development of the strategy of the company to manage patent, creation of the formal structure of the company to manage patent, application for patenting.

The research is based on the testing of the main Hypothesis, expressed as:

H0. Patent is not an important asset for the small and medium sized business organizations in Albania.

Ha: Patent is an important asset for the small and medium sized business organizations in Albania.

.....as well as, on the testing of five other Sub-Hypotheses, trying to find out if relationships, between "patent as an important asset for the business" and "some

other specified variables (activities pertaining to the management of the patent)", are present in such organizations**.**

H1: There is a positive correlation between the "patent as an important asset for the business" and "change in attention of company management".

H2: There is a positive correlation between "patent as an important asset for the business" and "existence of policy to manage patent".

H3: There is a positive correlation between "patent as an important asset for the business" and "development of strategy to manage patent".

H4: There is a positive correlation between "patent as an important asset for the business" and "creation of formal structure to manage patent".

H5: There is a positive correlation between "patent as an important asset for the business" and "application for patenting".

The methodology used for the research has its own dimensions like: *specification of the research subjects, tools used for the research, sampling, implementation plan, ethical issues and presentation of the research findings*. The research is based on primary and secondary data collection.

3.1 Specification Of The Research Subjects

Many companies in Albania see the patent/s as an important asset/s, so the conduction of such a research adds value to their management strategies. So, after defining the hypotheses, we started out the work about specification of the subjects that could be compatible to the purpose of this research. After distinguishing a number of companies of interest (SMEs in the Tirana region of Albania), we started to collect the required information from the managers of these companies.

The data for the study were collected from business organizations with activity in areas like: manufacturing, service, retailing, etc. The respondents were senior managers. This category was considered to be the best to target, because these individuals have the tendency to be closely associated with invention process, patenting practice, and its respective managerial decision making.

3.2 Tools Used For The Research

In order to collect the necessary information, analyze the data, and draw conclusions, a questionnaire composed of some basic questions were developed and delivered. The questionnaire was prepared to collect important data on different aspects of patent management practice. The analyses of the collected information would give us the necessary level of understanding about the issue in discussion. Data are analysed using SPSS program.

3.3 Sampling

Our original sampling consisted of 126 managers, in 126 companies, in the Tirana region of Albania. 126 questionnaires were delivered, and the questionnaires' return rate was 78.6%, or 99 collected questionnaires. However, the collected data could be considered as being representative.

3.4 Implementation Plan

The way we were organized helped us in reducing the time and costs required to perform the interviews. Data were collected during 2019, comprising a period of five years (last five years). Collected data were processed in order to prepare the findings and draw conclusions. There were not present any difficulties in distributing and collecting the questionnaire.

3.5 Ethical Issues

The information collected from the respondents was very important for analyzing and interpreting the findings. The names of the respondents (companies' managers) due to ethical obligations were not disclosed in this paper.

4 Results. Presentation Of The Research Findings

In this section research findings are presented.

4.1 Patent As An Important Asset(Univariate Analysis)

In order to test Hypothesis 0, Descriptive analysis is used.

In regard with the level of importance of the patent as an asset of the business, the results of the analysis are as following:

To the question "Are you aware of the concept of patent?", 100% of respondents answered "yes", (0% of respondents answered "no", 0% of respondents answered "do not know"), clearly indicating that all companies are aware of the concept of patent.

To the question "Do you know how to gain legal protection of the patent?", 100% of respondents answered "yes", (0% of respondents answered "no", 0% of respondents answered "do not know"), clearly indicating that all companies know how to gain legal protection of their patent/s.

To the question "Do you think that the patent is an important asset for your business?", 87.9% of respondents answered "yes", 9.1% of respondents answered "no", and only 3% of respondents answered " do not know", indicating that most of the companies are aware of the importance of their patent/s as business assets. However, there are companies (managers) thinking that their patent/s are not important.

To the question “Did the attention of company management (in regard with patent mangement), change over last five years?“, 78.8% of respondents answered “yes“, 18.2% of respondents answered “no“, 3% of respondents answered “ do not know“, indicating that in most companies management is continuously being focused on patent/s mangement.

To the question “Are there any policies of your company (management) to manage its patent, over the last five years?“, 39.4% of respondents answered “yes“, 51.5% of respondents answered “no“, 9.1% of respondents answered “do not know“, indicating that most of the companies do not own any policies to manage their patent/s.

To the question “Did your company (management) develop any strategies to manage its patent, over the last five years?“, 42.4% of respondents answered “yes“, 48.5% of respondents answered “no“, 9.1% of respondents answered “do not know“, indicating that in many companies patent is becoming part of their business strategies.

To the question “Did your company (management) create any formal structures to manage (that is, to identify, to protect, to promote or to comercialize) its patent, over the last five years?“, 30.3% of respondents answered “yes“, 66.7% of respondents answered “no“, 3.0% of respondents answered “do not know“, indicating that a few companies own formal structures envolved in the mangement of their patent/s.

To the question “Did your company filed any applications for patenting, over last five years?“, 54.6% of respondents answered “yes“, 42.4% of respondents answered “no“, 3.0% of respondents answered “do not know“, indicating that not all the companies applied for patenting during the specified period.

Examining the answers of the questions, it is clear that the weight of the percentages indicated by the respondents, is on the affirmative value of the evaluation, clearly showing the importance of the patent, and the importance of the activities pertaining to its management.

By using Arithmetic Mean, Standart Deviation and Variation Coefficient (CV) (as a standardized measure of dispersion of the above answers‘ frequency distribution, expressed as a percentage, and defined as the ratio of the standard deviation {\displaystyle \ \sigma } to the mean) of the results above, based on a scale of three values, “positive (yes)“, “negative (no)“ and “indifferent (do not know)“, (indicating the relativity of answers above), we see that the lowest value of the CV corresponds to the scale “positive“, with 60.2% of the business organizations. The results of the analysis above clearly indicate that hypothesis H0: Patent is not an important asset for the business organizations in Albania, is invalidated, that is, alternative hypothesis Ha: Patent is an important asset for the business organizations in Albania, is validated.

4.2 Relationship Between Patent As An Important Asset And Other Variables (Bivariate Analysis)

In order to test Hypothesis 1-5, first the Crosstabulations between the variables were computed in order to quantitatively analyze the relationship between variables, and than Pearson's chi-squared test was used in order to test the independence between variables. Correlation analyses was used to attempt rejection of the other sub-hypotheses.

No	Variable 1	Variable 2
H1	patent as an important asset for the business	change in attention of company management
H2	patent as an important asset for the business	existence of policy to manage patent
H3	patent as an important asset for the business	development of strategy to manage patent
H4	patent as an important asset for the business	creation of formal structure to manage patent
H5	patent as an important asset for the business	application for patenting

Table:1

Variables to be crossed.

For the crosstabulation “Do you think that the patent is an important asset for your business?“, and “Did the attention of company management (in regard with patent mangement), change over last five years?“, values of the table below show that the “Significance of the chi square“ value is greater than (0,363 > 0.05) “Accepted error“ value, indicating independence between the variables. Based on the Table 7. Correlations, values show that “Significance“ value is 0.812, indicating the existence of a statistically important relationship, and the “Pearson correlation“ value is 0.445, indicating that there is a medium, positive, linear correlation between the variables. Hence hypothesis H1: There is a positive correlation between “level of patent as an important asset for the business“ and “change in attention of company management“, is validated. That is, since patent is an important asset for the business, it has caused a change in the attention the company management pays on it.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4,333	4	,363
Likelihood Ratio	4,511	4	,341
Linear-by-Linear Association	,060	1	,807
N of Valid Cases	99		

Table:2

Chi-Square test for H1.

For the crosstabulation "Do you think that the patent is an important asset for your business?", and "Are there any policies of your company (management) to manage its patent, over the last five years?", values of the table below show that the "Significance of the chi square" value is greater than (0,131 > 0.05) "Accepted error" value, indicating independence between the variables. Based on the Table 7. Correlations, values show that "Significance" value is 0.137, indicating the existence of a statistically important relationship, and the "Pearson correlation" value is 0.378, indicating that there is a medium, positive, linear correlation between the variables. Hence hypothesis *H2:* There is a positive correlation between "level of patent as an important asset for the business" and "existence of policy to manage patent", is validated. That is, since patent is an important asset for the business, it has required the existence of a policy to manage it, in the company.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4,058	2	,131
Likelihood Ratio	5,580	2	,061
Linear-by-Linear Association	2,391	1	,122
N of Valid Cases	99		

Table:3

Chi-Square test for H2.

For the crosstabulation "Do you think that the patent is an important asset for your business?", and "Did your company (management) develop any strategies to manage its patent, over the last five years?", values of the table below show that the "Significance of the chi square" value is greater than (0,503 > 0.05) "Accepted error" value, indicating independence between the variables. Based on the Table 7. Correlations, values show that "Significance" value is 0.508, indicating the existence of a statistically important relationship, and the "Pearson correlation" value is 0.426, indicating that there is a medium, positive, linear correlation between the variables. Hence hypothesis *H3:* There is a positive correlation between "level of patent as an important asset for the business" and "development

of strategy to manage patent“, is validated. That is, since patent is an important asset for the business, it has required the development of a strategy to manage it, in the company.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1,376	2	,503
Likelihood Ratio	1,760	2	,415
Linear-by-Linear Association	,477	1	,490
N of Valid Cases	99		

Table:4

Chi-Square test for H3.

For the crosstabulation “Do you think that the patent is an important asset for your business?“, and “Did your company (management) create any formal structures to manage (that is, to identify, to protect, to promote or to comercialize) its patent, over the last five years?“, values of the table below show that the “Significance of the chi square“ value is greater than (0,277 > 0.05) “Accepted error“ value, indicating independence between the variables. Based on the Table 7. Correlations, values show that “Significance“ value is 0.171, indicating the existence of a statistically important relationship, and the “Pearson correlation“ value is 0.257, indicating that there is a small, positive, linear correlation between the variables. Hence hypothesis *H4:* There is a positive correlation between “level of patent as an important asset for the business“ and “creation of formal structure to manage patent“, is validated. That is, since patent is an important asset for the business, it has required the creation of a formal structure to manage it, in the company.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2,568	2	,277
Likelihood Ratio	3,683	2	,159
Linear-by-Linear Association	2,020	1	,155
N of Valid Cases	99		

Table:5

Chi-Square test for H4.

For the crosstabulation “Do you think that the patent is an important asset for your business?“, and “Did your company filed any applications for patenting, over last five years?“, values of the table below show that the “Significance of the chi square“ value is greater than (0.834 > 0.05) “Accepted error“ value, indicating independence between the variables. Based on the Table 7. Correlations, values

show that “Significance“ value is 0.618, indicating the existence of a statistically important relationship, and the “Pearson correlation“ value is 0.795, indicating that there is a strong, positive, linear correlation between the variables. Hence hypothesis *H5:* There is a positive correlation between “level of patent as an important asset for the business“ and “application for patenting“, is validated. That is, since patent is an important asset for the business, it has required the application for patenting, in the company.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	,364	2	,834
Likelihood Ratio	,605	2	,739
Linear-by-Linear Association	,274	1	,601
N of Valid Cases	99		

Table:6

Chi-Square test for H5.

Correlations between the variables are shown in the table below.

Correlation

		change in attention of company management	existence of policy to manage patent	development of strategy to manage patent	creation of formal structure to manage patent	application for patenting
patent as an important asset for the business	Pearson Correlation	,445	,378	,426	,257	,795
	Sig. (2-tailed)	,812	,137	,508	,171	,618

Table:7

Correlations.

Some important conclusions are given below.

Conclusions

Many small and medium sized companies in Albania are aware of the concept of patent and they know how to gain legal protection of their patent/s.

Most small and medium sized companies see their patent/s as very important for their businesses and in these companies management is continuously being focused on patent/s and patent/s mangement.

Despite tha fact that many small and medium sized companies see their patent/s as very important, many of them do not own any policies to manage their patent/s. Time after time companies have been applying for patenting and most of them see their patenting as very important.

Despite the fact that in many small and medium sized companies patent is becoming part of their business strategies, some of them own or created formal structures envolved in the mangement of their patent/s.

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SEO Based Analysis of Online Grocery Stores During COVID Lockdown

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Abstract: *The coronavirus epidemic forced consumers to purchase their basic food supplies online, which accelerated the penetration of e-grocery store services in Hungary. The survival of online grocery stores depends on how long the pandemic will last and how well they manage to meet growing demands.This study takes a closer look at the developments of e-grocery providers between March and May of the COVID-19 lockdown period through analising their online presence.*
Keywords: *SEO, COVID, online grocery stores*

1 Introduction

The last couple of years we could read numerous articles decrying the slow progress of e-commerce penetration in Hungary. According to GKI's Digital study, online e-commerce represented 6.3% of the total retail industry in 2019, and FMCG was only 9.4% of the e-commerce pie [1]. Last year this time, experts have predicted that the increase in the number of online shoppers will probably slow down because there is not much room for further growth (Figure 1).

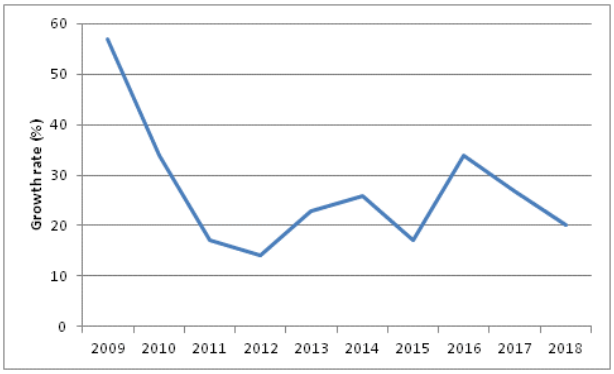

Figure 1
Growth rate of e-commerce revenue in Hungary from 2009 to 2018 (Data: Smart Commerce Consulting)

GKI's Digital survey estimates that adult internet shoppers number around 3.3 million, however most of these, 35.9%, only buys online 1 or 2 times a year. Of

these roughly half a million have already ordered food online [1]. eNET's online research in April of 2019 found that the top three categories users bought were mobile phones and accessories; clothing, also toys and presents. 86% of online shoppers have purchased services, where accommodations clearly dominated. Only 22% of shoppers have bought foodstuffs and household goods online. Most of them (67%) used Tesco's, and 27% chose Auchan's online store [2]. This is still a sharp increase compared to the just 8% in the fall of 2015 [3]. Of course at that time there were very few e-grocers on the market compared to today. Even as late as February 2020 one of the major Hungarian dailys ran an article with the title "Home delivery is still a small business" in which, while introducing the newest entrant to the e-grocery market (Kifli), the author deliberated wether this model would work for Hungarian customers? [4]

In early March, most had no idea that consumer habits could be completely upset by the effects of the coronavirus. The pandemic has placed e-grocery shopping, a previously niche industry that was showing potential, in the limelight. Due to the government stay at home orders, customers avoidance of public areas and their continued need for foodstuff and basic supplies, online grocery delivery services became indispensable. According to GKI Digital's measurements, more than 50,000 new customers appeared on the Hungarian online retail market in the month and a half between mid-March and the end of April as a result of the epidemic [1]. Current developments are expected to change consumer behavior on the long term, well after the pandemic subsides, accelerating the industry's penetration in Hungary. How successfully e-grocers are able to meet expectations during the pandemic will decide who the leading online grocers will be after the pandemic subsides.

1.1 The timeline

According to Nielsen, the turnover at the hyper- and supermarket chains in the last week of February was still completely average, with about HUF 39.4 billion. As the epidemic situation in Hungary started to get worse and customers have started to take the epidemic more seriously more and more people tried to replenish stocks and fill up their pantry. Between the 9th and 11th weeks of the year the turnover of supermarkets increased by 34% jumping to HUF 56.9 billion **[**5].

On the 11th of March, the Hungarian government declares a state of emergency. Consumers rush to the stores in panic mode buying durable food and basic consumer goods. Sought after products quickly run out of stock. Quantitative restrictions appeared soon thereafter. Online sales, however already started rising significantly in mid February. In the first wave, people were buying mostly epidemic related supplies (face masks (a 590% demand increase), hand sanitizers, wipes, antiseptic sprays, disposable gloves, vitamins, bottled water and soap).

From an online survey conducted by Reacty Digital between March 12-15 we can find out that only 17% of respondents ever purchased groceries on line. After the Prime Minister's proclamation on March 13, 2020 announcing the first set of restrictions, consumer attitudes have changed rapidly. Until Friday evening, three-quarters of respondents did not consider online grocery shopping at all, while by

the end of the weekend, nearly half of them were contemplating it as a possible solution [6].

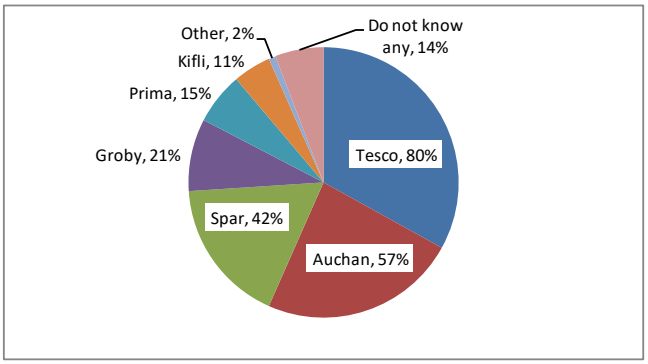

Figure 2
Best known online grocers at the time of lockdown (Data: Reacty digital survey)

As expected, most shoppers would have preferred using, well known grocery chains, or the providers where they would normally purchase food (Figure 2). However, online ordering systems were overwhelmed by increased demand, and by March 17th there was not a single open spot at any of the well-known e-grocers. Inventory shortages were commonplace (flour, yeast, sugar, toilet paper). The curfew imposed on 28th of March further complicated the situation. As of March 23rd, in times of emergency out-of-shop and mail order trading could be performed without registration if the merchant sells daily consumer goods or restaurant food (48/2020. (III. 19.) Government Decree) [7]. This new legislation also allows the seller to deliver goods to customers with the involvement of an off-premises contributor. Within a span of a few weeks, the process in the fresh food delivery market has sped up and several players have entered the market who have not participated or not sold to retail consumers beforehand. By mid April, supply chains were again normalized, stock shortages were eliminated and orders could be placed 1 or 2 days in advance.

2 Materials and Methods

There are a number of Search Engine Optimization (SEO) tools available on the net, of which I utilized two freely available one: SE Ranking and Alexa. SEO is an e-marketing tool generally used to optimize website visibility, but it is also extremely useful for analyzing competition. In my research I incorporated a number of indicators (number of keywords positioned, volume of searches, and inbound links) thus facilitating the comparison of different domains in a more comprehensive way.
First I had to compile those companies that I wanted to include in the survey.

The five types of e-grocers currently present on the market are:

1. Already existing providers
2. Grocery stores adding online presence
3. Wholesalers entering consumer markets
4. Restaurants, bakeries etc. adding grocery delivery
5. Completely new competitors

The companies examined were, either nationally present, delivering in all of Hungary, or present in Budapest and the conglomeration. Providers operating only in the countryside, or in certain localities were excluded. This study looks only at general grocers, that is specialized shops (bakeries, butchers etc.), are not included. Smaller providers did not have enough data to incorporate them into the study. The database thus consists of 7 companies the characteristics of which can be seen in Table 1. The selected company domains were SEO-analyzed for the period of lockdown, that is between March and May of 2020.

Table 1 e-grocer's caracteristics as of May 2020 (Data: Alexa, SE Ranking)

	Alexa Rank		Daily Pageviews	Daily time	Bounce	Referral	Clicks /month		Traffic %
	Golbal	Hungary	per visitor	on site (min)	rate	Sites	organic	paid	from search
tesco	65,472	263	3	2:38	35.90%	374	416475	3700	54%
auchan	78,917	187	2:48	3:01	34.80%	180	227917	12527	30%
spar	106,022	479	3.5	4:19	29.20%	186	85633	1134	50%
Kifli	296941	951	1.7	1:26	82.80%	13	5694	10327	na
prima (cba)	370,102	na	6.7	4:37	22.20%	7	11421	7	na
groby	726,012	na	2	2:51	na	69	19613	883	na
roksh	1,131,017	na	2	na	na	10	1340	1606	na

3 3 Discussion

Keyword analysis run for the expressions "online shopping" and "food delivery" showed a sharp increase within a week of 393% and 374%, respectively, after March 14 (Figure 3). Search interest is graphed relative to the highest point for a given time. In this case, the search for these terms peeked on the week of March 28th.

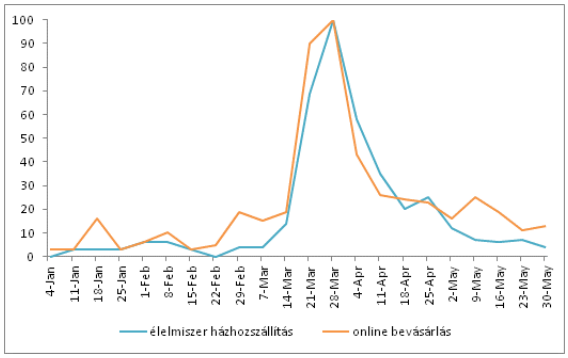

Figure 3
Keyword popularity (Data: SE Ranking)

The foundation of Alexa Ranking is overall web traffic. A site's ranking is based on a combined measure of Unique Visitors and Pageviews. Alexa Rank can act as a tool for SEO audits, especially in comparison to competitors. The lower your Alexa rank, the more popular your website is (the number one ranked site, not surprisingly is Google). From the e-grocers examined, currently only six is ranked by Alexa. Kifli, a new addition to the market, faired the best with a 69% increase in rankings since inception. Tesco, Auchan and Spar changed about the same rising between 40-48%, while gRoby and Prima underperfomed with only 27-28% increase. Although, gRoby's online delivery has been on the market the longest, since 1999, as it can be seen from the graph, it took a pandemic for them to pass a certain treshold in their online presence.

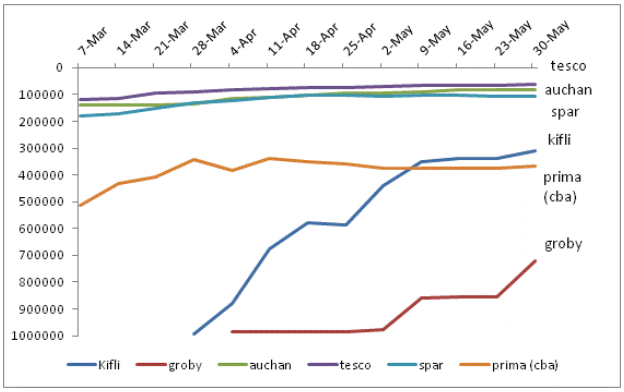

Figure 4

Global internet traffic and engagement over the past 90 days for selected sites (Data: Alexa)

As sites with lower traffic are not tracked by Alexa, additional information was gained through SE Ranking, such as organic and paid traffic and organic and paid keyword usage by site. Based on this data, the competitive e-market place could be visualized (Figure 5 – for better visibility the graph is divided by size of grocers). The begining position is November 2019, that is pre-Christmas shopping rush (for Kifli entry to the market was December and for Roksh January). The number of websites showing up in the SERP (Search Engine Results Page), are basically your online competitors. SERP is unique for each query based upon the keywords used when a consumer is searching for results. It is important because the higher a company's website ranks, the more searchers will click on the website (most searches do not look beyond the first page). Results on a SERP can be organic in nature, or they can be paid (Google Ads). The effectiveness of a keyword is measured by the so called KEI (Keyword Effectiveness Indicator). For example, if I type in "groby" in the search engine, Google will display 2.4 million results, but the number 1. on SERP (both paid and organic) will be the e-grocer GRoby. The KEI of this keyword, based on the overall search volume, is 27.8. The actual traffic for this keyword for the month of May, for example, was 3000 clicks. If I type in "online food delivery", I will get about the same amount of hits

(2.6M), but the KEI of this for gRoby will only be 0.4, and the actual clicks are only 325.

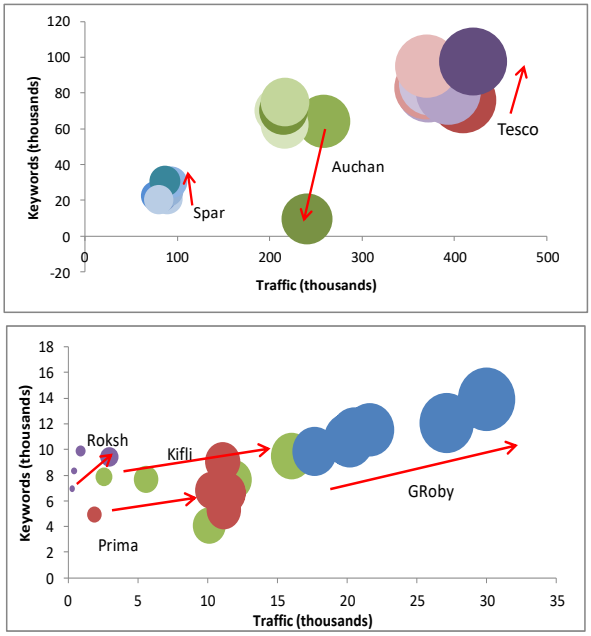

Figure 5
Distribution of competitors (Data: SE Ranking)

As it can be seen on the above graph all of the larger chains experienced setbacks after the Christmas shopping spree but while Tesco managed to improve its positioning with relatively little effort, Spar stayed about the same and Auchan has lost traffic. While Spar has continuously increased its efforts to improve its online presence Auchan has drastically reduced them in May. When shutdown was announced in March only Spar benefited with a 21% increase in traffic, Auchan and Tesco only seen their traffic increase by May (undoubtedly because of the logistics problems). The smaller, established chains (gRoby and Prima) both experienced moderate growth of 2-4%, while the new comers (kifli and roksh) grew over 100%. Kifli, after a good start lost some steam and only managed to make up for it in May. What happens to Roksh remains to be seen, as they have not gained as much popularity and reamained quite small.

Conclusions

Experts predicted an annual growth rate of about 20% in domestic e-commerce traffic for 2020. However, consumer habits changed drastically as a result of the virus in the first quarter which will influence the results for the year with effects probably carrying over. As a result of the crisis, several new e-commerce innovations have emerged, enhancing the online shopping experience and drawing

a larger customer base to the monitor. Thus, it is easy to predict that e-commerce is on a faster growth trajectory than intially expected.
Merchants with well-established online channels, after the initial setbacks were able to direct buyers quite easily from their traditional store to online purchasing. Tesco is the best positioned to lead the pack post-pandemic given its massive brick-and-mortar network. The real winners, however, were the smaller e-grocery chains (gRoby and Prima) and the new entrant Kifli. Although, they are and will still be tiny in comparison to Tesco and Auchan, they have strengthened enough where they will be participants of the online grocery scheme on the long term. It is worth pointing out, that out of these stores only Kifli and Roksh are real e-grocers, the rest all have physical stores.
Some grocery stores are not participating in the online market, most notably the discount stores of Lidl, Aldi, Real, Coop and Penny. How much have this affected their profitability for 2020 or their future competitive position could be the subject of a further study. It might not be surprising to see some consolidation in the grocery market in coming years, especially in the e-grocery venue.
Circumstances caused by the epidemic acted as a catalyst for the implementation of new ideas. The big question is to what extent these new players will be able to stay in the market and keep the customer base once the emergency situation goes away.

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Cybersecurity threats of cloud and third-party services in small and medium-sized enterprise environment

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***Abstract**: Small and medium-sized companies typically use the advantages of cloud solutions to run their business; moreover, they can use the cloud to decrease their responsibility. Some of the on-permisses threats can easily eliminate and transform by moving to the cloud environment, but some of the threats will remain. This paper examines the common threats of cloud and third-party services in the SME environment.*

***Keywords**: SME, Security, Cloud threats, Third-party service threats*

1 Introduction

The most popular cloud providers focus on smaller companies and try to help them with special packages tailored for small and medium-sized enterprises. Using cloud solutions is very accustomed to SMEs, as there is no need for well-educated technical persons to manage these servers and care about the availability and settings. There is much important advantage of the cloud, like less operational tasks needs for these, and it is highly scalable, and the availability of these systems is really high. The most common components are easily accessible from any device without a special jump-server, and there is no need for a higher one-time investment as it is available as a monthly subscription. Sadly, moving to the cloud is not solving every security problem and make the dependencies disappear; it is just transforming the threat to something different. The dissertation aims to assess and review the threats related to cloud solutions in small and medium-sized enterprises in Hungary. [1], [2]

2 Research process

I examined a Software development company with around 200 office employees and a Logistics company with around 20 office employees during the research process. Both companies are small, and mediums size enterprise categories and are located in Hungary. I picked these companies to reveal the two extreme characteristics of the SMEs; the clearest common attribution is probably the pursuit of cost-efficiency. Relevant domestic and international literature was processed to gather more information about the cheap way to use cloud solutions to reduce its operational task-related responsibility and improve the environment's

security. Consulted with local security auditors and company members to find cost-efficient best practices. Complete security review based on ISO 27001 requirements. Collected existing information security log files and shreds of evidence. The information collection happened via several different streams; it started with enterprise mapping and employee discussions. Collected information about the everyday work from the end-user employees and managers later gathered more information about the system administrators' network and IT. The Logistics company CEO and one first-line manager from the Software development company kindly answered all of my questions during the examination.

3 Common cloud panorama in the world of SMEs

There are great advantages of the Cloud, accessibility, scalability if the business grows, no need for technical maintenance, built-in disaster recovery, redundant storage, decreased responsibility, short term cost savings, tailored packages for SMEs. The main advantage of using Cloud is to delegate responsibility to let the companies focus on their business, not on their systems. It is common to use the Cloud's advantages nowadays; most people use Google Drive and Gmail in their private life. Nowadays, in the word of SMEs, it is common to use Google Workspace or using Microsoft's Outlook, OneDrive or Office with Cloud subscription, but the use of Google Cloud Platform or Microsoft Azure is not really obvious, neither any another Cloud Computing provider's solution, so mostly the Software as a Service is used by SMEs. [3]

With the SaaS, there is no need to care about the updates or the vulnerabilities; the company's few responsibilities are to handle the accounts with the right passwords and backup settings and make and keep the used device safe. Another important part of the SaaS to know what is uploaded and shared with whom via these platforms; it needs. It sounds simple but still needs education and security awareness on the user end. These enterprise cloud solutions could make it even easier to review the team's security readiness with well-tailored audit procedures or with the management consoles. The commonly used cloud characteristic defines the responsibility of the customer in each service model. Table 1 shows that in the case of an on-premise system, it is the customer's responsibility to care about everything about the environment and go from the Infrastructure as a Service through the Platform as a Service to the Software as a service the responsibility of the Customer is decreasing.[4]

Responsibility of Custumer	SaaS	PaaS	IaaS	On-prem
Information and data used	Yes	Yes	Yes	Yes
User devices to use these services	Yes	Yes	Yes	Yes
Accounts and identities	Yes	Yes	Yes	Yes
Identify and directory infrastructure	Mostly	Mostly	Yes	Yes
Applications		Mostly	Yes	Yes
Network controls		Mostly	Yes	Yes
Operating system			Yes	Yes
Physical hosts				Yes
Physical networks				Yes
Physical datacenter				Yes

Table 1 - Responsibility of the Costumer [4]

In the case of a Platform as a Service, there are some special cases where the responsibility mostly depends on the scenario. Based on the companies' review, the most problematic parts are the physical host, physical network, and server operation. In table 1, the responsibility model clearly shows the usage of Software as a Service solutions are the best as the user company's responsibility is limited. In the logistics company's case, they could use most of their system as SaaS; most of their tools are available as cloud subscription. Their ERP, CRM tools are already available as Cloud, and they have alternative billing providers who have a cloud subscription option, and as they have only 20 office employees, it could be thrifty. The Software development company is in a different shoe as they have 200 employees; however, they already have Google's Gmail as enterprise mailing and using Google Drive with well-managed accounts. The software development company uses services that are available as PaaS or IaaS in the portfolio of Cloud companies, but it could be cheaper to use the on-premises solutions for testing purposes. The employees mostly use their own enterprise notebook to host any virtual machine and test their developed programs, but they have to use a more powerful resource to test and run their codes in some cases. With both companies, we started developing a complex solution to collect user activity-related events and feed a Security Information Event Management solution. The used Elasticsearch instance and the visualization Kibana tools are available as SaaS. However, the log forwarder that collects the logs from the end-user devices is only available as Linux or Docker installer, so we have to use IaaS to meet these requirements, which means responsibility for us is still just a fragment of the whole project.[1], [2], [5], [6]

Services	Logistics company	Software development company
Microsoft Office	Office 2019 (non-cloud)	Office 365
File share	Google Drive	Google Drive
Document share	Google Drive	Google Drive, Office365
Email provider	Hungarian domain provider	Google Gmail
Online meetings	Google Meets	Google Meets
Calendar	Outlook calendar	Google Calendar
Servers in use	2 – internal hosting	10 –development, global hosting

Table 2 – Used services matrix by the examined companies

The Table 2 shows the common used cloud and non-cloud services by companies. Based on the day-to-day life of the companies, the most common cloud part of their life is the Google Workspace environment such as Google Drive, Google Documents, Gmail, Google Calendar, Google Meets, and they are using the Microsoft Cloud Environment as well as One Drive, Microsoft Office 365, Outlook. Based on the first survey, the Google Cloud Environment and the Microsoft Cloud environment were known by everyone before they joined the companies, and because of it, the management did not think they should provide appropriate user training on how to use it in this environment. I found great shortcomings in this area; for example, some of the employees do not know how to check the access settings of different folders or files in these cloud environments, and most of the employees never check the access for these, and there is no process to review the accesses of these files. It is a ubiquitous way in the environment to upload their documents to Google Drive or One Drive to reach these via Mobile or Tablet or to share it with their team members; I found some case when users shared a public link to a folder or a file if another participant does not have a Google account. At least every member of the software development company uses the enterprise version of the Google Workspace environment, so the related accounts are linked together to make any further improvement while most of the users use shared accounts in the logistics company. I found non-reviewed and considered security, privacy, compliance questions during the assessment. During the devices' examination, we found some advanced persistent threat on one of the logistics company's devices, a sinister indicator of the user awareness shortcomings. Suppose the SaaS is perfectly secured on the provider end. That does not mean anything if the customer side end-user computer is infected, and the attacker can reach the SaaS data via one infected device. The Software development company with their more aware users and their centrally managed antivirus software performed much better during the examination, and they are located in the heart of Budapest where more internet service providers (ISP) are available moreover these ISPs are much more reliable than in case of the logistics

company which is located in the countryside in the industrial area of a town. The logistics company sometimes have serious local bandwidth limitations, as these ISP networks are not well maintained, and they are based on ADSL technology. This company did not have any business continuity plan for the ISP outage and did not have any aggregator or uninterruptible power supply. This ISP outage could stop the company's work if the company moved to the cloud, if there is no plan B for this scenario. In 2020 during the COVID-19 pandemic, most of the world changed their ways of working to work from home, and with it, the magnitude of an ISP outage decreased, but now it needs to cover on the user end. With the globally available cloud solutions, there is no way to separate it from external threats, so this risk mitigation option is not possible here, a these publicly available it is even more vulnerable for threads, and even the biggest names like Google can suffer from a data breach or 0-day vulnerabilities too. Companies could save a lot or waste a lot with the Cloud subscriptions; it depends on the company's actual profile and plans.[7]–[10]

4 Conclusion

The examined companies are already using cloud solutions, and they are open to using new cloud services if they decrease their costs or make their business more effective. During the COVID-19 pandemic, they are even more interested, as these cloud solutions make them even more resilient again the changes, and now it needs much less to invest. The companies' most important uncovered task is to improve the companies' user awareness with special attention to the right usage of the cloud services and the user's involved devices.

5 Recommendation

The most important thing is to improve the user's awareness and properly cover the right secure way of using their devices to avoid any malicious content and cover the secure usage of the Cloud services. Important to create control processes for data management and access management, as it is more exposed to the publicly available cloud environment. Do regular review on shared items to avoid unauthorized access to customer and business data and review the cloud and third-party provider related contracts for legal and compliance risks. Provide the necessary equipment for business continuity in case of an ISP outage with backup lines and 4g/5g subscription and know the provider's right escalation process and the SLA.

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Cybersecurity threats of on-premise systems in small and medium-sized enterprise environment

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Abstract: *Small and medium-sized enterprise environments are less resilient than large enterprises. SMEs have much less budget to spend on IT security, but they sometimes feel even more the cybersecurity attacks. This paper examines the common weakness and threats against SMEs through two Hungarian Companies.*

Keywords: *SME, Security, Open Source, SIEM, Log management,Elastic Stack*

1 Introduction

Multinational companies usually spend huge sums on reducing the impact and amount of IT incidents, using more and more IT tools, set up dedicated teams, or hire external experts to protect their trade secrets and their users 'data. They are aware of what data they handle and to what extent they need to protect it. Based on my own professional experience and on the preliminary survey, smaller organizations receive less attention to cybersecurity threats, as they use fewer IT tools, and they are less known, and maybe less exposed to targeted attacks. They can be even more vulnerable - precisely because of their smaller size and more limited resources - than large companies with the right security tools, systems and with the right governance. As a cybersecurity analyst for several multinational companies, I have gained experience in cybersecurity incidents involving organizations, including on a 24/7 information security incident management team. My colleagues in my environment, working in other spheres, and my personal acquaintances, who work in a smaller company or company, surprisedly listened to my reports on the operation of such organized intervention groups. During our conversations, it became clear to me that they are all different from the IT threats affecting organizations, and the size of the company strongly influences the opinions they form. This pattern is a phenomenon barely explored in the literature, so I focus on this under-researched area in my research. The dissertation aims to assess and investigate the threats affecting small and medium-sized enterprises in Hungary. [1], [2]

2 Research process.

During the research process, I examined a Software development company with around 200 office employees and a Logistics company with around 20 office employees. Both companies are small, and mediums size enterprise categories and are located in Hungary. I picked these companies to reveal the two extreme characteristics of the SMEs; the clearest common attribution is probably the pursuit of cost-efficiency. Relevant domestic and international literature was processed to gather more information about the cheap way to improve the environment's security. Consulted with local security auditors to find cost-efficient best practices. Complete security review based on ISO 27001 requirements. Collected existing information security log files and shreds of evidence. The information collection happened via several different streams; it started with enterprise mapping and employee discussions. Collected information about the everyday work from the end-user employees and the managers and network and IT information from the system administrators and planned the further network scanning and mapping with their involvement, and we installed a network vulnerability scanner. After I get the full picture of the enterprises' structure and their IT systems, we started to deploy the open-source tools to collect near-time information about the enterprise. Based on the collected information and the review of the available books, websites, the information collection happened with the Elastic Company's open-source tools. The core is the Elasticsearch product, which is a multitenant-capable full-text search engine with an HTTP web interface. The Elasticsearch instance is the collection and store point of our log files, and this product provides advanced search capabilities. The following tools are extensions for Elasticsearch. The Kibana is an open-source data visualization tool that generates informative dashboards with near-time information. The Logstash product is a log-parsing engine and data collecting tool which can transform and manage any data on the fly; it is used as a man in the middle between the Elasticsearch instance and log source systems like Beats, Syslog, or any agents which are capable for log forwarding. The mentioned Beats product bouquet is used for the data collection on the agent end. During the research, the opensource Filebeat, Packetbeat, Winlogbeat, Metricbeat, Heartbeat, Auditbeat, Journalbeat were used to collect the data. The used Elasticserarch, Kibana, Beats architecture shown below in figure 1. [3]–[5]

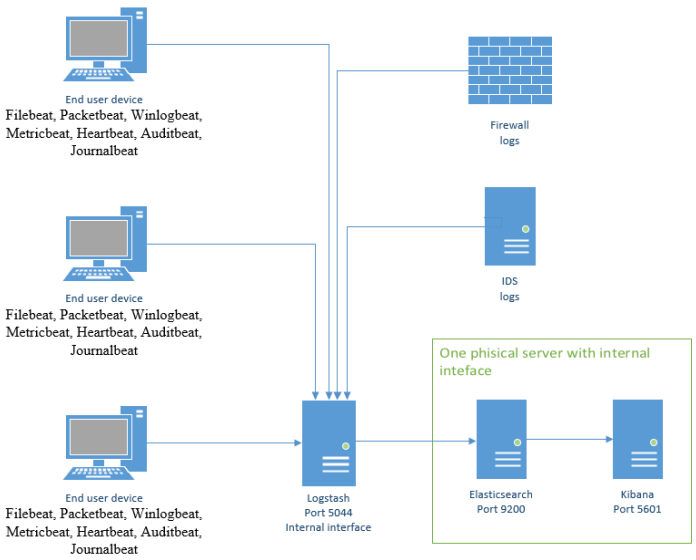

Figure 1
Log collector architecture

This setup with Elasticsearch, Kibana, and Logstash is mentioned on the Elastic Company's site as Elastic Stack, and it is usually used for security information and event management (SIEM) purpose; in this case, it is outstanding, but the main goal is the threat hunting in the environment. This was the core of our monitoring system; also, we installed RDP, SSH, VNC honeypots, and forwarded the logs to the Elasticsearch instance from the firewalls and network devices. I have to mention here as the Security module of Kibana, which is responsible for encryption, and user access management is not available for free. To avoid any extra cost here, I did extreme hardening with the Elastic search and Kibana instances. This final setup is the outcome of several integrations, tests, reviews, and based on the actual threat campaigns and the findings of our threat hunting and findings.[6], [7]

3 Discussion of Findings

Data collection period from 1st of February 2020 until the 20th of April 2020. Several findings from bot company's RDP, VNC, SSH honeypots, and the attackers tried to download and run several malicious scripts on the servers. There were similar attacks from several different IPs, so it is not efficient to block these IPs one by one as the attackers can easily find other devices to use as jump-server. After a review, most of the initiated scrip on the honeypot environment could significantly damage the servers or user devices as they were vulnerable against them.

Based on the user browsing activity, both company's employees visit non-recommended, suspicious, or malicious webpages. However, the Software developer's history was way more significant for their daily work even though most of the more suspicious sites where related to programming forums, while the Logistic company's employees' suspicious traffic was more unpredictable. Most of them came from spam or scam emails and browsing. For example, one of the Logistics company's employees opened a phishing mail on the enterprise device and provided her bank card details on the phishing site; happily, with the monitoring system, it was noticed on time, so she was able to ask the bank to block her credit card.

Based on the network logs, we found APT activity in the Logistics company's employee device.

- Communication catched towards the following malicious site: alibaba[dot]zzux[dot]com
    - IBM X-Force Exchange: Risk score 10/10 - APT41 Using New Speculoos Backdoor to Target Organizations Globally[8]

Several malicious software found on the device's, so an OS re-install was the answer for us to solve the problem; the antivirus softer has been deactivated on the device; happily, other devices had no problem with it.

From the vulnerability scanner results and the enterprise device reviews in the Logistician company, we found several non-supported outdated software or tools and found deactivated or non-frequently updated antivirus solutions and non-installed OS and application updates. The software developer company's conditions were much better, with centrally managed Antivirus solution and forced OS updates, but they neither patched their servers with special tools, while they use much of them.

4 Conclusions

The Logistics company sees the IT systems as a necessarily bad thing to deal with; if it works and can run their business, they do not care about it, and as there is no real IT management, the main problem is the lack of security awareness. Without the frequent security awareness pieces of training and control, people use their company devices as their other private devices, and without the proper security awareness, the reckless web surfing and email link or attachment opening by employees could go wrong. Expired paid applications open new vulnerabilities when the OS and application updates are not forced and are commonly postponed. If someone using USB drives, then mostly unaware of the related threats, and common to charge private mobile via USB while attaching the device's storage. The antivirus solution is not managed centrally, and they have poor Network and Firewall configuration, and they did not have IDS/IPS or any network monitoring.

The Software developer company performed much better, but they have significant shortcomings. The IT and the IT systems are much more in their lives. They have much better security user awareness, but they handle the IT services way too confidently, maybe even irresponsibly. Some of the employees use their enterprise device as just a remote desktop protocol server, and they log in from their personal device for their daily work; with this, they bypass most of the company's security intention. It is ubiquitous in the company to use their device to read enterprise mailing and use the enterprise chat solution. They neither have the right network and firewall configurations, and they did not have the IDS/IPS or any network monitoring.[2]

4.1 Recommendation for the small and medium size companies

Organize security awareness training and measure the results. Based on the results, plan the further strategy to improve user awareness in the company. Harden the network tools and the OS of every used device, check the publicly available hardening guides reflecting on the trending and previous threats. Use a „Deny by default" setting for everything on the firewalls and add the user applications' exceptions. Patching, patching, patching. Patch every OS and application; if the support is not available anymore, do extra hardening to compensate for the vulnerabilities. Run vulnerability tests periodically or after any significant change in the environment. Do security assessments periodically or after any significant change. Hire an IT security expert or make a contract with an IT security company to improve the company in cybersecurity. If It is not possible or not worth to cover the necessary maintenance tasks and cares about the security shortcomings, then review the possibility to use the cloud solutions like the cloud is not just someone else's server; it is operated by someone else's as described in the contract.[9]–[12]

4.2 Recommendation for the individual employees

Year by year, people are moving to the online era more and more. Most people banking, ordering, working online with this responsibility after our online being is rising. The internet is full of free user awareness training and recommendations. It is everyone's responsibility. Learn more about social engineering techniques and how to avoid these attacks. Update the OS and the applications. It is unpleasant to close all of our works and wait for the patching, but it is important, as this is necessary to maintain and update our defense lines against the threats. Plan the patching and frequently create backups about our important files.[13]–[15]

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Examination of IT risk-taking with modified DOSPERT questionnaire among university students

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Abstract: All our decisions based on personal perception and personal risk taking, the extent of the risk and the personal judgment of the possibility of the risk event. According to Weber, Blais and Betz, this can be different from subject to subject. To measure this, they have developed Domain-Specific Risk-Taking (DOSPERT) Scale questioner. For my research I have modified this questionnaire to examine risk-taking behaviour on ICT security and used this questionnaire on university students to examine their risk-taking differences between domains. In this paper I show my results.

Keywords: DOSPERT, Risk-taking, IT Risk, BYOD

1 Risk and Risk-Taking

1.1 Definition of Risk

One can find a wide variety of definitions of Risk. In this paper I use Renn's definition [3] which states that there are two prevailing definitions which are: risk is a situation or event where something of human value (including humans themselves) is at stake and where the outcome is uncertain; risk is an uncertain consequence of an event or an activity with respect to something that humans value.

In risk analysis a traditional way of classifying uncertainty as aleatory – when randomness in inherent, and epistemic – when uncertainty can be sourced from secondary or tertiary effects, not considered during the modelling. [4][5]

We can examine risks in different viewpoint one of them during when while we make decisions. According to Albert Camus "life is the sum of all your choices". In our lives we have to and must make decisions. According to Herbert Simon decision making is a three-stage flow. [6]

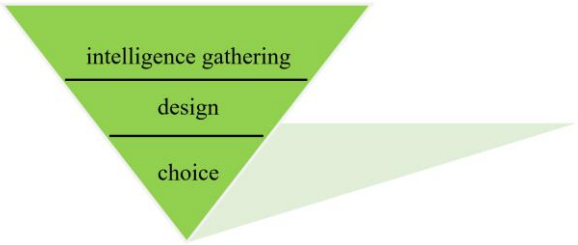

Figure 1
Herbert Simon's decision-making flow

The stage of intelligence gathering contains the searching environment, searching for condition and the calling for decision.

When we take this stage into our non-determined non-rational real life, we must deal with limited knowledge of the environment. limited information about the conditions, and the limits of the human mind at the event of call for decision.

1.2 Risk-taking

In real-life situations rarely can have whole information. We can only deal with the model of reality in our head. We cannot gather and deal with all the conditions affecting our situation. Also, we might find the call of decision to late or too early from the optimum.

The main question about our decisions is about the information we use in our decision, that we use for making our choice.

Even if we would be able to gather all the information that could have an effect on our decision which can be a state in very limited number of cases, the human mind can only deal with a limited number of information pieces at a time. We even have problems with classifying, ordering, and scoring these when we need to consider and judge.

In these circumstances when making our decisions we need to deal with uncertainty and take the risk of non-intentional negative or positive outcomes.

Risk-taking is a personal quality of one, which differs from person to person. Numerous studies were done researching risk-taking in different cultures and different backgrounds. [7][8] [9][10][11]

According to Hofstede the people of Hungary could be considered as risk- and uncertainty-avoiding. [12]

In this paper I have analysed the risk-taking qualities of university students with a modified version of the DOSPERT questionnaire.

2 Modification of DOSPERT questionnaire

2.1 DOSPERT questionnaire

Weber, Blais and Betz in 2002 have published a paper which present a psychometric scale on the topic of risk-taking in different parts of life.

The domains are:

- Financial,
- Health / Safety,
- Recreational,
- Ethical,
- Social decisions

The answerers are asked to rate on a 7 step Likert scale the likelihood the perceived risk and benefits of the stated situations.

In 2006 they have revised their work and created a renewed, shortened version of the questionnaire with the same domains.

2.2 The modified questionnaire

For my research I have modified the 2006 version of the questionnaire. I have added a new domain Security of Information and Communications Technology (SICT) which contains five new questions. These are simple situate yes-no questions where the answerer are asked to answer would he or she do as it situated or not and tests the ICT security consciousness of the answerer.

These questions are the following:

- Would you send corporate data to your private email
- Would you connecting to public open Wi-Fi
- Would you let somebody to use your mobile without your previous consent
- Would you use your pin (password) - unlock pattern in front of others
- Would you copy corporate data to private smartphones

I have removed one question from each original domain. For selecting the questions to be dropped I have tested the new domain and the original questions on a test sample. After the first test I have revised and modified the questionnaire according to the feedbacks from students and my research leader, and used on a larger sample.

3 Results of the research

3.1 Sample

For my research I have handed out the modified DOSPERT questionnaire to different bachelor courses at Obuda University. From the received answers I have built a sample from three bachelor's courses Business Informatics Engineer, Electronical Engineering and Mechanical Engineering.

Course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business Informatics Engineer BSc	107	34,7	34,7	34,7
	Electronical Engineering BSc	108	35,1	35,1	69,8
	Mechanical Engineering BSc	93	30,2	30,2	100,0
	Total	308	100,0	100,0	

Figure 2

Courses of the students in the sample

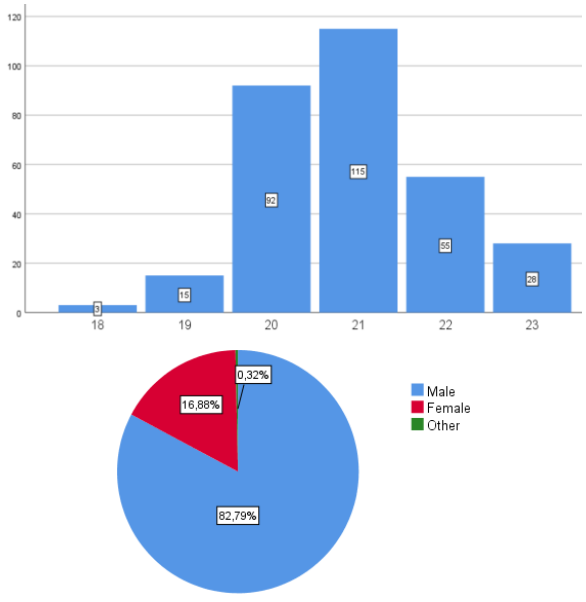

Figure 3

The Distribution of Students by Age and Sex in the Sample

As we can see on the figure in the sample there is a male dominancy. Because of this non-biased state, I could not study the effect of gender on the answers.

In the domain of Security of Information and Communications Technology we could see that the perceived risk of the statements is between 3,56 and 5,51 (minimum 1, maximum 7). If we study the order of the statements it is interesting that the highest perceived risk is connected to the usage of pin (password) – unlock pattern in front of others, which is a positive sign. Although the lowest perceived risk is for the statement about connecting to public open Wi-Fi networks.

	Business Informatics Engineer BSc	Mechanical Engineering BSc	Electronical Engineering BSc
Would you use your pin (password) - unlock pattern in front of others	4,98	5,06	5,51
Would you copy corporate data to private smartphones	4,80	4,62	5,04
Would you let somebody to use your mobile without your previous consent	4,51	4,72	5,26
Would you send corporate data to your private email	4,77	4,86	4,93
Would you connecting to public open WiFi	3,80	3,56	3,97

Figure 4
Perceived Risk of the Situations in the Domain Security of Information and Communications Technology

3.2 Hypothesises

The first hypothesis for this research was that the perceived risk of the ICT security domain will be the highest. (H1)

My second hypothesis was, that the ICT security is significantly more important for those in the field of IT than other students (H2)

3.3 Testing the hypothesises

Field of study		Social	Financial	Health and Safety	Ethical	Recreational	Security of ICT
Business Informatics Engineer	Mean	3,8626	4,6112	4,8355	5,2336	4,6579	4,5738
	N	107	107	107	107	107	107
	Std. Deviation	,78878	1,00970	1,05502	1,03868	1,20502	1,10883
Electronical Engineering	Mean	4,0630	4,7815	5,1389	5,4500	4,5704	4,9407
	N	108	108	108	108	108	108
	Std. Deviation	,75400	,82418	,84608	,92610	,90184	1,03554
Mechanical Engineering	Mean	3,9892	4,5183	4,9806	5,2387	4,5183	4,5656
	N	93	93	93	93	93	93
	Std. Deviation	,60675	,90132	,91131	,84404	,83366	,96532
Total	Mean	3,9711	4,6429	4,9857	5,3110	4,5851	4,7000
	N	308	308	308	308	308	308
	Std. Deviation	,72833	,91871	,94806	,94625	,99819	1,05306

Figure 5
Perceived Risk of Domains

As we can see in the table the Security of ICT domain is in the middle. For the Business Informatics Engineering students this domain is second to last. Thus, my first hypothesis has fallen.

I have tested the differences between the students of the different courses. Only in two domains could have we seen significant differences. These were between the students of Business Informatics Engineer and the Electronical Engineering courses and the Electronical Engineering students and Mechanical Engineering students.

The significant differences were in the Health and Safety domain and The Security of ICT domain.

In the Health and Safety domain the Business Informatics Engineer students' perceived average risk (Mean: 4,9806; Std. Deviation: 0,91131) and the Electronical Engineering students' were (Mean: 5,1389; Std. Deviation: 0,84608).

While in the domain of Security of ICT surprisingly, the direction of the difference is the opposite than what we could have suspected. The group of Electronical Engineering students answered with a higher average perceived risk

(Mean: 4,9407; Std. Deviation: 1,03554) than the Business Informatics Engineer students (Mean: 4,5738; Std. Deviation: 1,10883).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Health and Safety	Equal variances assumed	2,139	,145	-2,327	213	,021	-,30337	,13037	-,56035	-,04639
	Equal variances not assumed			-2,325	202,623	,021	-,30337	,13050	-,56069	-,04606
Security of ICT	Equal variances assumed	,114	,736	-2,508	213	,013	-,36691	,14631	-,65531	-,07851
	Equal variances not assumed			-2,507	211,725	,013	-,36691	,14635	-,65541	-,07841

Figure 6

Results of T-test between the groups of students from Business Informatics Engineer and Electronical Engineering students

There was no significant difference between the group of Business Informatics Engineer students and the group of Mechanical Engineering students in the risk-taking domains in the questions of perceived risk.

Conclusions

According to the answers for the questionnaire the perceived risk of the ICT security is in the middle or below than the middle in the sample comparing the other five domains. This means that the students of the sample do not perceive a high risk for the studied situations. Especially they do not think that connecting to open Wi-Fi networks could have high security risk.

If we continue the comparison in between of the domains we can see that the perceived risk of the Ethical and Health /Safety domains has high levels, while the Social domain and the Security of ICT domain is lower. This could lead us to the conclusion that our students should have a higher level of ICT security education.

Acknowledgement

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The relationship between the market and cultivation in Europe from the point of view of organic farming

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Abstract: *Our first thought may be that where the production side of organic farming has a strong background, there are also strong markets. However, if we look deeper into the issue, we can see that this is only true in some countries, but rather there is a link between environmental awareness, prosperity and organic products, and between the production of organic goods and the development of agricultural and processing industries. The study analyzes these issues and substantiates the claims, based on data from recent decades.*
Keywords: *organic farming, cultivation, consumption, regression*

1 Introduction

The aim of this study is to examine the relationship between agricultural production areas and the size of food markets in the point of view organic farming in Europe. As Buday-Sántha wrote in 2011 (Buday-Sántha, 2011), developed countries cannot afford it, while underdeveloped countries cannot afford not to provide their basic food supply. While the more developed industrialized states with a significant service sector supply themselves with staple foods for strategic, independence reasons, the poorer states have a lifeline to have food that is often not realized. Developed states, if they do not supply themselves with these, become vulnerable to their malice. They have the opportunity to starve them. If we ask the question why the castle of Sümeg did not fall and why Montsegur was able to fall, the background to the answer is logistical. While the defenders of the castle were secretly supplied from the settlement of Sümeg through the secret tunnel system, the fortress of Montsegur on a very similar mountain peak, did not have such an opportunity, and the defenders of the castle were starved for 3 weeks.

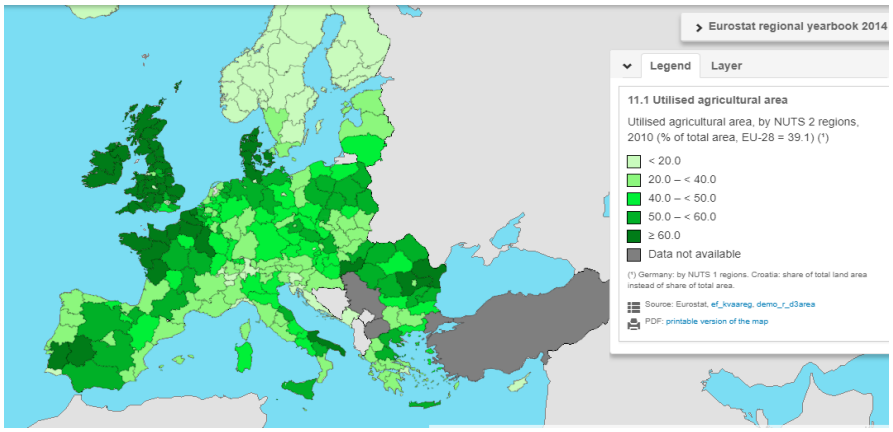

Figure 1

Utilized agricultural area Source: EU own edition

Regions with significantly high cultivation rates are either traditionally agricultural areas with favorable conditions or non-poor quality areas with high mechanization opportunities. More developed states take advantage of their stronger industries to bring capital to agriculture, which can increase its efficiency, resulting in higher yields and more efficient production.

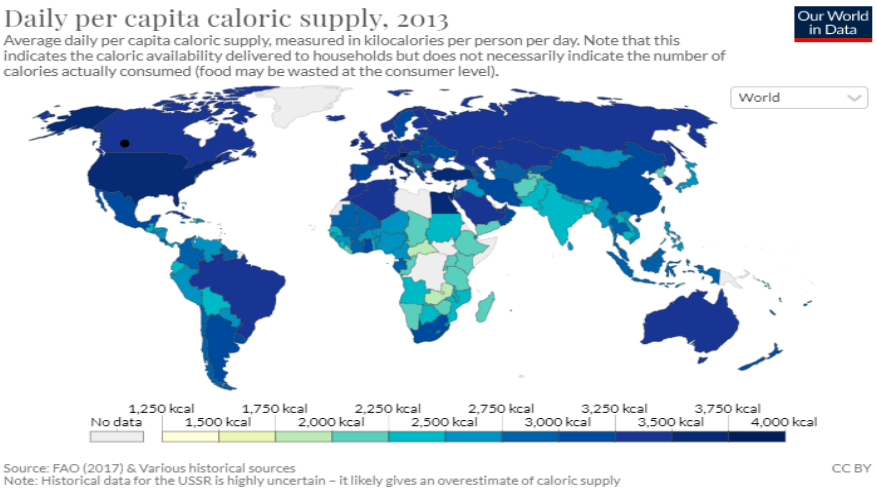

Figure 2

Daily per capita caloric supply Source: ourworld in data organistaion own edition

Organic production is a renewed mode of production that was renewed by Rudolf Steiner in the 1920s. What were the reasons for its appearance? The national economies, which wanted to supply an increasingly industrialized and growing

population, followed the industrial model, ie industrial agriculture appeared. Due to the increase in production, a larger amount of fertilizer was used, and chemical materials and pesticides were used to protect the crop. Mechanization appeared, which was able to cultivate larger and larger areas with greater efficiency. It was characteristic that with the mechanization of one operation, for example: harvesting, threshing, plowing) the labor force was freed up, ie the work of the multitude of animals that were traction and the people doing the work became redundant.

From subsistence agriculture, a system of market production emerged and with it the disintegration of closed agriculture, one of the advantages of which was that it was sustainable, despite the fact that its production systems were a fraction of its efficiency. The commodity-like agricultural model, which relies heavily on external, industrial resources, has emerged. This change of model made a significant part of the agricultural workers redundant, and it also resulted in the disintegration of village communities, which were characterized by a close working relationship. The closed connection between the village, the individual and the land was broken. I'm not even talking about the fact that this detachment from nature has triggered processes that have resulted in urbanization, unnatural lifestyles and rhythms, and the generalization of stress to a greater extent. With the decrease in the proportion of rural people and the decrease in the number of producers, the land no longer represented the base of the village and the individual. As a result, Steiner developed a farming model that runs counter to the visible direction of development, especially in the village and it relies on the internal resources of the agricultural sector and continues to preserve the close-to-nature, closed system of agriculture from the ground, and thus the rural community and way of life. One of Steiner's main goals was also to reverse the devastation caused by industrial production, and he wanted not only conservation measures but also a system to improve the state of the environment. Following Steiner, several organic production trends have developed on similar principles, but overall, organic production has played a marginal role in agricultural production for decades. This changed when the harmful effects of chemical use became known in the 1960s. In parallel, due to the oil explosion in the 1970s, the cost of industrial production increased significantly. Meanwhile, agricultural commodity prices have fallen significantly due to market oversupply. Agriculture has thus sought new ways to meet environmental and economic requirements.

In the 1990s, uniform rules for organic production were born in the USA and the European Union, but also worldwide, where individual producer and trade associations may impose stricter conditions (eg BioSuisse in Switzerland or Demeter in Germany). , but products produced on looser terms are gradually being pushed out of the market. The unification of standards and the growth of trade in organic products, the financial support of producers make it possible and necessary for continuous professional control and statistical registration of organic production. This has created the opportunity for more and more information on

organic farming, both domestically and internationally, and for science-based research.

Organic Agriculture: Key Indicators and Top Countries

Indicator	World	Top countries
Countries with organic activities[1]	2018: 186 countries	
Organic agricultural land	2018: 71.5 million hectares (1999: 11 million hectares)	Australia (35.7 million hectares) Argentina (3.6 million hectares) China (3.1 million hectares)
Organic share of total agricultural land	2018: 1.5 %	Liechtenstein (38.5 %) Samoa (34.5 %) Austria (24.7 %)
Wild collection and further non-agricultural areas	2018: 35.7 million hectares (1999: 4.1 million hectares)	Finland (11.3 million hectares) Zambia (3.2 million hectares) Tanzania (2.4 million hectares)
Producers	2018: 2.8 million producers (1999: 200'000 producers)	India (1'149'371) Uganda (210'352) Ethiopia (203'602)
Organic market[2]	2018: 96.7 billion euros (2000: 15.1 billion euros)	US (40.6 billion euros) Germany (10.9 billion euros) France (9.1 billion euros)
Per capita consumption	2018: 12.8 euros	Switzerland (312 euros) Denmark (312 euros) Sweden (231 euros)
Number of countries with organic regulations	2018: 103 countries	
Number of affiliates of IFOAM – Organics International	2018: 779 affiliates from 110 countries	Germany - 79 affiliates India - 55 affiliates China - 45 affiliates United States - 48 affiliates

Figure 3

Organic agriculture's key indicators Source: FiBl 2020.

In Europe there was 15.6 million hectares of organic agricultural land in 2018 of which EU territory was 13.8 million hectares. The number of producers was 418.000 of which in EU the number is 327.000. The ratio of organic farming is significant. In gereneral 3.1 percent of all agricultural territory was organic while in the EU the ratio was 7.7 percent. The territory of organic farms increased by over 1.25 million hectares compared to 2017. Spain had the largest organic area in Europe with 2.2 million hectares, second is France with 2.0 million hectares and Italy, with 2.0 million hectares. We can see 10 countries with minimum 10 percent organic farmland ratio. Liechtenstein, (38.5 %), Austria (24.7 percent), Estonia 21.5 percent. One of the most important factor is the market. It is necessary to sell the product to the customers. Retail sales of organic products was 40.7 billion euros in 2018, while 37.4 billion in EU. It means 7.8 percent since 2017. Germany has the largest market with 10.9 billion euro retail sales, followed by France with 9.1 billion.

2 Methods

If the role of both the cause (s) and the cause is mediated by quantitative criteria, we speak of a correlation relationship. Hereinafter, it is primarily a factor or explanatory we present the measurement of the relationship between a variable (X) and a result variable (Y). However, when measuring the correlation relationship, it is relatively easy to examine the combined effect of several causes. According to the nature of the correlation, the following relationships can be interpreted between the variables: monotonic relationship and within this linear relationship. The most common indicator for measuring the correlation relationship is the linear correlation coefficient (sign: r), the application of which assumes a linear relationship between the variables, or if the assumption of linearity is not far from the problem under study. The correlation coefficient is calculated using the covariance measure characterizing the co-movement of the variables and the standard deviation of the variables.

In addition to correlation calculation, regression calculation is the most commonly used statistical method for examining the relationships between quantitative criteria. Regression calculation examines the tendencies of phenomena, trying to grasp the nature of the relationship in the form of some well-understood and interpretable function. These functions are called regression functions.

In practice, the role of the factor variable parameter (b1) is particularly prominent, the statistics call it a regression coefficient, while the parameter b0 is called an axis section or constant. The regression coefficient quantifies the expected change in the outcome variable accompanying the unit increase of the factor variable in the originally given unit of measure, ie a unit change in the value of the explanatory variable changes the result variable by b1 units. Knowledge of the regression coefficient allows us to quantify the elasticity (flexibility) even in the case of a linear relationship, which expresses the relative (expressed as a percentage) degree of change. The indicator provides an answer to the percentage change in outcome variable Y that is expected to contribute to a 1% change in explanatory variable X. (Pintér-Rappai 2007, Ács 2014)

3 Results

We first examine the data of the correlation matrix, which illustrates the direction and tightness of the correlation between the examined variables in pairs. Examined by country, the following results are obtained. For most countries, all variables are closely related, ie each variable has a close, positive relationship in pairs. However, there are countries where this is not the case, i.e., relationships are moderately or weakly related to each other in pairs. As a result, the correlation matrix calculated for the whole data set no longer provides as clear a picture as in most countries. In the summary table, we see a strong relationship between the size of the production area and the number of producers. The relationship between the area and the quantities sold on the market is medium. There is a weak

relationship between the other relationships in the aggregate. Which countries do not operate in a post-majority manner. Hungary, Finland, the Netherlands, Norway and Denmark. In these countries, the size of the area does not strongly determine the number of producers, the proportion of organic producers, and the value of goods sold in the markets.

Looking for the answer to the question of whether the volume of sales of organic products depends on the proportion of organic farming in a given country, or on the number of producers. Then, in countries where the available data are complete, I look for which is characterized by output and product purchases and where it is that production is dominated or just purchases. Data are available between 2000 and 2018. The figures for European countries are as follows. The size of organic farming in hectares, the ratio of organic farming to the total area under cultivation. The number of producers and the organic product sold in millions of euros.

Table 1 Regression data

	R	Rsquare	Corrigated	Standard false	Events	Significatic
UK	0,352	0,124	0,073	0,475	19	0,139
Switzerland	0,928	0,861	0,853	0,718	19	0,000
Sweden	0,891	0,794	0,782	2,296	19	0,000
Spain	0,959	0,920	0,916	0,793	19	0,000
Slovenia	0,822	0,676	0,657	1,491	19	0,000
Poland	0,803	0,645	0,624	0,989	19	0,000
Norway	0,469	0,220	0,174	0,895	19	0,043
The Netherlands	0,789	0,623	0,601	0,236	19	0,000
Italy	0,937	0,877	0,870	0,924	19	0,000
Ireland	0,912	0,832	0,822	0,179	19	0,000
Hungary	0,613	0,376	0,339	0,644	19	0,005
Greece	0,824	0,679	0,661	0,936	19	0,000
Germany	0,981	0,963	0,960	0,299	19	0,000
France	0,994	0,989	0,988	0,189	19	0,000
Finland	0,966	0,933	0,929	0,501	19	0,000
Denmark	0,820	0,672	0,653	0,671	19	0,000
Czech	0,935	0,874	0,866	1,044	19	0,000
Belgium	0,942	0,887	0,881	0,620	19	0,000
Austria	0,976	0,953	0,950	0,572	19	0,000

Source: FiBl 2020, own calculation.

If we look at countries where we didn't find strong correlation coefficients between factors in all cases. What may be behind this trait? In the case of the Netherlands, we see a strong link between the ratio of farmland and organic farming, but this is no longer the case in terms of the number of producers and market turnover. This may be due to the fact that, compared to production, Dutch consumers have higher demands, which are covered by imports, mainly from French, German and Austrian producers. We see a very similar situation in

Denmark. Strong agriculture, few switched producers, strong demand for organic products. The third example is our country. Producers of raw materials, with a relatively large area. Lower demand due to high ecological surcharges and rural consumers with lower purchasing power.

Conclusions

In most countries, there is a strong relationship between the size of organically farmed land and the value of organic products sold. That is, it is clear that countries with strong organic production have strong purchasing power. In the table, we do not find a country where weak production is associated with a weak market. In the countries with the exception, either purchasing power is weak and therefore a country with good conditions is forced to export, or purchasing power is so strong that production is not worth it. Denmark is a good example of this, where otherwise strong agricultural production has not switched to organic farming and therefore demand is met by imports. In the case of Finland, we see a weaker demand. There is no strong demand for organic products among the population. The situation is similar in Norway, while in the Netherlands, as in Denmark, we encounter stronger demand compared to production. Our country is an example of a country with good endowments, with raw material exports and minimal processed food, not providing adequate supply for consumers, because the products appear at very high prices compared to the demand.

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Leave or stay? The reasons behind drop-out

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Abstract: *In Hungary, leaving school became a significant problem. The average of drop-out percent is around 40 to 50, which is almost the double of the top 15 "least likely to drop out" countries. There are a few base problems that covers most of the reasons why students leave school. They usually tend to lose their motivation, their community, friends, or they realize that in the long run, leaving school with their present skillset is more beneficial than finishing the university. While these might be an adequate way to define the fact of school-leaving, we wanted to dig deeper and look behind these problem-groups. As you would guess it, universities already trying to reduce this number, but they need feedback from students. Our school started mentor-program, tutoring, e-learning and much more unique solution, which did help lowering the leaving students amount, but these projects could be improved. We revised these programs, rated their efficiency, likability and compared them to student's preferences. After that, we created a ranking where studs could rate every project to create an importance list, this way the university can easily see which ones need to be rethought. Our goal is to provide a reliable source of information to the university what can be used up to improve the overall likability of these programs.[13]*
Keywords: *Drop-out, Student-keeping projects, Junior preferences, Student reflection*

1 Dropping out of school

Falling out of school is often unplanned. Most of the times it is the consequences of their own choices, even though it is rarely a students will to leave. We can group their leaving by the future plans they have. The most common one is when they do not reapply to another university, contrary they give up on studying and start to work. Less common, but still often case is when they try to study afterwards even if their next choice is not a unviersity, they still have the motivation to master a profession.[1]

1.1 Definition of school leaving

"Dropping-out" is not just an incidence, it is a longer process where the student falls out of the educational system without an official document that confirms their work's result. This starts with the student applying to the desired institution, since every single impact can form the decision even if it's against the student's

benefits. Horn's work stated that students, who leave the school are more likely to require social support and their chances to improve are lower. [2]

1.2 Crucial time before the application

We have to investigate this period of time first, since this is the most important part of a student's next 2 to 6 years. Even though universities and other institutes that give profession tries to show what each faculty stands for, thousands of pupils choose without the knowledge of what would be interesting for them. This might happen because the stress on their shoulder is exponentially bigger than usual and they get influenced easier. In the case of lowering the rate of dropping-out, it should be our main priority to help juniors make a wise and clean decision while they know how their desired faculty would work. It would favor the university as well, because more student would be actually interested about the knowledges they teach instead of the 80 – 20 rate, where 20 percent of students are not even sure they want to learn this kind of teachings from the beginning. Universities should target schools and hold events there, in addition of open days and profession nights.[4]

Most common ways to influence a student

In 2020, we take internet granted. Mobile phones, laptops, computers, they are all part of our life, this way it is almost impossible to not get influenced by the targeted advertisements all over the internet. Quite some pages start to review and rank universities around this application period, which can be damaging to the university's fame, especially if the review writer hasn't even attended there just read about it online or had a friend who had experiences there.[5][10]

Other times, students before ranking universities, they tend to check on them. They look at the webpage, read about the faculties, maybe look up earlier open days, studies, events that has been held by the chosen school. This is the reason why an institution that wants pupils to choose it, needs to create a proper and clean looking webpage that can impress the guest.[10]

Another influental part can be other's opinion about the school. Usually students ask seniors of the lived experience they have before applying to there. This is the most realistic way to get information about the raw experience that the pupil is going to have in the next few years. Usually the first thing they ask about are the teachers, how hard it is to finish subjects, then they get excited because of several unique events the university community can hold. In this case, the school has to create a balance between teaching and letting the students have fun. For example, in the University of Obuda, in addition to everyday teaching, the school holds several interesting events for the pupils.

Family status as influental factor

A student always takes into account his family's opinion about further education. Family status, parent's highest degree, parent's job, they all form the choice of the

child. If the pupil has a family with a lower socioeconomic status, it is unlikely that educating is going to be the top priority. Contrary, if someone lives in a family with highly educated parents, they will shift their kid's thoughts towards educating even if it is not conscious. The worse case, when this "forming their kid's thoughts" is forced, since it can easily set an unachievable goal and create stress between the elders and the child.[9]

1.3 Grouping the sides of a drop-out

We've read several grouping for this part of our research and we thought Hovdhaugen's viewpoint would be the most fitting. He chooses to divide these parts into national, institutional and invidivual levels. Every group is involved to decrease the rate of school-leaving, but their intentions and methods are significantly different. It is important to realize that we are not talking about people, but behind every level, there are dozens of helping individuals trying to reach the set goal.

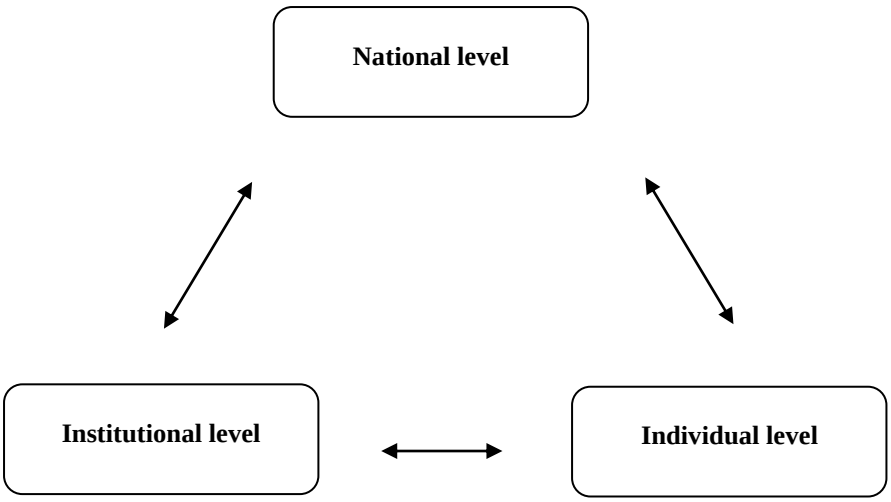


Figure 1

Hovdhaugen levels[3]

National level

As we stated before, this is the broadest level of the grouping. Main goal here is to help the individuuals increasing their talents while making sure the nation as a whole benefits the most. This can be measured by how successful it is to integrate students to the labor market. If we can make sure that our support towards juniors does not go to waste, we can consider this goal as a completed task. In Hungary, our government encourages people with a wide variety of assistance. They grant reserved places for the good students, this way they don't have to pay for their scholarship, also they support these people with studentship, decreased dorm prices, petitions where enthusiasts can research and get mentored by experts.

Institutional level

On this level, drop-out rate can be measured the best, since nowadays every university keeps track of students who leave school, change faculty and things that changes their base idea of learning. For example, our university has multiple scales where they examine how many students left. This way the institution can react if there's a sizeable difference in the rates of leaving. Overall, every school has multiple projects to decrease this percent even if it looks like a program that makes a small impact, like mentor-program or rehearse groups, they can definitely be useful for the students. Although, the main problem with these programs is that they are not individually tested how much it affects the student drop-out. It should be a higher priority, since this way we could get an overall picture about a program's effectiveness. Just to come up with an example, here at the university students who hold rehearsal lessons does not earn an income, even though that would be a great motivation to become a 'teacher'.

Individual level

This might be the hardest level to analyze since it is out of boundary to question every pupil about the reason of leaving. We thought it would be a great way to add Jordan's and Watt & Roessingh's study to this part, because it creates a great grouping in a group. They made three main reason how an individual leaves school, push, pull and fall out.

The most common is the "push" part, since it happens because of the university makes you leave the school. This could happen if the student does not have good marks, missed too much lessons or just overall the school was way harder than expected.

When we say "pull" we mean that someone falls out of school because of a reason that has no connection to the university. Usually this happens when some family related issue comes up or a job proves to be more benificial than studying further.

In the end, "fall out" is the time when none of the above is true. Demotivation, lack of social interaction and friends or just simply the student is disinterested. This can happen pretty often and usually it is harder to manage by universities,

since their power is limited in socializing everyone although, the part where the pupil loses interest could be and should be priorized by the institution. [11]

2 Research and analyzed data

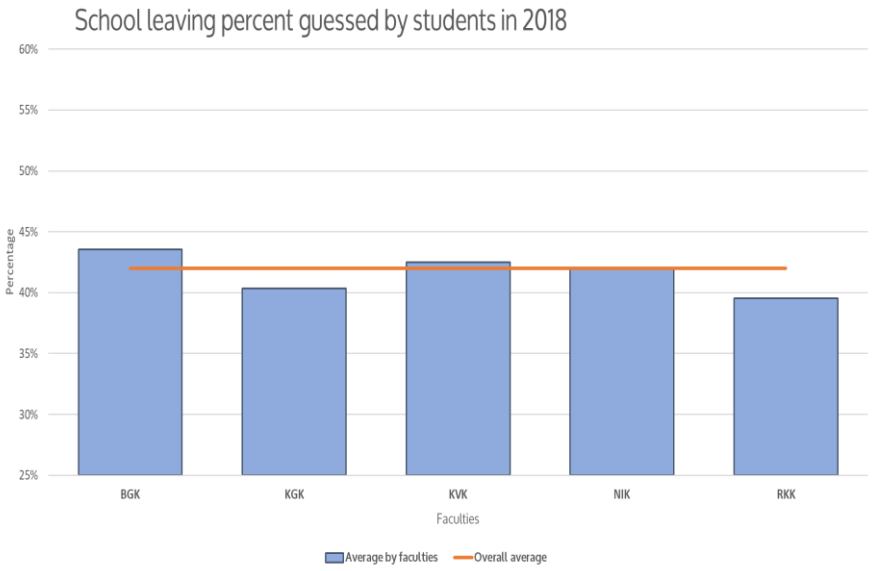
In our research, we applied a quantitative survey to ask students about their opinion of this matter. 200 pupils from the University of Obuda provided a feedback, where we tried to keep the faculty balance even. We made it anonym, this way we can not say that it was a representative survey, yet we had multiple open-ended questions where they could state their ideas or comments about the questions we asked. The form had 14 questions where most of them was about the reasons behind drop-out and the actual effectiveness of the programs the university gives. One of the question was to rank these projects, this way we could create the ranking system we objectively wanted to make. Every diagram we used are self-created and the title is on the upper left corner.

2.1 Hypothesises

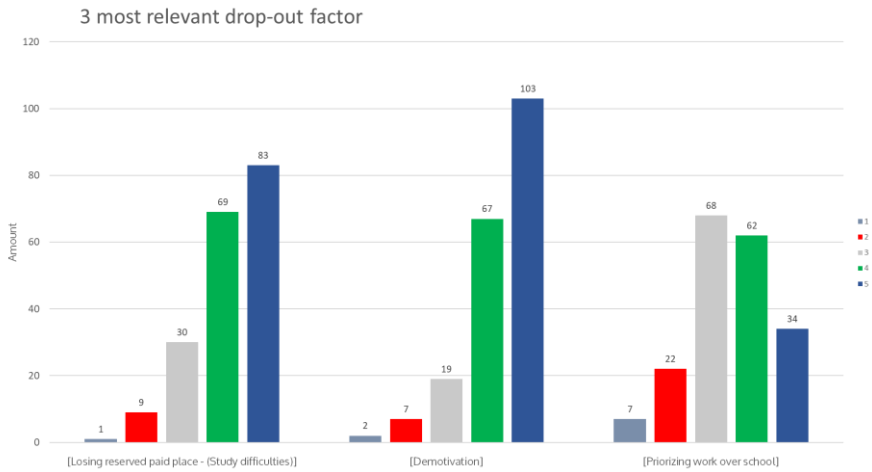
We came up with four hypothesis, where we analyzed every part of our form to approve or cancel these statements.

- We think that if we average the answers for “How big was the drop-out rate in 2018?”, they will reflect the actual percentage, which is around 40%. Students exactly know how big of a threat this can be and they are enlightened about the size and volume of the school leaving.[13]
- We agreed on the most impactful reason why someone would leave school is demotivation. Students usually give up after the blockades they meet in the first few semester. This part is the hardest to analyze because multiple reasons can cause loss of motivation. We will try to inspect this reason thoroughly.[6][7]
- Patronage is always a controversial topic, this is the reason we thought it would be good to analyze how students react to this lesson. We thought that it would be an unliked project, since most of the pupils does not even attend to it.
- We believed that the overall happiness tends to go towards being negative, instead of being on the positive side. We expect to get a rating under 3, since students does not really realize how much work the university does to maintain these programs.[8]

2.2 Provings



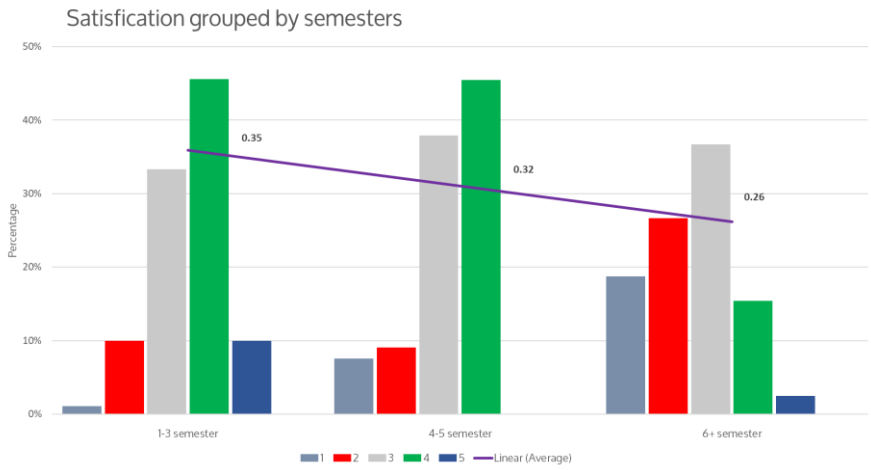
As the diagram shows, the overall average became 42% which is 2% off the official drop-out rate. This shows that students are mostly enlightened about these problems and they see it relevantly. Every faculty guessed almost the same, this way we made sure there are no anomalies where a faculty would be way harder or expected to have a higher rate.



Here, we proved that demotivation did become the first relevant problem, continued by study difficulties. Students mentioned that they felt unssatisfied how the university rewards them and slowly they get disenchanted.

	Number of answers						Weighted sum
	1. place	2. place	3. place	4. place	5. place	6. place	
[Mentor program]	25	29	36	37	40	33	737
[Rehearsal lesson]	70	46	45	19	12	8	481
[E-learning]	35	34	33	38	33	27	681
[Patronage lesson]	13	19	25	33	49	61	869
[Consultation]	34	60	38	38	21	9	579
[Dual system]	23	12	23	35	45	62	853

Here we structured a ranking system where the students could vote about the most effective pograms. Rehearsal lesson became the most effective way for the students, continued by Consulation, E-learning, Mentor program, Dual system and Patronage lesson as the least effective one. This creates a paradox, since teachers are mostly positive about this lesson and they feel like it creates a friendly connecton with the students. This comes down to the stigma they attend to get in middle school, where it is usually a dissasitsfying lesson to be. This case requires more attention further on if we want to come up with a solution.



We grouped overall happiness by semesters and as you can see, only the ones who are further into the university feels less satisfied than “neutral”. This creates a parallel problem with the students who feel like university is no longer a great way for them to improve. Our institution should pay more attention to these students, this way we could improve grading statistics.

Conclusion

We reached the end of this research, for now. The importance of this topic needs constant analyzing, this is why we hope we can continue our work in the future. Right now, University of Obuda has 6-7 active programs that help decreasing student leaving and we think that their effectiveness could be further increased. Our idea of "mentor program" became a reality since from the next semester, there are going to be a program like this that is going to help the newcomes to integrate into university life.

We achieved our goals, created a ranking system for the programs that are active, made assumptions from the massive feedback that the pupils provided and analyzed their viewpoint on this matter. Even if our research decreases the drop-out rate by one percent, we consider it as a success. We are positive about the future of our work and seeing how cooperative the pupils were, it is likely that we will see changes in the future.

Acknowledgement

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Accounting in small and medium enterprises in Albania.

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Abstract: *Accounting methods in Albania has changed a lot during the years, like all other things. First beginnings of accounting in Albania are in the 19th century. Nowadays accounting in Albania is organized with national and international accounting standards in different types of entities. We use 16 national accounting standards to register transactions in small and medium enterprises in Albania. In this paper, I evaluate accounting quality in 150 small and medium enterprises in Albania during nine years of activity (2006-2014) using Barth Model. I used earning management to evaluate accounting quality. If there is earning management in financial statements it means that the quality of accounting is poor and vice versa. I conclude that the quality is improved during the years.*
Keywords: *Accounting, SME, National Accounting Standards*

1 Introduction

SMEs are spread all over the world and play a key role in its economy. They represent about 90% of businesses and more than 50% of employment world wide. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies. These numbers are significantly higher when informal SMEs are included.[1]

Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361. The main factors determining whether an enterprise is a SME are:

1. Staff headcount
2. Either turnover or balance sheet total.

These two criteria are illustrated in the following table:

Table 1: The criteria in Europe for SMEs

Company category	**Staff headcount**	**Turnover**	**Balance sheet total**
Micro	< 10	≤ 2m €	≤ 2m €
Small	< 50	≤ 10m €	≤ 10m €
Medium sized	< 250	≤ 50m €	≤ 43m €

Othervise in Albania some things are different.

[1] https://www.worldbank.org/en/topic/smefinance

According to the statistics, in Albania operate about 99.8% small and medium enterprises. They are made of micro, small and medium entities too. The identification of SMEs in Albania is regulated by law (Law No. 10042, dated 22. 12. 2008). According to this law, the identification of small and medium enterprises is made by taking into consideration the number of employees and annual turnover or balance sheets of their assets. Below we have the table of these indicators for each category:

Table 2: The criteria in Albania for SMEs

Company category	Staff headcount	Turnover or Balance sheet total
Micro	**< 10**	**0 – 80000 €**
Small	**< 50**	**80001 – 400000 €**
Medium sized	**< 250**	**400001 – 2000000 €**

They operate in different activities, but the most are trade sector about 41.5% and service sector about 20%. The largest number of employees is in these enterprises too, about 81% of all employees.

2 Accounting development in Albania

In Albania accounting has its beginnings during the Ottoman Empire Rule. This empire has its guidance for all the countries, that were under her administration.

In 1912 Albania announced its Indipendence and begun to create its own laws. At that time we had the beginnings of first steps of accounting based on turkish methods, with double registration method. In 1924 Albania opened the first accounting and trade school with the help of Noli's governance. It was opened in Vlora and was called Trade School of Vlora. This school has European and West management. In 1929 Zogu's Kingdom create the accounting law. After that the accounting has a huge development.

According to Binaj and Kalemi (2012), accounting development in 100 years of Indipendence in Albania divided into three periods:

1. First period 1912 – 1944. Creation of a modern state in Albania needed creation of an accounting and finance structure to collect taxes and manage them. This was a difficult period for Albania because its funds were limited. Regardless Albanian experts successfully managed them. As we mentioned above during these years we have the opening of the first accounting and trade school and then the creation of accounting law. This law was so advanced and created a high level financial reporting. We see this in that time archives.

2. Second period 1944 – 1992. In this period we have the centralization of the economy and creation of another accouning law and plan for this economy. In 1947 Finance Ministry created first Accounting Plan for the centralized accounting. This was based in Russian experience. Then in 1965 first plan was replaced from Unique Accounting Plan and in 1979 the state made many changes to centralize more and more economy and accounting information. Until the years

50’ accounting in Albania organized into two levels: general accounting and inside accounting. After this was a unique accounting, an integrated accounting according to Russian and world experience. Basic documentation aproved from Finance Ministry and the accounting registered all the documents. In these years, basic and high education spread all over Albania.

3. Third period 1992 till nowadays. After the years 90’ Albania began to operate in trade economy and accounting methods changed. They adapted with sociale and economic conditions. In this third period we can mention two periods according to Bollano:

a. First phase 1993 – 2004. This phase begun with “Accounting Law” aproved in 1993. This law determined the accounting and evaluation methods of accounts and their preparation. During these years we have the approval of General Accounting Plan, Trade Enterprises Law and many other accounting manuals for banks, public sector etc. During these period we have the beginnings of indipendent professions like: Approved Accountant and Audit.

b. Second phase 2004 – nowadays. In 2004 Albania approved “For Accounting and financial statement” law no 9228, which executed from 2006. In this law accounting was organized in accordance with national and international standards. National standards published in 2006 and implemented from 2008. While from january 2015 till now, we use Improved National Accounting Standards, that are in accordance with SMEs International Accounting Standards. Actually we have 2 levels of financial reporting in Albania:

I. First level are entities that use International Accounting Standards or International Financial Reporting Standards (IAS or IFRS) to prepare financial reporting. Here we mention: (a) listed and public interes entities like: banks, assurance companies, listed and not listed security funds and (b) other large entities that fulfill following two criteria for the last two years: Annual Income are above 10000000 € and annual average number of employees is above 100 employees.

II. Second level are SMEs that use National Accounting Standards. (NAS). There are 14 NAS that are used from all small and medium enteprises, NAS 15 that is used only for micro enterprises and NAS 16 that is used for NGO financial reporting.

3 Literature review

In Albania there are few studies about accounting in small and medium enterprises. May be this is the effect of being a transition country and accounting information tranparency is in low levels. The most part of the studies evaluate accounting quality with qualitative methods.

One of the first studies of accounting quality in Albania is World Bank study (2006). It conclude that the accounting quality in Albania is in a low level. Only financial institutions have high level of financial reporting.

Bollano (2010) studied the implementation of national accounting standards and accounting information quality. He concluded that NAS implementation were in beginning phase, because of the low level knowledge of the accounting professionals.

Perri and Naqellari (2010) studied the accounting quality after the implementation of the NAS. They prepared a questionnaire with accounting professionals of SMEs and concluded that accounting quality was in low level, because most part of them didn't apply NAS, meanwhile this was regulated by law.

Shuli (2011) studied the effect of earning management in accounting information quality. She used interviews with the following professionals: albanian accountants, albanian or foreign accountants companies that operate in Albania, albanian audits and albanian or foreign audit companies. From the interviews she concluded that albanian managers used earnings management in the end of the year. They did it to increase financial reporting quality and profitability indicators and to avoid tax obligations.

Lati (2012) concluded that financial reporting quality in Albania affect the competition between economic entities. This because entities that deceive tax authorities has a positive effect on their competition. In this study she added that accounting professionals should see their profession as a live tool for all the economy and not only a profession for their economic benefits.

Çela (2012) in his study mentioned the role of the audit in the financial reporting of economic enities. He invited professionals to create a supervisory body for the audit role.

Dhuci (2012) in his study, mentioned that financial reporting of bank is the most qualitative reporting in Albania. In his study he mention the difficulties of the implementation of IAS about: evaluation of financial instruments and financial statement preparation.

Kodra (2012) in his study mentioned the difficulties of the IAS implementation in the assurance companies.

Hoxha (2014) studied quality of financial reporting in SMEs. She prepared a questionnaire with loan officers in bank institutions and evaluation and control inspectors in tax authorities. She concluded that the most part of enterprises contracted accounting offices for their reporting and the young professionals near them serve only as bookeepers. She also concluded that the most part of them prepared their financial statements according to tax laws and not to NAS. Loan officers didn't believe in the financial reporting of the companies so they asked additional data from the companies.

Foreign scientist have studied a lot accounting quality.

In this study I used quantitative methods to evaluate accounting quality in SMEs in Albania.

I applied Barth model to evaluate accounting quality in Albania, because it is more suitable for SMEs data.

Mary Barth is one of the researchers that studied more than others did the quality of accounting information and IAS (IFRS).

In one of her studies with others (2006), she determined that implementation of IAS (IFRS) is accompanied with high accounting information quality and low cost of capital. They studied 1885 observations in 319 companies from 21 different countries that implemented IAS from 1994. They studied years 1990 – 2003 (published from World scope); four of them were before IAS adoption and other post adoption. During their study they defined that post adoption period had higher quality of accounting information and lower timely loss recognition and more compliance between market prices and book values for shares and lower cost of capital than implementation of GAAP.

In September 2007, the same researchers applied the same model in 1896 observations of 327 companies from 21 countries that implemented IAS (IFRS). Period and variables were the same as above. They finally define that companies with IAS adoption have higher accounting information quality than the companies without IAS. This was a result of interaction of financial reporting characteristics as IAS, their interpretation, their obligation of implementation and law cases. As they involved in their study the effect of economic environment intervention, they were not sure that the accounting quality was from the intervention or from IAS adoption. Finally, they conclude that accounting information quality was higher in post adoption IAS period.

In another study of November 2007, the researchers conclude that the accounting information quality was higher in IAS companies than in GAAP companies. The model applied in other 2212 companies from 24 countries during the period 1995 – 2006. They compared some IAS companies in different countries in world with some IAS companies in different countries in USA and some GAAP companies in different countries in USA. They conclude that the IAS companies in world differ from IAS companies in USA from regulations and law cases. They conclude that accounting information quality was higher in IAS companies in USA than in IAS companies from other countries of the world. They conclude that IAS companies in USA did not have many changes in their quality in pre and post adoption period. Finally, they conclude that the accounting information quality in IAS companies of USA is higher than that of GAAP companies.

4 Evaluation of accounting quality in SMEs in Albania

As I mentioned above, I used Barth model to evaluate accounting quality in SMEs.

4.1 Sample and data collection

To evaluate the accounting quality in SMEs I applied Barth model in 150 SMEs in Albania, that use NAS. These enterprises operate for more than ten years in their field and my study period is nine years, 2006 – 2014, because I didn't have the data before 2006 and from 2015 till now the companies use Improved NAS. It is a random sample. I took the financial statement of these companies from our National Centre of Business. I select a study sample from different countries of Albania and that operate in different activities, to generalize the study results. Below is a graph that shows the activity of the studied companies:

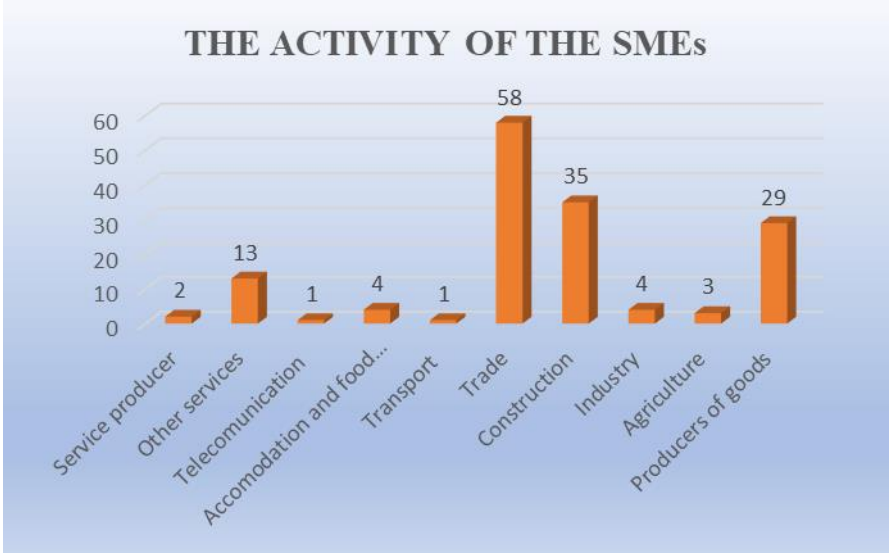

Figure 1.
The activity of the SMEs.

For these sample companies we have 783 observations during the years 2006 – 2014, because we have some missing data during years 2008 – 2009. We delete the outlier data and we hold data that are in the interval [-200%; 200%], because they worsened the regression. After the deletion we have about 700 observations.

4.2 Analyses

As the review of the literature gives us different methods to evaluate the accounting information quality, we choose to apply in Albania, Barth model, as it is more suitable for the companies that operate here. We choose to evaluate the quality based on the earnings management. The purpose of this paper is to give answer to the research question below:

Is there earning management in the financial statements prepared from the accountants after the NAS implementation?

If there is earnings management in the financial statements, we conclude that the accounting information quality is low, if there is not we conclude that the accounting information quality is high.

The first measure of earnings management relies on the variability of the change in net income scaled by total assets, ΔNI (Lang and others, 2006). The second measure of earnings management relies on the ratio of the variability of the change in net income, ΔNI, to the variability of the change in operating cash flows ΔCF. The third measure relies on the connection between accruals and operating cash flows. (Barth and others, 2008).

According the above information, we raise three hypotheses that link with research question.

We foresee that a higher accounting information quality comes from a lower earning management. Therefore, the first hypothesis is as below:

H1: The implementation of NAS links with a high variability of change in net income.

The second hypothesis on earning management relies on the ratio of the variability of the change in net income with the variability of the change in operating cash flows. We foresee that a higher accounting information quality comes from a higher ratio. Moreover, the second hypothesis is as below:

H2: The implementation of NAS brings a higher ratio between the variability of change in net income to the variability of change in cash flows.

The third hypothesis on earning management relies in the correlation between accruals and operating cash flows. We foresee that a weak correlation between them leads to a high accounting information quality. Moreover, the third hypothesis is as below:

H3: The implementation of NAS relies on a low management of accruals from the company.

We implement these three hypotheses in 150 enterprises that uses NAS in Albania during the period 2006 - 2014.

After we create the hypotheses, we follow these steps to complete the database analysis:

1. We evaluate four models of regression: the variability of the change in net income, the variability of the change in operating cash flows, accruals and operating cash flows.

2. After this, we took the residuals of every model of regression.

3. Then we use FISHER and ANOVA analysis to analyse the residuals of the regressions. We use FISHER analysis to compare the accounting information quality before and after the standards. While we use ANOVA analysis to evaluate the variance of the residuals.

4. Then we approve or reject the hypotheses.

We use Gretl programme and Excel Megastat to analyse the data.

4.3 Findings

To analyse the link between dependent and independent variable we use the multiple linear regression analysis with ordinary least squares model.

Beginning from Barth model, we define the dependent and independent variable for every hypothesis. Then we use the correlation matrix to see if there is auto correlation between the variables. Then we prepare the equations of multiple regression. To evaluate the variance of independent variable we evaluate the variance of the residuals of every regression. We use FISHER and ANOVA analysis to evaluate the hypothesis.

Let us begin with the first hypothesis. We prepare the first equation of the multiple linear regression where the dependent variable is the variability of the change in net income scaled by total assets, ΔNI, meanwhile independent variables are size, growth, financial leverage, change of total liabilities, turn of assets and operating cash flow. Other independent variables such as issue, exchange, listing and close are not object of our regression, because we do not have a stock exchange in Albania where we can take these data. The indicator variable of audit is not in this regression because one of four big audit companies audit all the companies that are audited, from the companies we consider. The independent variable of size will be the natural logarithm of total assets, because we do not have a stock exchange to evaluate the market value of the equity. From the matrix of the correlation between independent variables, we see that we do not have problems of correlation between them, because the coefficients are out of the interval [-0.7; 0.7].

The multiple regression is as follows:

$$\Delta NIit = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 LEV_{it} + \alpha_4 \Delta DISSUE_{it} + \alpha_5 TURN_{it} + \alpha_6 CF_{it} + \varepsilon_{it}$$

Where:

ΔNI = the change in annual earnings, where earnings is scaled by end of year total assets

SIZE = natural logarithm of end of year of total assets

GROWTH = percentage change in sales

LEV = end of year total liabilities divided by end of year equity book value

ΔDISSUE = percentage change in total liabilities

TURN = sales divided by end of year total assets

CF = annual net cash flow from operating activities divided by end of year total assets

After the evaluation of linear regression the results tell us that the model is statistically significant (p = 0.001) but the independent variables like LEV, ΔDISSUE and CF are not statistically significant. After that, we do another time the evaluation of linear regression and we see that it was statistically significant with [(F (3,696) = 2307, p = 0.000] and adjusted R^2 is 90.9%. The significant variables in the final regression model are SIZE (p = 0.0002) and GROWTH (p = 0.0361) and TURN (p < 0.00001). Below is the final linear regression model:

$$\mathbf{\Delta NI = -1.16 - 0.06SIZE_{it} + 0.005GROWTH + 0.11TURN_{it} + \varepsilon_{it}}$$

As we see from the linear the adjusted R is high. This means that the independent variables justify 90.9% of the dependent one. This means that other variables indicate the change in net income such as fiscal and trade law, economic environment etc.

The variability of ΔNI is the cross sectional variance of residuals of the IAS data companies. Therefore, we proceed with evaluating of the variance of the residuals of the regression that is the same with the variance of the change of net income. To do this, we use Fisher test, because we have data for two periods: before NAS and post NAS. This because we know that SMEs use NAS from 2008 and later in Albania. Below we have the table for F-test:

Table 3: FISHER Test Anlyses

	Before NAS	Post NAS
Average	-0.011	-0.106
Variance	0.005	5.989
Observations	88	612
Degrees of freedom	87	611
F	0.0008	
Critical Value F	0.7532	

We saw that critical value of F test is higher than the value of F test. This means that in the post NAS period we didn't have earnings management, so the accounting quality of information is higher. But this is not very clear, because the number of observations in the post NAS period is higher than in the period before NAS.

So, we think that the best result are given from ANOVA analysis.

Therefore, we use ANOVA analysis and we have two hypotheses:

$H_{0,1}$: During the years the average of the residuals don't change

$H_{a,1}$: During the years the average of the residuals change

Below is ANOVA table (table 4). From the table we see that F < Fcrit, so 0.32 < 2.02 and p > α, so 0.94 > 0.01. This means that we refused H_a and approved H_0.

Table 4. ANOVA Analysis H1.

Source of the variance	**Sum of squares**	**df**	**MS**	**F**	**P – value**	**F-crit**
Between groups	0.055957261	7	0.007993894	0.322718	0.94382979	2.02283283
Within groups	17.09166691	690	0.024770532			
Total	17.14762417	697				

Finally, it means that during the years in the financial statements we have earnings management. Therefore, the accounting quality during the implementation of NAS worsened.

Our second hypothesis based on the ratio of the variability of the change in net income, ΔNI, to the variability of the change of operating cash flow ΔCF. The first variance is ready from the first equation. Now we have to evaluate the same equation for ΔCF. We prepare the equation of the multiple linear regression where the dependent variable is the variability of the change of operating cash flow, ΔCF, meanwhile independent variables are size, growth, financial leverage, change of total liabilities, turn of assets and operating cash flow. From the matrix of the correlation between independent variables, we see that we do not have problems of correlation between them, because the coefficients are out of the interval [-0.7; 0.7].

The multiple regression is as follows:

$$\Delta CF_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 LEV_{it} + \alpha_4 \Delta DISSUE_{it} + \alpha_5 TURN_{it} + \alpha_6 CF_{it} + \varepsilon_{it}$$

After the evaluation of linear regression the results tell us that the model is statistically significant (p = 0.001), but the variables GROWTH, LEV, ΔDISSUE, and CF are not statistically significant. After that, we do another time the evaluation of linear regression and we see that it was statistically significant with [(F (2,801) = 2575, p = 0.000] and adjusted R^2 is 86.5%. The significant variables in the final regression model are SIZE (p = 0.0008) and GROWTH (p = 0.0001). Below is the final linear regression model:

$$\mathbf{\Delta CF = 1.75 - 0.09SIZE_{it} - 0.17GROWTH_{it} + \varepsilon_{it}}$$

The variability of ΔCF is the cross sectional variance of residuals of the data of the companies (2008-2014) because we don't prepare the Cash Flow Statement before NAS. Therefore, we evaluate the variance of the residuals of the regression that is the same with the variance of the change in operating cash flow. Then we measure the ratio of the variance of ΔNI with ΔCF. In this case, we know that the ratio will be available for panel data, where we have data for both. We use ANOVA analysis to measure the variance of the ratio. Therefore, we have two other hypothesis:

$H_{0,2}$: During the years the average of the residuals don't change

$H_{a,2}$: During the years the average of the residuals change

Below is ANOVA table (table 5):

Table 5. ANOVA Analysis H2.

Source of the variance	**Sum of squares**	**df**	**MS**	**F**	**P – value**	**F-crit**
Between groups	76.25543643	6	12.70924	2.979252	0.00714	2.11464
Within groups	2405.976614	564	4.265916			
Total	2482.23205	570				

From the table we see that F > Fcrit, so 2.98 > 2.11 and p < α, so 0.007 < 0.01. This means that we approved H_a and refused H_0. Finally, it means that during the years in the financial statements we don't have earnings management. Therefore, the accounting quality during the implementation of NAS improved. It means that our accounting professionals don't use short-term assets and liabilities to manage their earnings. We explain this result with the small number of data.

Finally, we see our third hypothesis. Here we have to evaluate if in the companies we have low management of accruals after NAS implementation. This means to

see the correlation between accruals with operating cash flows. To measure this correlation we use Spearman coefficient.

Now we prepare the equation of the multiple linear regression where the dependent variable in the first case is accruals, meanwhile the dependent variable in the second case is operating cash flow. The independent variables are the same for two cases; size, growth, financial leverage, change of total liabilities and turn of assets. From the matrix of the correlation between independent variables, we see that we do not have problems of correlation between them, because the coefficients are out of the interval [-0.7; 0.7].

The multiple regressions are as follows:

$$ACC_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 LEV_{it} + \alpha_4 \Delta DISSUE_{it} + \alpha_5 TURN_{it} + \varepsilon_{it}$$

$$CFit = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 LEV_{it} + \alpha_4 \Delta DISSUE_{it} + \alpha_5 TURN_{it} + \varepsilon_{it}$$

After the evaluation of the first linear regression the results tell us that the model is significant ($p = 0.03$) but independent variables like GROWTH, LEV and ΔDISSUE are not statistically significant. After that, we do another time the evaluation of linear regression and we see that it was statistically significant with [($F(2,696) = 5.93$, $p = 0.003$] and adjusted R^2 is 3%. The significant and marginally significant variables in the final regression model are SIZE ($p = 0.0099$) and TURN ($p = 0.0739$). Below is the final linear regression model:

$$\mathbf{ACC = 1.16 + 0.02SIZE_{it} - 0.002TURN_{it} + \varepsilon_{it}}$$

The low adjusted R^2 means that the independent variables justify 3% of the dependent one. This means that other variables indicate the change in net income such as fiscal and trade law, economic environment etc. Otherwise this does not worsen analyse quality, because we are interested in the variance of the residuals of the regression and not in regression especially. We see this in the original model, because Barth does not mention the adjusted R^2 nowhere.

Then we evaluate the second linear regression. After the evaluation of the second linear regression the results tell us that the model is marginally significant ($p = 0.003$), but the independent variables like GROWTH, LEV, ΔDISSUE and TURN are not statistically significant. After that, we do another time the evaluation of linear regression and we see that it was marginally significant with (($F(2,608) = 11.06$, $p = 0.000$) and adjusted R^2 is 3%. The significant variable in the final regression model is SIZE ($p < 0.0001$). Below is the final linear regression model:

$$\mathbf{CF = -7.8 \times 10^7 + 4.7 \times 10^6\ SIZE_{it} + \varepsilon_{it}}$$

As we see from the linear regression, SIZE has negative relation with CF and the adjusted R^2 is low. The low adjusted R^2 means that the independent variables justify 3% of the dependent one, but this does not worsen our analyses.

Then we evaluate the residuals of every equation and we use Spearman coefficient to evaluate the correlation between the residuals of these two equations.

From data processing, we see that this coefficient is -0.031, which means that between accruals and operating cash flows exists a weak negative correlation. (Figure 2) Therefore, it means that in the financial statements does not exist earning management so the accounting information quality is high.

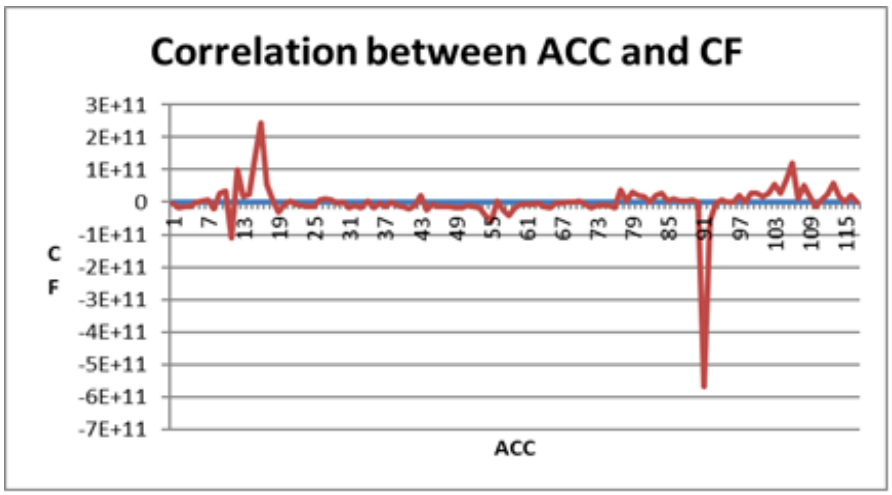

Figure 2

Correlation between ACC and CF

Finally, we conclude that we don't have earning management in our financial statement after NAS implemetation period. This because the second and the third hypotheses were approved. Below in the table 6 is a summary of the conclusions from the hypotheses:

Table 6. Hypotheses summary.

Hypotheses	**Approved Basic hypotheses/ Alternative hypotheses**	**Conclusions**
First Hypothesis	Approved Basic Hypothesis: The implementation of NAS doesn't links with a high variability of change in net income.	This means that in the financial statements prepared by SMEs have earnings management, so the accounting quality is low.

Second Hypothesis	Approved Alternative Hypothesis: The implementation of NAS brings a higher ratio between the variability of change in net income to the variability of change in cash flows.	This means that in the financial statements prepared by SMEs, managers don't use accruals to manage earnings so the accounting quality is high.
Third Hypothesis	Approved Alternative Hypotheses: The implementation of NAS relies on a low management of accruals from the company.	This means that in the financial statements prepared by SMEs, managers do not use accruals to manage earnings so the accounting quality is high.

Conclusions and recommendations

1. SME-s in Albania are about 99.8% of all enterprises and their employees are about 81% of all employees.
2. They use national accounting standards to prepare financial statements for their users.
3. I studied the accounting information quality of 150 SME-s that use national accounting standards in Albania. I see that the accounting information quality, measured by earnings management, improved during the years, especially during post NAS period. But I see that our professional use net income to manage earnings, so I think it is more suitable to have a coordination between all the institutions to stop earnings management using this variable.
4. In connection with the accounting quality model, as we see above, we in Albania, use only the balance sheet evaluation, because don't have an active Stock Exchange. We hope to have it, as soon it is possible, like other countries of Western Balkan. This would help us to have a real evaluation of the situation.

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Better online? Efficiency of e-learning courses

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Abstract: *The Generation Z is already living on the Internet, so it is likely that web learning is preferred over traditional classroom courses. E-learning courses can be a solution, because their purpose is to improve the quality of the learning and teaching. The University of Obuda consider it as an objective to advertise many e-learning courses in line with student's need. Unfortunately, in many cases they are not correspond to the expectations, mainly because there is no unified expectation. The main purpose of my research is to inspect the completed courses and to prepare an integrated rating system, asking students what they are making up for such courses and comparing them to the already finished ones, suggesting a review of them, resulting e-learning courses that can help to prepare successfully. At the first phase of my research I made a basic rating system with a focus group, and in the second part I will make it more accurate with the help of my fellow students*

1 Introduction

The Generation Z makes a a significant proportion of higher education students, and in the most cases they have different expectations, not only about their jobs, but about their education as well. Learning interesting and useful things became more important for them than it was for their ancestors. This requires practice-oriented education, which is difficult to achieve with traditional methods. We need to understand young people's new approaches, or at least accept and pay attention to them.

One of the new methods is e-learning, which is used at the University of Obuda, but the course materials' quality are not always adequate. Therefore, the purpose of my research is to compile a system of criteria that helps the instructors in the preparation of the curriculum, thus helping the students to understand it.

This study is about the second part of a 10 months long research, supported by the New National Excellence Program. The first part can be found in FIKUSZ – Symposium for Young Researchers 2019. Proceedings.

2 Generations

The Cambridge Dictionary says generation is all the people of about the same age within a society or a particular family. But the definition and the grouping of the generations are not unitary, because a lot of peple made researches in this topic, and many of them made different sections, based on what things and attributes they thought are important.

I think it is important to mention, that generations are usually separated by the birth dates of the people, but these changes are much more slower, there is no sharp line between two generation. And although usually general characterization can be found in literature, everybody is individual and does not always identify with all the characteristics of the generation.

The table below shows some of the groupings with names and birth dates based on the literature.

Howe & Strauss (1991)	**Lancaster & Stillman (2003)**	**Oblinger & Oblinger (2005)**	**Mccrindle Research (2012)**
Silent Generation (1925-1942)	Traditionalists (1900–1945)	Matures (1900–1946)	Builders (1925-1945)
Baby Boom Generation (1943-1960)	Baby Boomers (1946–1964)	Baby Boomers (1946–1964)	Baby Boomers (1946–1964)
13th Generation (1961-1981)	Generation Xers (1965–1980)	Generation X (1965–1982)	Generation X (1965–1979)
Millennial Generation (1982-2004)	Millennial Generation (1981–1999)	Net Generation (1982–1991)	Generation Y (1980-1994)
-	-	Post-Millennials (1995-)	Generation Z (1995-2010)

Table 1
Generations [1][2][3][4]

The Traditionalists were born before the World War II, there were youngers during the war and as a result of it, they are characterized by confinement due to fear. They are skillful and opportunist, but they first met the online world in their old age, so they often encounter difficulties in this field. [5]

The Baby Boomers were born after the war, They are curious and the respect is important for them. There are differences in the generation, Boomers who were born after 1956 are much more disappointed, they lost their optimism, but they have principles and they are creative. [1]

The Generation X, or is some sutdies the Digital Immigrants were born during the technological breakthrough, so the continuous progress and the digital worls became a part of their life and it is not strange for them. Although they prefer the traditional tools and methods. [6]

The Millenials are the first generation of digital natives. They can easily get through today's fast moving world, they try to be up to date at technical acquis and when they meet something new they try to use it, instead of getting frightened. In many cases, they do not need lexical knowledge, but competence in how to find answers to their questions. [7]

Generation Z is the second generation of digital natives, so they are often called as Digital Generation as well. The members of the generation are between the age of 10 and 24, which means they made a large proportion fo the higher edication students. This is why it is important to ask their point of wiev, when creating the current e-learning courses.

According to a study, one of their most important habbit is that they live their social life online, at a faster pace than their parents, grandparents. They are brave and they often like to push boundaries. [8]

They are often characterized by multitasking and task-switching, which means that they can perform up to 3-4 activities at the same time (such as listening to music, talking to friends, and learning) and they can easily switch between them frequently. As a result of this, many more stimuli are needed to capture their attention. They are expected to make as much of the necessary information available online as possible, because they handle those surfaces professionally. [9]

They use digital tools at every part of their lives, which is not surprising, even if they were not born into it, the online world has been an integral part of their lives since childhood. As a result, they have gained a huge advantage over other generations in this regard. They are native speakers of a new language that previous generations can speak only with an "accent". This is the digital language of computers, video games and the Internet. Many times this difference makes the communication more difficult between generations, this effect is called generation gap. It also appears in their education, as most of their teachers belong to Generations X and Y, who are less fluent in using the digital tools that students would need. In addition, instructors often believe that students have not changed, they are the same as they used to be, so the previous methods are also perfectly appropriate. [6]

Older people often think they can't pay attention to one thing for a long time, but that's not entirely true. Several studies show that they can concentrate for hours on a game or a movie, but not everything. Because of the opportunities offered by games, movies, and technology, they have become accustomed to a fast-reacting, multitasking, fun, imaginative, connected, fast-feedback environment that has

developed new abilities and skills (such as parallel processing and graphic awareness) that are sometimes not appreciated or ignored by older people. [6]

It is important to emphasize they prefer visual representation to long unstructured texts, and it is also important that the particular curriculum should arouses the interest of the students. [10] However, this requires a rethinking of curriculums and teaching methods. “The process has already begun – I know college professors inventing games for teaching subjects ranging from math to engineering to the Spanish Inquisition. We need to find ways of publicizing and spreading their successes.” [6]

3 E-learning

E-learning is the digital technologies effectively used for educating, but as this form of education has only existed for 30-40 years there is no uniform definition for it. One of the literature says: “The e-learning is instruction delivered on a digital device that is intended to support learning. In e-learning the delivery hardware can range from desktop or laptop computers to tablets or smart phones, but the instructional goal is to support individual learning or organizational performance goals.” [11]

Its benefits include being available anywhere, anytime, allowing students to process the curriculum at an individual pace, with a choice of multiple methods, and progress can be tracked and monitored for both students and teacher. The downside, however, is that communication and information flow can be more difficult and slower than the traditional classes.

3.1 Evolution and current forms of e-learning

One of the first, rudimentary form of e-learning was CBT (Computer Based Training) where the curriculum was delivered on portable data storage devices, floppy disks, and later on CDs. [12] One of the benefits is that students received not only texts, but videos or audio files that they could listen to or watch anywhere, anytime. However, the disadvantage is that the communication is one-way, there is no connection between the student and the teacher, as the data storage only transmits the curriculum. [13]

The next milestone that took a huge step forward in e-learning education was WBT (Web Based Training) which was started at Universty of Hagen in 2000. [12] The computers were connected with networks, which help to overcome distances as students and teachers could communicate with each other more easily than before. [13]

The next step was the e-learning, where the internet has taken over the role of the networks. Nowadays, there are many forms of e-learning, I would like to present the two most common. The first type is blended learning, which means that there are traditional classroom classes, but some of the classes take place in the form of

e-learning. This method takes advantage of both technologies as students can learn with their own methods and at their own pace, but can easily communicate with their teachers. [14] The other type is e-learning, where, unlike blended learning, there is no (or rarely) personal consultation that can make learning difficult for students. There are several types of e-learning that can be grouped based on the relationship between teacher and students. [13]

3.2 E-learning at University of Obuda

The University of Obuda considers it its goal to advertise as many e-learning subjects as possible in response to student needs. This is currently possible on 2 interfaces: Moodle and KMOOC. To complement these Microsoft Teams is used for online consultations and lessons.

Moodle is an educational platform designed to provide a secure and integrated system for creating personalized learning environments for students, teachers, and administrators. Its advantage is that it has an easy-to-use, clear interface and what is also important for Generation Z, it can also be accessed from a mobile application. [15]

KMOOC (Kárpát-Medencei Online Oktatási Centrum) is operated by the University of Obuda, which offers free online training in Hungarian on the model of MOOC-type online courses for students of Hungarian-speaking higher education institutions in Hungary and abroad. [16]

4 The research

For the research I made a Google questionnaire, which I tried to convey as many students as possible, across different platforms.

In the first part of the questionnaire, I collected general data necessary for grouping, such as the faculty and the major in which the students are studying and the number of e-learning courses they completed. In the second part, I ask the students about the most important elements, which parts a good curriculum should contain, and in what proportion.

The questionnaire was filled in by 113 people, 109 of them are students of the University of Obuda, so I will further process their answers. The graph below shows the distribution of fillers by faculty. The number of students of the Keleti Faculty of Business and Management stands out significantly compared to the other faculties, which may be due to the fact that I am studying at this faculty, so I reached the students there more easily.

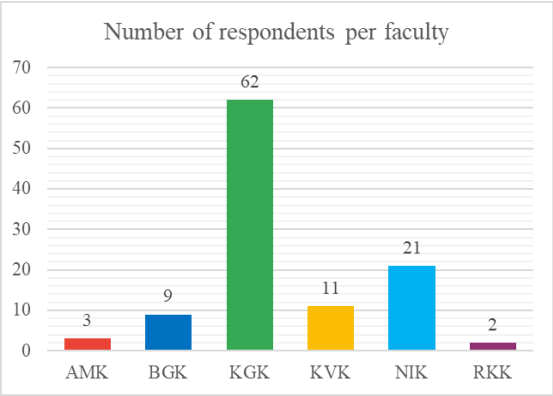

Figure 1
Number of respondents per faculty

The majority of the respondents (91 people) have so far completed a maximum of 10 e-learning courses, and the most of them (74 people) completed 1-5 subjects. In terms of satisfaction, more than half of the students, exactly 57%, are satisfied with the current online curriculums. However, I think this is not enough because although there is no curriculum that suits everyone, the ideal rate would be around 70-80%. This is also why I consider this research important, as it is expected to increase this ratio.

Based on the answers to the open-ended questions that require longer explanation, a total of 81 students say that video and online consultation is necessary, as it is important for them to replace personal contact and visual and audiovisual effects can make learning more effective for them. Regarding their length and proportion, it was generally agreed that they should be a maximum of 20-40 minutes in length, depending on the topic and the amount of important information. If a topic requires a longer video than this, it's a good idea to split it into several shorter units. Compared to the entire curriculum, videos should be maximum 30-50%. Depending on the subject, these videos may include lectures, practice or lab tasks and their solutions.

For online consultations, it is important that the instructor is actually available at the previously discussed time and is able to answer questions about the curriculum. In addition, it is worth creating a forum-type interface where students can ask questions or communicate with each other outside of consultation time.

The second unit mentioned by many was the slideshow or presentation, which was noted by a total of 52 people. An important criterion that it be short and concise, but at the same time clear. It is roughly 20-40 slides in length, which can be combined with the rest of the curriculum, such as the video mentioned earlier.

The third important unit is the sample tasks as well as their solution, of course in case the subject includes tasks as well. This was mentioned by a total of 83 students. According to them, detailed and accurate deduction is important, because it helps with understanding. Several of them suggested solving the tasks in video format, as this makes it easier to explain the individual steps and subtasks. Typically, 2-3 solved tasks from every type and 4-5 tasks for practicing are required for students to check whether they have really understood the examples.

The fourth important element for several students are the tests, but only 18 people suggested this. As the tasks, they also serve to measure the progress and the knowledge-level. The advantage is that not only the students but also the teacher can see the results of these, so they can get a better picture of the current knowledge of the group. These can supplement the curriculum in the form of short series of questions containing 10-20 questions.

The figure below shows the summarization of the above mentioned elements.

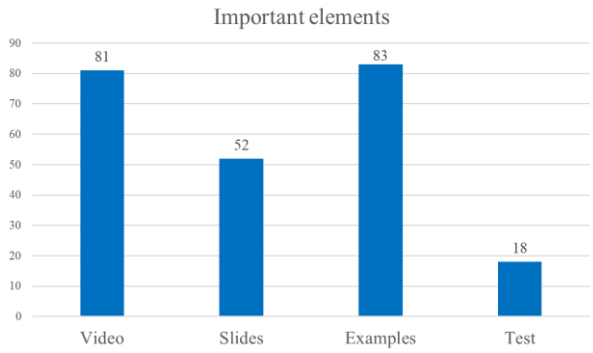

Figure 2
The most important elements

In addition to these elements, it is important for students to have a structured curriculum, preferably separated by weeks. Another important aspect is the fulfillment of the requirements and the continuous updating of the online study materials, if necessary.

4.1 Rating system

Based on the students' opinions and my own knowledge and literature, an e-learning curriculum is considered appropriate if:

- Divided into weekly units
- Includes instructor’s contact information
- Contains video, which is maximum 30 minutes, up to 50% of the curriculum
- Includes a presentation and the explanation of it, maximum 20-40 slides

- Contains solved tasks, 2-3 detailed, step-by-step examples per type
- Contains practice tasks, 4-5 tasks with solution
- Contains test at every 2-3 weeks or per topic, with 10-20 questions
- Includes a list of required and recommended literature

4.2 Review of the courses

Based on these aspects, I rated three e-learning courses I have already completed.

The first is an IT course, where students can learn the using of basic business softwares. The curriculum is divided into weekly units, including topics. Each week, the teacher uploaded several shorter videos (maximum 15 minutes in length), in which she briefly explained the presentation of the lectures and the operation of the software used in practice. The presentation of the lecture is of sufficient length and contains the theory necessary for understanding the practice. In addition parts of the course are the weekly assignments that can be created based on the videos using the software. There are tests about every 4 weeks, they contain 10-15 questions, but you can try them several times. It also contains where the literatures are available and the teacher's contact.

Overall, the curriculum of the subject is appropriate, because, although the videos make up more than 50%, this is not a problem in understanding and mastering the curriculum, it even promotes it.

The second is a business course, where students get basic knowledge in economy. There is no weekly division, in the curriculum, the different topics are uploaded one after the other. This makes preparation difficult as the student may not always be able to identify the curriculum for the actual week. The contact details of the teacher and the dates of the consultations are indicated in the course, so the students can discuss any questions or problems with him. Video is not included in the curriculum, which I think would be needed in some sections, for better and easier comprehension. Uploaded presentations are of sufficient length, but do not have a more detailed explanation, which can also cause problems during processing. Solved tasks are included in the presentation, however, this is not always enough to acquire knowledge. The practical tasks appear in the form of homework, they must be completed by the student for a certain period of time, this is part of the grading system. In contrast, a test is not part of the curriculum, but it is not absolutely necessary for this course, as homeworks can replace it. Required or recommended literature is not included in the course.

Overall, the subject is not appropriate based on the aspects I have compiled earlier, in order to improve it, it is important to replace the video and to improve and expand the presentation with an appropriate explanation.

The third is also an IT subject, where students can gain more advanced programming skills. The curriculum is presented in a weekly schedule, by topics

on the online interface, theoretical and practical topics are separated. The curriculum is available in the form of videos, which, although exceeding 50%, is necessary in this case due to the theme of the subject. The videos are 15-20 minutes long and include a presentation in the theoretical part. The practical part contains videos about solving excercises, where the teacher explains the individual logical steps and the solution of various problems in a detailed and clear way. There is also a homework assignment for each week, which is a short follow-up to a program we have learned in practice, which is a good exercise for students. Additional practice tasks are not available within the curriculum, but are not required. A test is also not part of the course, however, it is not necessary for the submission and assessment of homework, as I think it is also appropriate feedback to both the student and the teacher. The textbook and the contact details of each instructor and the dates of their consultation are also available within the course.

In summary, the electronic syllabus for the subject is appropriate and contains all the important elements needed to understand and master the subject. This course can be a good example in the future as well.

Conclusions

While it can still be said that there is no perfect curriculum for everyone because of different personalities and thus different needs, the majority agrees on the basics. Based on these, I created a new assessment system, which can be used to check the general, basic expectations of e-learning materials and to improve the individual problems and shortcomings in order for students to learn effectively.

Of the three subjects analyzed, two proved to be appropriate, which is an encouraging sign for the development of electronic learning materials, as with the development of IT tools, online education has an increasing future and an increasingly important role. This is also evidenced by the events of recent months, as for many subjects the online curriculum already had a good foundation, the instructor did not have to build from scratch due to the sudden change.

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Focus on internal stakeholders in Hungarian SMEs

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Abstract: *Corporate Social Responsibility is a broad concept depicting organisational relation towards internal and external stakeholders; however, most companies emphasize the external market and even the environmental aspect more than their own personnel and their wellbeing. Since SMEs are the backbone of most countries' economy, it is important to analyse their behaviour regarding their internal stakeholders. Present paper introduces the problem of staffing and personnel management of SMEs based on relevant international literature. In addition, it provides a picture about the Hungarian situation on the basis of a sample of 118 SMEs. In line with the data presented in the paper, managers of SMEs also focus on the market environment more than on their colleagues. However, the behaviour strongly depends on the size and characteristics of the company, as well as the features of their leaders.*

Keywords: *internal stakeholders, SME, Hungary, CSR*

1 Introduction

For a company to flourish on the market it is no longer sufficient to offer work and provide employees with income in return. Companies that intend to sustain a profitable operation on a long run have to be aware of the fierce competition on the labour market and act accordingly. Companies must meet the needs of their employees. Issues of responsible employment are becoming an evergreen topic that no company can evade. Companies do not only compete on the market with their products and services, but they are also in a fierce competition with each other on the labour market too (Ivanova, 2019). Creating a motivating and inspiring workplace, a family-friendly approach, creating a healthy and people-centered work environment, supporting people with disabilities, ensuring equal opportunities for women, fostering work-life balance are all features that can make a company win this competition.

Nonetheless, it is not only for business purposes companies introduce such practices, but the ever-increasing importance of social responsibility also dictates

companies to change their previous, exploiting practices. In our globalised world, no company can flourish on the market (not even with god quality, low priced products) with constant internal scandals. What is more, undermotivated, uncommitted employees are not striving to increase the efficiency and efficacy of business operations either, hence a long-term improvement of processes cannot take place without them. Employees are very important players (Benedek, Takácsné György, 2016). They represent the company to consumers, and they are the ones to implement corporate decisions and bear the consequences too.

All in all, employees are key resources of modern age companies, who can contribute to the success of their companies greatly but can also create a great impediment of prosperity if not treated fairly (Hvolkova, 2019). Accordingly, a responsible company has to put (at least) the same effort in winning over and retaining good employees as in gaining and retaining costumers (Martinez-Conesa et al, 2017).

It is becoming increasingly clear that the practical dimensions, such as codes of ethics and cooperation agreements, well-structured management systems, and financial incentives are not sufficient. Companies have to think way beyond that to meet the expectations of their (future) employees (Cepel, 2018). They have to think holistically and responsible, striving for a non-zero sum game with all parties concerned in and affected by their operations.

2 Literature review

In the past two decades, corporate responsibility has become an important issue in the global business world. CSR is a well-known abbreviation by now, which stands for Corporate Social Responsibility. The use of the abbreviation CSR is already part of everyday business discussions, however, the debates about its definition are still ongoing (Sahlin-Andersson, 2006). Several definitions have been developed to describe the concept of CSR. In Kotler's and Lee's (2005) interpretation, corporate social responsibility depicts a commitment that a company makes voluntarily for the well-being of its community and that the company is willing to supports with its resources.

According to the European Commission's Green Paper, CSR is a process by which companies, on a voluntary basis, incorporate social and environmental considerations into their business operations and their system of relations with stakeholders (European Commission, 2006). The Green Book discusses the main areas and tools of CSR along two dimensions, distinguishing between the internal and external dimensions. Human resource management, occupational health and safety, adaptation to change, transformation, crisis management, and environmental impact management (exploitation of natural resources, environmental protection) are considered the internal dimensions, while local communities, business partners, suppliers, consumers, and on a greater scale

human rights, and global environmental considerations make up the external factors (Kun, 2004).

Hence, the responsibilities of companies can be manifold. Dahlsrud (2008) compiled several definitions and attempted to make them comparable in some way. His study revealed that the most common aspects were the environment, the economy, and the stakeholders, but the social and voluntary dimensions are also at the core of the collected definitions.

One of the most basic, and still well-structured approaches is the one of Carroll (1991). The bottom layer of the CSR pyramid defined by her is the economic responsibility of the company. Even though we talk about CSR, the main responsibility of a company is to be profitable, to sustain its operations, to be able to benefit society in long-term. The second layer consists of legal aspects of the operations. A responsible company must obey laws and other regulations regarding employment, competition, health, and safety of employees, … This is also a basic prerequisite of a company's long-term operations as legal entities. The third layer is the moral and ethical dimension that already goes beyond the requirements defined by the law. This includes fair treatment of partners and employees. The top of the pyramid is the philanthropic level, where a company strives to give back to society. This is the place of charitable donations or voluntary work.

When addressing the issue of corporate social responsibility, the Stakeholder theory should also be mentioned (Freeman, Velmuri, 2006; Freeman, Moutchnik, 2013). In line with the Green Paper, stakeholders of a company can be divided into two major groups: internal and external stakeholders. Internal stakeholders are the owners, managers, employees. External stakeholders include government, suppliers, competitors, political groups, trade unions, local communities, the natural environment, banks, consumers, consumer advocates. According to another grouping, we can distinguish between market (primary) and non-market (secondary) stakeholders. Market stakeholders are owners, managers, employees, suppliers, consumers, competitors, while trade unions, local communities, the natural environment, and consumer advocates are not market stakeholders.

Unfortunately, most CSR tools are in many cases not adaptable for small and medium-sized enterprises (SMEs). Their funding opportunities, staffing, ownership structure and access to information are significantly different from those of large companies (Angyal, 2008). Nonetheless, there are many small business ventures that strive to operate in a socially and environmentally responsible way, without even knowing the concept of CSR or being aware of its true meaning and the tools of CSR practices (Csáfor, 2009). In line with their number and economic significance, their social and environmental role is by no means negligible (Jain et al, 2017; Moneva, Hernández-Pajares, 2018).

The aim of present paper is to look into the way Hungarian SMEs deal with their employees; to investigate, whether the fierce market competition is taking the

managers' attention away from internal stakeholders, and if yes, do they realise it as a threat to their everyday operation.

3 Research method and sample

In a timeframe of 3 months, starting from December 2019 an international research has been carried out with an English questionnaire developed by Tomas Bata University in Zlín, Faculty of Management and Economics. The questionnaire consisted of 77 questions. The first half of the questionnaire collected data about the company and the respondent, the second half about the operations within the business ventures, and the third part about bankruptcy (whether the company has ever been in the situation of bankruptcy, and if yes, what were the measures that had been taken). Present paper will focus on the data of the first two parts, and within them on questions related to the internal stakeholders of the ventures.

3.1 The companies

The sample consisted of 117 SMEs. 85 micro, 23 small and 9 medium-sized enterprises responded to the survey call. In most cases (N=96) the owner him/herself filled out the questionnaire, in the remaining cases the manager of the business venture was the one to take the poll. The legal form and the field of operation of the ventures is displayed on the graphs below

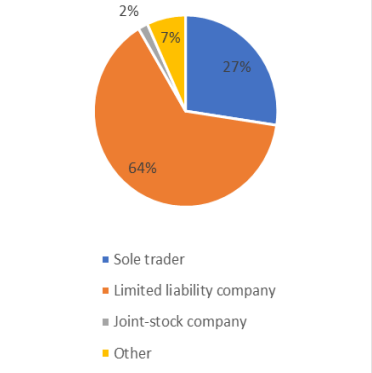

Figure 1
Legal form of SMEs in smaple

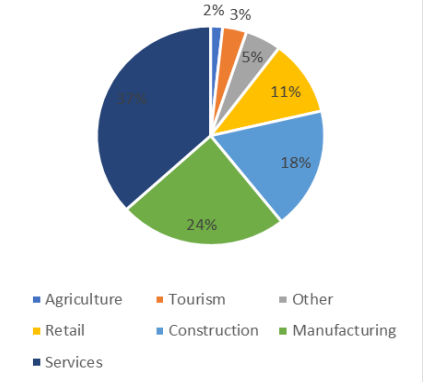

Figure 2
Industrial affiliation of SMEs in sample

In line with the small size of the companies in the sample, the export orientation was quite low. Only 25 % of the ventures stated to operate on international as well as on domestic markets, and an additional 3% has it in its strategic plan to join foreign markets. However, the majority claims that the domestic market space is sufficient for them (N=42), or that they do not have the capacity (personnel, technical, financial, etc.) for appearing on foreign markets.

3.2 The respondents

As indicated above, the owners and managers of the business ventures in the sample were the ones to fill out the questionnaire. As we are talking about SMEs, the tag 'owner' is a position, where the respondent is not "only" a manager but has his/her own money at the stake, when it comes to business success or failure. For this reason, we have tested whether there is a significant difference between these two groups of respondents.

As the graphs below represent, the respondents were from an older age-group, the majority of them being between 36 and 55 years old. Interestingly, the highest level of education obtained by the respondents displayed a varied picture. 41% of them did not finish any tertiary education. What is more 21% has stated that their field of higher education is unrelated to the area their business is operating in. Hence, it is an interesting question whether the level of education has any significant effect on the company 's orientation towards internal stakeholders.

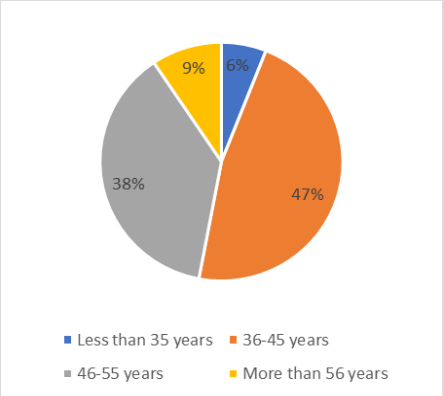

Figure 3
Distribution of respondents by age

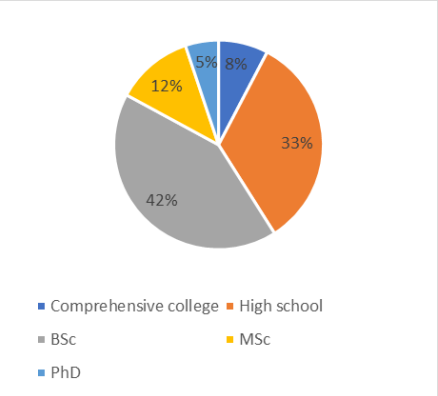

Figure 4
Distribution of respondents by highest education

4 Research results

The research intended to explore the CSR activities and concept of the respondent companies. Hence, companies were requested to identify, which kind of CSR activities they are actively involved in. 2% of the respondents stated to not know about CSR, 38% to know, but not really apply it in their everyday business.

Most business ventures (60%) have stated to the needs of their partners on the market. They stated to conduct business transparently, to have honest relationships with investors, suppliers, customers, to adhere to their code of ethics, to provide clear and truthful information, to be ethical in advertising and to produce products that do not harm the health of the consumers.

Interestingly, half (51%) of the respondents have realised how important their internal stakeholders are and stated to focus on their needs as part of their CSR activities. They indicated that their employees work in a favourable working environment. They also stated to take care of employee development and education, and the health and safety of their employees, to offer various benefits and to help mothers and parents and provide equal opportunities for men and women.

The community was the third most prevalent field of CSR for business ventures in the sample. 38% of the respondents stated to behave in a fair in relation to the community in which they do business, to be aware of the problems of the community in which they operate and take active measures to help them solve them. They even stated to support volunteering and be involved in corporate donations.

A minority of the companies also stated to take active measures to protect their environment (18%). They indicated that their products are environment friendly; to use environment friendly packaging, promote waste recycling, save energy, water, material, paper, etc. to minimise waste and protect natural resources.

In line with this, only a small portion of the companies (11%) stated that CSR is not important for them. Others indicated how important it for various purposes is as displayed in the figure below. In accordance to their main focus of CSR presented above, most companies regard CSR as a way to gain a competitive advantage in the market and higher customer loyalty and to attract satisfied, loyal and motivated employees. Only 17% of the respondents think that CSR is a good tool to gain reputation and new business opportunities.

Figure 5
Perceptions of the advantages of CSR

In order to test, whether the CSR concept is actually applied in practice in regard to internal stakeholders, the following statements have been tested. Each statement was evaluated by the respondents using a five-point Likert scale

- The level of personnel risk in the company is considered adequate and does not harm my business.
- Employee turnover is low and has no negative impact on my business.
- The error rate of employees is low and has no negative impact on my business.
- My employees strive to improve their performance and competition among them prevails.
- Participative management style (involving employees in decision making) is important.
- Human capital is the most important asset of the company.
- A manager should regularly evaluate the performance of their subordinates and motivate them.

Less than half of the respondents stated that 'The error rate of employees is low and has no negative impact on my business.' (46%), 'Employee turnover is low and has no negative impact on my business.' (48%), 'The level of personnel risk in the company is considered adequate and does not harm my business.' (49%) or 'Participative management style (involving employees in decision making) is important.'(50%). 53% stated that 'My employees strive to improve their performance and competition among them prevails.' and 60% that 'Human capital is the most important asset of the company.' This latter statement is in line with the respondents' evaluation of CSR as a mean to improve employee satisfaction. In addition, it is not only in company policy and environment that managers intend to improve the circumstances of their employees, but 85% of the respondents also stated that 'A manager should regularly evaluate the performance of their subordinates and motivate them.'

A more detailed description of the results can be found in the following graph.

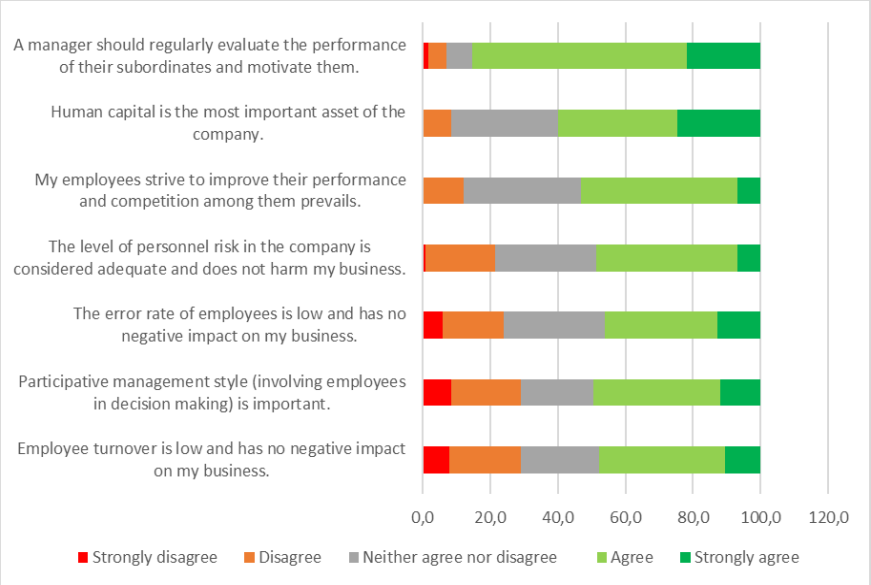

Figure 6

Managers' opinions about and actions towards internal stakeholders

In addition, two yes or no questions also depicted the business venture's relation to its personnel:

- Risks connected to personnel are considered to be one of the most important
- Dishonest actions by employees is one of the most significant risks for my business for the next five years.

30% of the responding companies stated that risks connected to personnel are one of the most important for them, and only 10 business ventures (8,5%) stated to have problems stemming from dishonest actions of employees. These results are also in line with the general picture presented so far, namely that SMEs in the sample really take their employees, and their wellbeing seriously, and CSR - especially actions related to internal stakeholders - is not only a façade, but an important part of their everyday operations.

As some of the respondents have been "only managers" while others also owners too, the responses have been tested (with the help of an independent samples' T test) has been prepared for significant differences regarding their approach towards internal stakeholders.

For business owners, it was less important to giver regular feedbacks to employees, than it was for managers. They also considered CSR less important in regard to new business opportunities and employee satisfaction. A more detailed description of the differences can be seen in the following table.

Table 1

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Conf. Interval of Diff.	
							Lower	Upper
A manager should regularly evaluate the performance of their subordinates and motivate them.	*	3,622	41,538	,0008	,527	,146	,234	,821
CSR enables our company to gain reputation and new business opportunities.	*	3,293	33,535	,002	,581	,176	,222	,939
CSR enables our company to attract satisfied, loyal and motivated employees.	*	2,470	45,934	,017	,371	,150	,069	,673

* Equal variances not assumed

T-test for differenes of owners and managers

In. order to explore the potentiality of difference between the behaviour and practices of respondents with and without higher than secondary education an independent samples' T test has been prepared.

Respondents with tertiary education evaluated the importance of CSR in gaining a more preferable market position. This better understanding and awareness of how CSR activities influence external stakeholders is surely owing to formal education.

In addition, those with higher than secondary education were more prone to apply participative leadership style higher, however, experienced higher employee turnover and more negative impacts due to personnel issues. The small size of the sample does not enable further conclusions, but this adverse relation might be explained with to past experiences of personnel related issues. Owing to business losses of the past stemming from personnel issues, participative management style might be more important to some of the business ventures, than for others. For further details, see the table below.

Table 2

		t-test for Equality of Means						
		t	df	Sig .(2-tailed)	Mean Diff	Std. Error Diff	95% Conf. Interval of Diff.	
							Lower	Upper
CSR enables our company to gain a competitive advantage in the market and higher customer loyalty.	*	-2,498	93,400	,014	-,346	,138	-,621	-,071
Participative management style (involving employees in decision making) is important.	*	-2,553	100,505	,012	-,547	,214	-,972	-,122
Employee turnover is low and has no negative impact on my business.	*	3,264	105,260	,001	,657	,201	,258	1,056

* Equal variances not assumed;

T-test for differences of respondents by highest level of formal education

Conclusions

On the basis of the data presented in the paper, most SMEs are aware of the meaning and importance of CSR. Almost two third of the respondents regarded CSR as a mean of having better relation with external partners, such as costumers and suppliers, however, half of the business ventures in the sample realised the importance of internal stakeholders as well. They indicated that their employees work in a favourable working environment. They also stated to take care of employee development and education, and the health and safety of their employees, to offer various benefits and to help mothers and parents and provide equal opportunities for men and women. They regard CSR as a tool that is able to help them gain a competitive advantage in the market and higher customer loyalty, attract satisfied, loyal and motivated employees, and gain reputation and new business opportunities.

In line with this, their everyday operation is also employee cantered. They realise the importance of participative management style and regular performance evaluation as a mean of employee motivation. What is more, they regard human capital as the most important asset of their company.

Some interesting differences could be identified between managers and owner-managers, as well as on the basis of the highest finished education of the managers.

For business owners, it was less important to giver regular feedbacks to employees, than it was for managers. They also considered CSR less important in regard to new business opportunities and employee satisfaction. Respondents with tertiary education evaluated the importance of CSR in gaining a more preferable market position and they were more prone to apply participative leadership style higher.

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Environmental impact of the coronavirus

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Abstract: *The current crisis caused by the coronavirus is having a strong impact on the world both economically and socially. In this challenging situation, individual values, behaviour, attitude have a great impact, either it can influence the further development of the crisis in a positive or even negative direction. During the virus, the main focus is on economic and social issues emphasis, however, in our view, it is also worth considering environmental impacts. The main aim of this study is to examine the positive and negative effects of the coronavirus on our environment sustainability with the help of secondary and primary research methods. In the frame of the primary data collection quantitative standardised questionnaire has been occurred. Based on the results the study covers the decrease and increase of environmental pollution at the personal, household, corporate and institutional level in the period affected by the coronavirus.*

Keywords: *Sustanability, CO^2 emission, coronavirus, carbon reduction*

1 Introduction

1.1 Sustainability and sustainable development

The concept of sustainable development has been a long contested issue, its exact definition was first encountered in 1987 in the report of the United Nations, World Commission on Environment and Development (Brundtland Commission) entitled 'Our Common Future'. The purpose of the report was to set out the requirements and principles by which the Earth can be saved for future generations. So "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". [1] There are three pillars of sustainable development that need to be considered in

a complex way, taking into account their interactions: environmental, social and economic sustainability.

Agenda 30

In 2015, 193 United Nation member states adopted the new integrated framework for sustainable development, which includes much more detailed and structured goals than before. The main advantage and characteristic of this framework is that, it sets goals and tasks for each country and region. The Agenda 30 framework (officially Transforming our world: The 2030 Agenda for Sustainable Development) contains a total of 17 goals, 169 sub-goals and nearly 230 indicators that attempt to assess and analyze aspects of sustainable development by 2030. [3]

1.2 Impacts of coronavirus

The coronavirus epidemic is a global health crisis of our time. The virus has spread to all continents except Antarctica. The number of cases is growing rapidly around the world, countries are competing with the spread of the virus, slowing it down is a global priority. Past global economic crises and epidemics have also had an impact on the environment, this impact can be measured with the intensity of carbon emissions.

The "Carbon Brief" summary examined estimates and reports from the world's largest carbon emitters. The summary examines the overall economic changes in China and America, the European Union's carbon emissions, the Indian energy sector and the global oil sector. According to the carbon analysis of data from ICIS and the International Energy Agency, these five areas account for the vast majority of annual global CO2 emissions, around 76% in 2018.

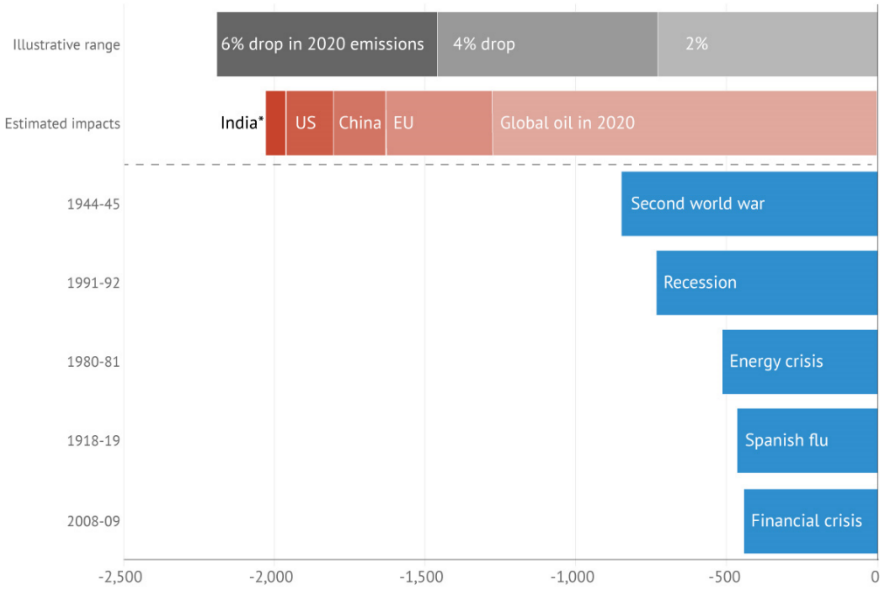
Highly infected countries in Europe have put in place strict quarantine regulations to reduce the spread of the virus. As a result, energy demand has been greatly reduced. In Italy and France, energy demand fell by 3% in the first week of quarantine and by 10% in the second week of quarantine. In England and Germany, demand is 10% and 5% lower than the average for the last 4 years. The quarantine also affected the airlines, with only 5% of the originally scheduled April flights operating, according to a Lufthansa Group report. The analysis assumes a total reduction of 388.8 million tonnes of carbon dioxide equivalent in the European Union. [4]

China starts with reduced carbon emissions every year. This is due to Chinese New Year, during Chinese New Year shops close and contructions stops for a week, most industries cease production. During this time, coal-fired power generation typically falls by 50%. In 2020, the shutdown was extended due to the coronavirus epidemic, bringing coal consumption in coal-fired power plants to its lowest level in four years over the next 4 weeks. In terms of declining coal and oil consumption, China has emitted 25% less carbon dioxide than in 2019 in the first

two weeks after the New Year. This ratio is about 100 million tons of carbon dioxide. [2]

According to the International Energy Agency's April short-term energy estimates, the United States is also expected to see a large decline in electricity, which will hit the commercial sector hardest by 4.7%. Electricity consumption of the industrial sector and households will fall by 4.2% and 0.8% in 2020. As a result of the changes, total electricity generation in the U.S. is expected to decline by 3%, but renewable energy generation is expected to grow by 11%. Due to the electricity sector's need for less coal and the longer-term closure of coal mines, analysts predict 557 million tonnes less coal production, which in total 22% less than in 2019. [5]

The "Carbon Brief" outlined the likely reduction in carbon dioxide due to the coronavirus in the figure below. The blue bar shows the events that have led to the largest reductions in CO2 emissions in the world to date and the reduction in millions of tonnes. The gray bar illustrates the 2020 reduction scenarios for 2%, 4%, and 6% reductions. The red bar shows the estimated effects of the coronavirus crisis taking into account the already mentioned five sectors.



1. figure Carbon reduction estimates for 2020 Source: [2]

The summary figure shows well that the world has entered a phase that it has not experienced before in terms of carbon emissions. With 2,000 million tonnes less carbon dioxide in the Earth's atmosphere we can say this is a positive impact. However, it is important that countries strive to restore their economies with environmental sustainability in mind so that the emission decline does not reverse.

2 Methodology

The possible environmental consequences in Hungary are analyzed in the framework of primary research, the research tool is a questionnaire survey. The research collects information on altered population habits due to the coronavirus through an online questionnaire survey. The aim of the survey is to be able to draw conclusions about the effects on environmental sustainability in Hungary on the basis of quantifiable changed habits.

The target group is the population of Hungary, who are fully affected by the changes and regulations caused by the current coronavirus. The only criteria of the questionnaire survey is to be a resident of Hungary, there was no no additional criteria are given (for example, regarding gender, age). The sample size was 203 people, the sampling was arbitrary, so the results are local and not representative. Subjects were recruited using an online survey using arbitrary sampling. The questionnaire examined the respondents' experiences and behavior before and during coronavirus. This allowed conclusions to be drawn about the impact of the current coronavirus crisis on people's lives. The areas examined were as follows:

- Change in shopping habits depending on, purchase quantities, purchase frequencies, amounts to be purchased.
- Changes in vehicle usage by examining own car, taxi, public transport, etc. usage.
- Changes in the amount of experienced waste by households.

The questions in the questionnaire included both open-ended and closed-ended questions, however, during the compilation, the goal was to minimize open-ended questions in order to facilitate the evaluation of the questionnaire. Most of the closed questions were selective and scalable. During the evaluation of the questionnaire, half-completed questionnaires and questionnaires with unrealistic, irrelevant answers were removed.

3 Results

3.1 Demographic characteristics of the sample

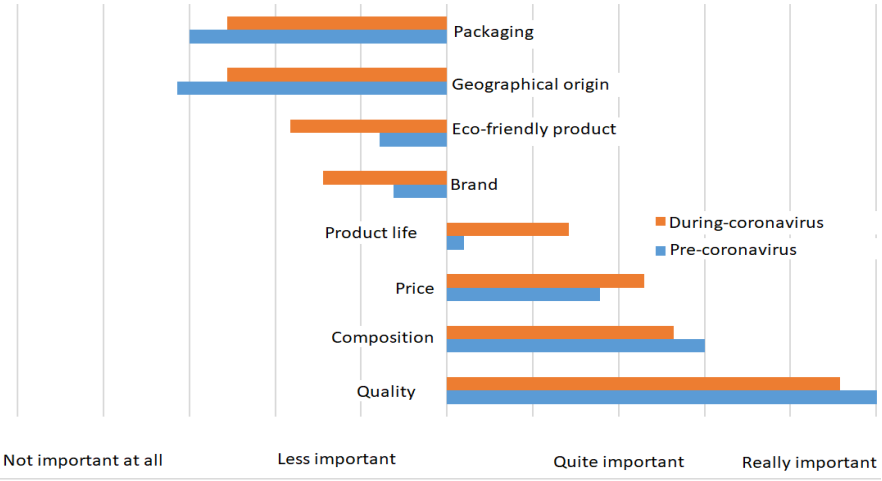
114 of the respondents are between the ages of 21 and 30, which is 56% of the respondents. Other larger age groups are between 31 and 40, with 35, and between 41 and 50, with 32. 90.69% of the fillings are given to those under 50 years of age. The youngest respondent is 20 years old, while the oldest respondent is 74 years old. The proportion of respondents to the questionnaire by gender: 59% are male and 41% are female, and 61% of the respondents are from Budapest. Budapest accounts for ~ 50% of all diseases in the country.

3.2 Importance of purchasing considerations

The following figure shows the importance assessment of pre-coronavirus and during-coronavirus purchase considerations. The x-axis of the figure shows how important the fillers considered the aspects on the y-axis. The x-axis shows the ratings in ascending order of importance from left to right, so the aspects on the left were considered less or not at all important by the fillers, while moving to the right increases the importance of the aspects.

Fillers purchased mostly in terms of quality, composition, and price before the coronavirus. These three most important criteria are followed by product life with a much lower level of importance. Then the brand and the eco-friendly product, aspects fall into the less important category, and finally the geographical origin and packaging are the least important aspects.

During the coronavirus crisis, the importance of the product life aspect has strengthened, fillers considering it almost 14 times more important than before the coronavirus, presumably the fillers were prepared for a longer-term crisis situation. This change was most detrimental to the environmentally friendly product aspect, which decreased by about 133% on the importance scale (relative frequency of mentions). Of those who considered the eco-friendly product criterion very important before the coronavirus, 29% changed their minds about it during the crisis.

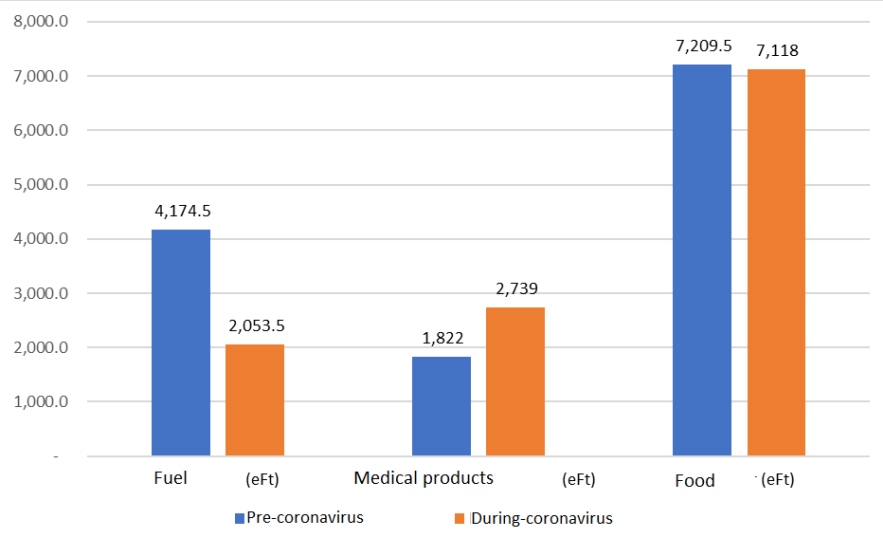


2. figure Importance of purchasing considerations Source: Own study, 2020 N=203

3.3 The amount spent on product groups

In the following, the respondents examined the monthly amounts of HUF for medicinal products, food and fuel. This allows conclusions to be drawn about how much less or more fillers will spend during the coronavirus crisis. The figure

below shows how much the fillers spent in total for each product category, based on the average of the amount groups. It can be seen that the amount spent on medicinal products increased by 33% due to the coronavirus crisis, while the amount spent on food did not change much. However, fuel costs have halved as a result of the crisis. Overall, the respondents spent ~ HUF 1.3 million less on the three product groups in one month during the coronavirus crisis compared to the pre-coronavirus period, driven by a decrease in fuel allocations.



3. figure: The amount spent on product groups

Source: Own study, 2020 N=203

The following table shows the change in the amounts spent on the different product groups on average per capita. Fillers spent on average HUF 10,197 less on fuel per month and HUF 440 on food and HUF 4,409 more on medicinal products.

1. table: Average amount changes per capita due to coronavirus

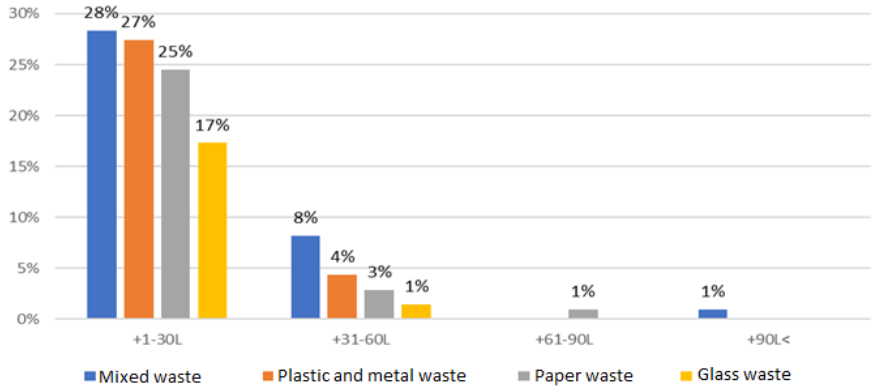
Product group	Average change
Fuel	-10.197 HUF
Medical products	+4.409 HUF
Food	- 440 HUF

Source: Own stuy, 2020 N=203

3.4 Increase in household waste

In the following, the questionnaire measured the weekly increase in household waste experienced by the respondents. The question was whether the fillers perceived a change in the amount of waste (be it mixed or plastic waste) and how

much waste has been experienced by respondents who do not collect waste selectively. Of the respondents, 80% collect waste selectively and only 20% do not. 52% of non-selective waste collectors did not experience any increase in waste in their household, while 30% observed an average of 15 liters, 13% an average of 45 liters, and 5% an average of 75 liters of mixed waste growth per week during the coronavirus. The figure below shows the changes in the amount of waste from the fillers who collect waste selectively. It can be seen that nearly 30% of selective waste collectors experienced an average increase of 15 liters of mixed and metal-plastic waste. Experiencing an average of 45 liters of waste growth, only 8% of selective waste collectors observed from mixed waste, 4% from plastic and metal waste, 3% from paper waste and 1% from glass waste.



4. figure: Increase in household waste
Source: Own study, 2020 N=203

Based on the analysis, the respondents observed an increase in household waste, the average increase in waste per capita is shown in the table below.

2.table Average household waste increase per capita

Waste type	Average increase
Mixed waste	12.15 litre
Plastic and metal waste	8.12 litre
Paper waste	8.04 litre
Glass waste	5.07 litre

Source: Own study, 2020 N=203

Conclusions

The above primary research used an online questionnaire to assess changes in the population of Hungary during the coronavirus. The research examines the impact of these changes on the environmental sustainability dimension. As a result of the primary research, the fillers, during the coronavirus crisis, considered

environmentally friendly products less important from a purchasing point of view. Instead of this, presumably, in order to prepare for the crisis, the product life of the products has become more important. Based on this, the goal of environmental sustainability is violated, as fewer people buy an environmentally friendly product.

The amount of household waste also increased on average, based on the responses to the questionnaire. This violates the indicator of the environmental sustainability development goal for responsible consumption. In contrast, the frequency of purchases was reduced by 41% of respondents, also curbing CO2 emissions from transport. The amount spent on fuel during the coronavirus crisis was much less than before the crisis, thus increasing the assumption of declining carbon emissions..

Based on international secondary research, it is estimated that due to strict social, transportation regulations and economic slowdowns, global carbon emissions could reach 2,000 million tons of carbon dioxide reductions during the coronavirus crisis.

Based on these, the conclusion of the research is that both in Hungary and in the world, the coronavirus had a positive effect on environmental sustainability in the first quarter of 2020. However, this change will be only a short-term change if nations do not take into account the objectives of Agenda 30 while restarting economies.

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Individual decisions during the coronavirus

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Abstract: *With the outbreak of the coronavirus, society is facing unprecedented challenges. As a result, significant economic, social and environmental changes are taking place, making it increasingly important to make the right decisions and assess the situation appropriately. Individual decisions, attitudes, fears and needs greatly influence societal willingness to take risks and determine the outcome of the virus, as its spread can only be reduced through social collaboration. The aim of this research is to assess the potentiality of certain social groups to make rational decisions and how they react to radical changes due to the coronavirus. The willingness to take risks is measured based on the DOSPERT scale and with the help of secondary and primary research methods. Based on the results of the research, conclusions can be drawn about how society can cooperate during a possible pandemic and how a possible future crisis situation influences decision-making and the willingness to take risks.*

Keywords: *individual decision making, risk taking, rationality, coronavirus*

1 Theoretical background

The coronavirus-induced COVID-19 (Coronavirus disease 2019) epidemic is the defining global health crisis of our time. The virus appeared in Asia in late 2019 and has since spread to all continents except Antarctica. The number of cases is growing rapidly around the world, and slowing it down is a global priority. By affecting almost every part of the world, it can cause not only a health crisis but also an economic, political, and social crisis [10]. In the current difficult situation, we sought to assess the decision-making of individuals through the eyes of researchers; their response to the coronavirus; their attitude to risk. We do all this by examining the willingness to take risks and the rationality of decisions.

1.1 Decision making

There are many approaches to “decision” in the literature. According to Kindler, “Decision is a purposeful human choice between action options in a given environment, where action options are explored as options for action in the pre-decision stage of the decision-making process.” [4].

People get into a decision-making situation by facing some problems that they need to solve. “However, the problem is most often not an objective phenomenon but a consequence of individual perception. Different people endow the same situation and circumstances with different meanings, and accordingly they may be satisfied or dissatisfied with the given position.” [3]

The decision is a very complex process that consists of three main phases:

1. Exploring a decision opportunity - we perceive that the target status is different from the current status.
2. Finding possible options for action
3. Choosing of action options [6, 7]

Currently, the emergency due to the coronavirus is the problem. An epidemic of this magnitude has been around the world for a very long time, so many countries are not prepared to take the right steps, most do not know exactly what the right/necessary procedure would be. Proper decision-making is important not only at the top management level of the country but also at the level of society and the individual. Both society's and individuals' responses and decision-making mechanisms need to adapt to the changed circumstances caused by the coronavirus, which affect the:

- Health status

External threats can not only affect physical health but also mental health. Closedness and access restrictions, limit access to the source of happiness caused by social relations. Isolation gives a feeling of losing the free will, which causes people anxiety, negative emotions. Some are better, others are less well tolerated in this situation.

- Financial status

Losing jobs or changing the way you work causes financially serious damage to people. Most are able to work from home, but investors, entrepreneurs, and many employees who are not in the healthcare or food industries have also found themselves in a difficult situation, with many becoming unemployed.

- Social status

The purpose of the access restriction is to limit human interaction with each other to slow the spread of the virus. Most do not even meet their family members or older relatives for their safety, which is extremely difficult. Online platforms help

people stay in touch, they try to make up for the recreational opportunities through video. The manner and regularity of routine shopping have also changed, so have shopping habits. Personal shopping is being replaced by ordering, and the turnover of online stores and home delivery of grocery stores has also increased.

Making the right decisions for individuals contributes greatly to society's progress in overcoming the coronavirus. However, this requires that everyone be able to assess the level of risk and be able to give up things, that are convenient but not absolutely necessary for the individual, in order to achieve a greater goal.

1.2 Risk and risk-taking

One of the basic preconditions for the existence of risk is uncertainty [9]. There is no absolute certainty that the existing set of information either does not contain everything or not all information is correct [1]. It is important to distinguish between the term risk and uncertainty. Knight stated that risk is the measurable, probable uncertainty, so one of the descriptive factors of risk is the probability of occurrence [5].

1.2.1 DOSPERT scale

Examining the decision-making mechanism and the background of risky behavior is not easy, as it is difficult to substantiate and examine each factor with numerical data. The DOSPERT scale (Domain-Specific Risk-Taking Scale) is a solution for this. The scale was described by Weber, Blais, and Blatz, with the goal of distinguishing between risk-taking, its perception, and its expected utility. The Hungarian translation of the scale was done by István Radnóti, his work helps to implement the scale for our research [2]. The questionnaire scales risk appetite through questions that affect different areas of life [8].

First, each area had 8-8 (5 * 8) statements, which had to be assessed by the respondents with three subscales, later these 40 items were modified to 30. They also changed the scale points, initially having to rate on a 5-point scale, however, this was later changed to a 7-point differential scale for better evaluability. One of the subscales examines the probability that the respondent will be involved in that activity. The second subscale measures the riskiness of each item based on the opinion of the respondent. The third examines how much benefit a person sees in the event of a situation. Based on these, the questionnaire can be used to find out what an individual's or group's risk-taking intent in a given area can be traced back to: „ a positive attitude towards a given risk, a perceived low risk, or a high return that rewards the risk [8]."

In our perspective, one of the major disadvantages of the questionnaire is that even despite the reduction, 30 statements have to be evaluated 3 times by the respondents, ie a total of 90 statements, which makes data collection more difficult. Based on these, in the case of our own quantitative survey, we tried to

transform the composition and quantity accordingly. The conversion is shown in the *table* below.

Original	Changed
Ethics (E)	Ethics (E)
Financial (F)	Financial (F)
Health / Safety (H/S)	Health / Safety (H/S)
Entertainment (En)	Entertainment (En)
Social (S)	Informatics (IT)

Table 1
DOSPERT scale adaptation [own edit]

The statements belonging to the general social field were replaced by IT-social statements. We believed that the current society is increasingly using the opportunities provided by information technology, which are already embedded in everyday life. Due to the circumstances caused by the coronavirus, the use of IT tools continued to increase so we considered it important to assess our willingness to take risks in this area. In addition, for each group, instead of the basic 6 statements, we defined 3 statements, so the respondents had to evaluate 15 statements from the three aspects mentioned above.

2 Methodology

As a quantitative part of our research, we compiled an online questionnaire. For the questionnaire used in the data collection, we used Google Forms. Both open-ended and closed-ended questions were used in compiling the questionnaire. However, we have sought to minimize open-ended questions, as they also make evaluation difficult. For closed-ended questions, the majority of respondents must answer selective and scalable questions.

One of the chapters contains the DOSPERT scale, which has been modified according to our own research. The questionnaire used for the survey can be divided into the following sections:

- Brief description of the research;
- Questions related to the general coronavirus situation;
- Risk appetite profiling based on the DOSPERT scale;
- Demographics.

The questionnaire was tested before the final version was shared. Following the correction, we shared it on the Internet, including Facebook, to reach a faster and larger audience. Completion was done anonymously and on a voluntary basis.

2.1 Sample

At the time of closing the questionnaire, we had 261 responses. Prior to data evaluation, data cleansing was performed, where those were screened out who only half-completed the questionnaire; gave unrealistic answers; answered too

unanimously; are not relevant to the survey. By the end of the data cleansing, the data of 204 people remained for evaluation. According to the relation to the population (discrete population), by which we mean those living in Hungary, our sample cannot be considered representative.

It was completed by 83 (41%) women and 121 (59%) men, so it can be said that the proportions were relatively balanced. Observing the places of residence, 98% of the Hungarian respondents live in Hungary, most of the respondents (59%) live in the capital, Budapest, and 39% in the countryside.

For the age groups, it can be seen that most of the fillings came from the 21-25 age group (31.9%). The age of the respondents ranged quite widely, with the youngest respondent was 20 years old, the oldest respondent was 61 years old, and the average age was ~ 33 years. The distribution by age group is shown in the *table* below.

Age groups (N=204)		
16-20	3	1.5%
21-25	65	31.9%
26-30	50	24.5%
31-35	16	7.8%
36-40	20	9.8%
41-45	15	7.4%
46-50	18	8.8%
51-55	11	5.4%
56-65	6	3%

Table 2
Age distribution [own edit]

3 Results

After closing the questionnaire, the exported data were cleaned, and then the analyzes were performed using Excel and SPSS programs. In this chapter, we present the results of our quantitative questionnaire research. In the first part, we review general questions, examining how respondents behave in an emergency.

3.1 General questions

In Hungary, as in many other countries, there is a curfew, which means that you can only leave your place of residence in very justified cases. We asked our respondents how many times they have left their place of residence since the restrictions have been in place. Looking at the 204 respondents, most move out only 1/2/3 times (56%), however, it can be seen that 12% leave their place of residence more than seven times on average in a week.

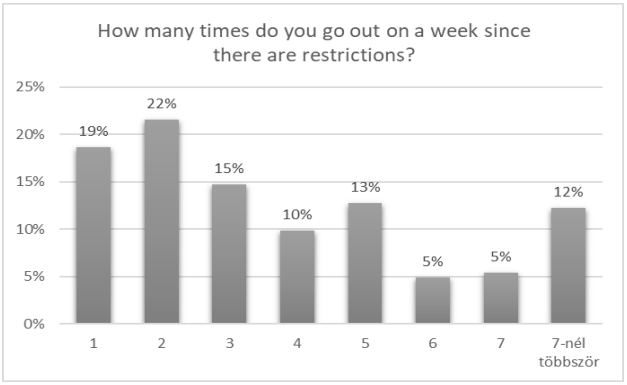

Figure 1
Leaving the place of residence [own edit]

This may be because they are doing a job, such as being a health care worker. So we asked them what they do in most cases when they leave their place of residence. Most people always / almost always go out to buy food, do sports and work. Very few people go to the pharmacy and meet others, but 5% almost always / always do so only to meet others. From this, we can conclude that the needs of the individual are considered more important to that person than to his or her own health and the interests of society.

If an individual decides to go into a community it is important to take the necessary precautions. We believe that the mask is one of the most basic aids as it prevents an infected individual from passing it on to others. We asked the respondents whether or not to wear a mask when they leave the house. The responses are summarized in the *table* below.

Do you always wear a mask when you leave the house?		
	Frequency	**%**
Never	61	29.9
Rarely	31	15.2
Almost always	55	27.0
Always	57	27.9
Total	204	100.0

Table 3
Mask wearing habits [own edit]

~ 55% of respondents always / almost always wear a mask when leaving the house, while the remaining 45% rarely or never wear it. There may be several reasons behind these decisions, but we will examine only the risk appetite inherent in these decisions in the next section.

3.2 Examination of risk appetite

The profiling of risk appetite was based on the modification of the DOSPERT scale mentioned above. We examined the rationality of decisions made in each area. The variable obtained by the difference between the benefits and risks inherent in the situations as compared to the decision of the individuals. We considered it irrational if, in terms of the risk-benefit ratio, a person should not do something, but still does. We considered it risk-averse if the benefit of a given situation is greater than its risk, but the person does not do it. And it is considered rational / risk-neutral if one does or does not do something in proportion to the benefit-risk ratio.

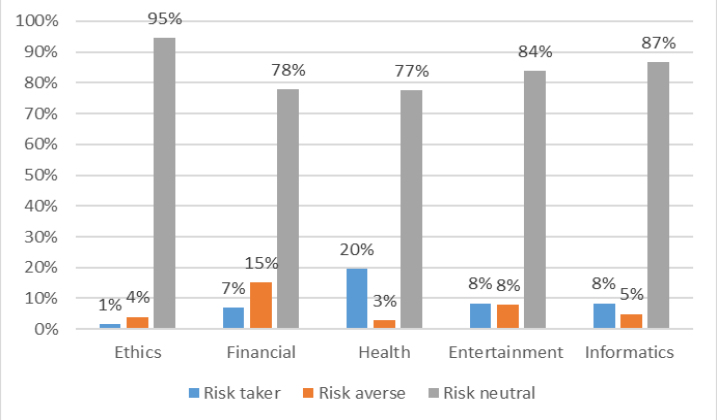

Figure 2

Examination of risk-taking rationality [own edit]

On ethical issues, 95% of the respondents proved to be rational decision-makers, they are risk-neutral. Risk aversion in the financial field was the highest at 15%, from which we can conclude that even if the return on risk is higher, it is not sure that the person will make a financial decision. The field of health was the most prominent in terms of irrationality, 20% of the respondents were more risk-takers in the questions asked.

Each area was compared on the basis of the averages obtained according to benefit, risk and probability. The table shows that the probability of financial and health/safety issues occurring is the most common, ethically negligible. For financial questions, 3 was the most common answer. From this, we can conclude that financial risks and health/safety risks are better tolerated.

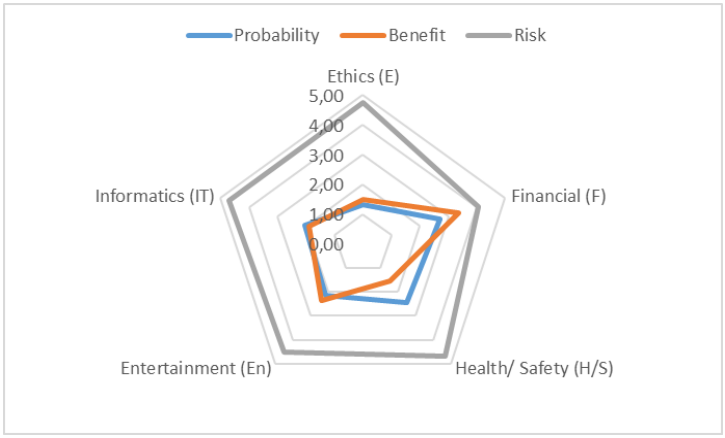

Figure 3
Risk map [own edit]

The risk of each life situation is highly valued by individuals, this individual perception stems from the risk-averse attitude. Behavior can be predicted as a function of benefit. The risk map above shows the aggregated results.

Conclusions

The state of emergency caused by the coronavirus situation also affects societal decisions and attitudes toward risk. The aim of our research was to examine these changed decisions and compare them with the results of previous analyzes. We tried to implement these with the help of a questionnaire.

In the first half of the questionnaire, we received answers to general questions. We have seen that in most cases, people meet the current restrictions, however, there are prominent cases where some people put their individual needs first and violate this restriction by not just leaving their place of residence when necessary. We also addressed the issue of wearing a mask and it turned out that most people wear a mask. However, the ~ 30% who do not wear a mask, pose a significant risk to other people.

During the questionnaire, we used the modification of the DOSPERT scale to examine the risk appetite. With the changes, we tried to achieve a user-friendly, shorter rating scale. The study found - based on our unrepresentative sample - that people are more risk-averse. On ethical issues, most people proved to be rational decision-makers. Risk aversion in the financial field was the highest. The field of health was the most prominent in terms of irrationality.

From general risk aversion, it can be concluded that appropriate regulations can achieve a faster runoff of the virus, as people prefer to follow the rules to reduce the risk. In addition, based on the results of the adaptation of the DOSPERT scale,

it can be concluded that the risk of individual life situations is highly valued by individuals. This is presumably also due to the risk-averse attitude.

Overall, it can be said that people have a risk-averse attitude during the coronavirus, but in many cases, they put their own needs before social needs.

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Characteristics of Human Resource Management in Crisis

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Abstract: *In addition to the constant changes in business environment, caused by technological, economic, demographic, political and social conditions, occasionally there are large socio-economic breakdowns in the modern world, inflation, mass epidemics of new diseases, natural disasters and various other crisis phenomena. In times of crisis, the quality of human resource management - HRM, dedication to ideas and results of an individual, group, department, team, and organization - is particularly significant. The aim of this paper is to examine the role of HRM in maintaining key competencies, loyalty and commitment of employees in times of crisis. The paper will analyze the choice and justification of applied HRM measures, from the perspective of short- and long-term business success. Particular attention will be given to the effects of dismissing employees, reducing or freezing salaries and benefits, reducing or freezing training and development budgets, and other HRM measures. The paper will describe how, and to what extent, HRM measures contribute to organizational stability in times of crisis, what the long-term and strategic consequences are. Based on data analysis and comparison with HRM best practices, the paper will provide recommendations for acute HRM issues, which could have long-lasting consequences for organization, and could provide the sustainability of organization after crisis ends.*

Keywords: *Organizational stability, Human resource management, Crisis*

1 Introduction

Global economy, technological advances, and rapid innovations have brought new opportunities and also created complexity for many organizations, forcing them to adapt quickly. In addition to constant environmental changes in the business ecosystem, there are occasional different crisis, political, humanitarian or health breakdowns, and they have far-reaching consequences in the global economy.

The best business organizations will be ones that would face this crisis, the opportunities they provide for change and progress, while avoiding the dangers of crisis. The development of adequate business models, which would include developed crisis management procedures, will be of great importance. Organizations that have progressive managers and leaders, that direct creative potentials towards the future, will achieve business goals and progress [1].

In times of economic crisis, organizations are more intensively focused on internal resources. One of the most important are human resources,and that would be a

challenge for human resource management in business organization. Human capital is the most important in organization. Business starts with human ideas, human actions execute operations, humans control the execution, and humans achieve business goals. In times of crisis, the quality of managers and leaders, progressive ideas and the tendency to produce quality, are especially pronounced.

The information technology has been developing extremely fast, artificial intelligence, automation and other progressive inovations has influenced understanding of crisis, because this changes have modified basic characteristics of the crisis. Information systems with high-tech devices are very sensitive, so many IT risks could cause different failures and breakdowns of hardware, software or other types security crisis. Information technology systems are very complex, so there are interdiscliplinary challenges for detection and correction of risk incidents. Successful designing of information technology systems requires interconnection of its elements, and this increases IT continuity risks.

Future crises will require preparations that include both recovery-oriented and anticipation-based business models. If anticipation-based business models could not be implemented, then future crises should be addressed with recovery crisis management actions. Crisis management should provide effective response in order for business organization to survive.

The subject of this research is to consider the function and position of human resource management in maintaining key competencies and commitment of employees in times of crisis. The research will consider the applied human resources measures, its short-term and long-term effects on business. The paper will consider the effects of layoffs, reduction or freezing budgets for employee salaries, and other employee benefits, as well as other measures in the field of human resource management.

2 New challenges of human resource management

In the most successful organizations, managers recognize the importance of human resource management for achievement of profitability and sustainable business. They know how important human resources are for organizational competitiveness, growth and development. The human resources management represents a cast center in organization. Contemporary trends in the global business environment show that from year to year the allocations for human resources management are increasing, which indicates the growing importance of this function within organization.

According to previous analyzes, in the 21st century, it can be stated that several factors will significantly affect the world of work, among which stand out [2]: transparency, agility, collaboration, innovation and productivity. In many organizations - both in the world and in Serbia - all these trends are already widely present and have strong impact on human relations in business organization.

Extreme technological development has been recorded and continues in the 21st century. Intensive progress of information technology has caused major changes in production processes, work tasks and the ways in which organizations perform their business activities. Globaly, a great demand for a highly skilled workforce has emerged, as well as a demand for completely new work profiles and job descriptions.

The development of information technology affects the collecting, processing, and analysing of new informations for management, business administration and decision making process. Information technology is a tool that can be used to pass on organizational goals, and supporting the sustainable development of organization. The development of technology implies the need for continuous education, and they also cause a change of job description. Flexibility is one of the preconditions for all employees who think proactively about their career. The development of information technology is used for solving organizational problems or responding to opportunities.

Globalization of economy provoked intense competition between organizations and employees in the global market. Information technology have a different impact on unskilled and highly skilled workers. The workers will also be far more mobile, due to the growing presence of virtual work teams. Technological progress requires significant changes in knowledge and skills that workers must possess in order to respond to new labor market demands. Dynamism of modern technological progress requires faster adjustment of workforce. The focus is increasingly on adult education and lifelong learning. Workforce is open for employment opportunities around the world. Adjustment of business strategy is vital to organization's survival, it is a process that continues, and it increases competitiveness of organization in the global market [3].

Due to technological progress and globalization, organizations go towards specialization and development of knowledge organization, as they are important for achieving competitive advantage. Specialization allows focusing on comparative advantages of organization, and outsourcing of secondary business operation, not belonging to core business. Specialization and outsourcing enables individuals to compete globally, to be remote workers who work on multiple projects simultaneously.

Non-standard forms of work are increasingly present. Non-standard work or non-standard forms of employment refer to the increase in the number of different forms of work that have appeared in the recent past. Non-standard work is usually used to denote work that is outside the standard employment, ie full-time employment, permanent contracts, and subordinate and bilateral employment. It implies different types of employment status that are regulated in labor legislation and that are represented in conventional labor market, but also includes forms of employment that are unclear or not regulated at all, and which are very poorly or not represented in official statistics [4].

Another significant challenge for human resource management is labor mobility, which has become common in large and global corporations. Work engagement in the offices of same corporation in different countries brings the necessary specific knowledge and experience to different locations.

Globalization has conditioned the relocation activity of a large number of organizations, from home countries abroad. Today, organizations are expected to know different cultures in order to achieve business success. The development of global organizational strategy requires the new management approach, directed towards a better understanding of different influences of culture and other characteristics of individual geographical areas. Human resources management is directly exposed to interpret many business decisions and integrate them into global corporations. Often neglecting the influence of cultural factors in the implementation of business decisions leads to their failure. Understanding the culture is certainly one of the foundations of successful business decisions making. Management must always keep in mind that the characteristics of organization are the culture and attitudes that each employee has incorporated.

Technological development is increasing the demand for highly skilled workers, and workers who are able to adapt quickly to technological changes and progress. The skills that the workforce will have will be the main, basic precondition for further economic development. Jobs in production require a good knowledge of technology and have suppressed traditional factory jobs [5]. In a time of accelerated informatization of society, there is the emergence of numerous non-standard forms of work, and new jobs. People are increasingly engaged in the production of information and this leads to the necessity of lifelong continuous learning. Lifelong learning, thanks to the Internet, is more accessible and can be more enjoyable and meaningful than traditional forms of learning.

Technology is transforming organizations, workforce skills needs are changing rapidly, and organizations cannot find the talent they need. Employees who possess skills are precisely those who want to constantly learn and adopt new things. All employees will need digital skills, collaboration, as well as ability problem solving, in response to the growing impact of digitization in organizations of different sizes. Successful global companies have realized that they achieve the best results by combining diversity. Diversity includes visible and invisible differences. Involvement is a way of combining the knowledge, experience, culture, ways of doing business and problem solving. The primary goal is to create an environment where all people, regardless of race, gender, generation, nationality or religion, feel valued and are able to express and maximize their potential.

3 Organizations' business operations in crisis situation

In the times of crisis, if managers are inactive, and do not have control over the problem, the crisis consequences would have impact on organization [6]. Proper crisis management is minimizing the impact of crisis. Speed and making the right decisions are crucial for crisis management [6]. Successful crisis management involves the speed of response to opportunities and threats from the environment, and the flexibility of business organization. In a world where change is widespread and rapid, to be successful, an organization must be prepared for the impact of long-term trends. A feature that will determine which organizations will remain competitive is the ability to make quick decisions and implement them [7].

Crisis management in organizations sometimes is understood as a process of reducing the number of working hours or reducing number of employees. When undertaking such activities in the organization, it should be borne in mind that one of the greatest value is human capital, as a irreplaceable factor of organizational competitiveness [8].

Human resources are the most significant and expensive resource in business organization, especially when it comes to the service sector. Crisis management brings great challenges to human resource management. In times of crisis, savings are expected in all fields, including human resources, in the form of outsourcing, freezing or reducing salaries, freezing employment or reducing number of employees, reducing or stopping training and education, etc.

Crisis management in most organizations leads to the following activities [9, p.1]:

- Reducing the likelihood of a disruption
- Shortening the period of disruption
- Limiting the impact of a disruption on its key products and services

Without proper movements, plans and forecasts, a crisis can effect organizations since they would be completely unprepared. Only a small number of organizations could continue sustainable business after a potential crisis breaks out, without proper crisis management.

Each crisis should be analyzed, and a continuous training program should be implemented based on these anaqlyses. It is very important that different managers and key employees undergo the appropriate type of training. These are leaders who play a key role during the crisis, and managers in organizational departments who manage complex systems.

Features of contemporary crises affect the basic acrtivities within crisis management strategies. In times of crisis, organizations are facing a new challenge, and that is the lack of quality people and their increasing mobility in the labor market. This trend is a direct product of a significant decline in employee

loyalty and distrust of management and organizations, during the crisis. Distrust and disloyalty are the consequences of activities applied by organizations during the crisis. Managers and leaders need to set key goals of crisis management, they must provide profitability and sustainable business of organization.

4 Achieving competitive advantage in crisis through human resource management

One of the biggest challenges of human resource management today is how to attract and retain the best people. Those organizations that manage to acquire, retain and develop good people will succeed in the future [10]. Organizations are more and more aware that their competitors on the labor market are now global organizations.

Ensuring adequate talent means that organizations have effective system for attracting and recruiting potential talent, and the same system of their positive selection [11]. Competitive advantage will be gained by organizations that will develop mechanisms for talent attracting. In addition to the talent attracting, an even more important goal is to ensure that the talents would stay in organization. Forward-thinking organizations use innovative approaches for talent management to gain a competitive advantage [12].

One of the newer trends in the field of human resource management is that the human resources manager adopts a consumer-oriented approach. Orientation to customer needs is one of the most important changes in strategic human resources function. Orientation of the human resources function to clients is an effective tool in its strategic role promotion, and contribution to organizational success.

Modern information technologies and global competition have led to a world division into those who know and those who do not know. For today's organizations a knowledge management is the ultimatum necessary to achieve a competitive advantage. Knowledge management includes people, technology and processes as interconnected and overlapping parts.

Innovations of products, services, or business processes, have a direct impact on global welfare and prosperity [13]. The modern market requires organizations to operate innovatively and creatively. Modern organizations are looking for a way to create added value through identification, application and use of knowledge in a unique way. And from the point of view of human resources, the profile of people needed by organizations is changing. The people in organization are its greatest asset, but also its greatest expense. Whether a person in the organization will be viewed as an investment or a ballast, depends on personal performance of each employee. Employees who create and add value cannot be seen as a burden to organization, because they are its greatest support. Small and medium business organizations may need a formal approach to knowledge management because they do not have a market approach strength, and resources as large organizations.

They need to be more flexible, more responsible and ready to make the right decisions, because even a small mistake can be fatal for them.

The structure of human resources in organization expresses the model of employee engagement, internal or external recruitment, permanent or temporary contracts. The advantages of internal human resources recruitment would be less costs, strong employee engagement, stability and predictability of knowledge. Disadvantages refer to the resentment among employees and managers, limitation of quality employees, lack of fresh ideas, inflexible organizational culture, etc. The benefits of external employment recruitment would be increased chances, fresh skills, greater flexibility, better competition, etc., while the disadvantages relate to the limited understanding of corporate culture, time consume, higher costs, etc.

Organizational cost efficiency could be accomplished through outsourcing. Activities that have low strategic value for business organization are suitable for outsourcing. In some organizations even some human resources management activities are outsourced, such as trainings and education, recruitment, health and safety, compensation practices, etc. Internal human resources management must have a professional expertise, to be able to manage and control the processes provided by outsourced agencies [14].

If the outsourcing process is well implemented, it contributes to the business and proactively lead the most important initiatives in the field of human resources management. It is important that internal human resources management invest in themselves, in order to provide a wider range of skills and expertise, especially since certain HR areas are strongly supported by computing technologies [15].

Employee self-service is another recent trend in favor of outsourcing the HR process. Employees update their own data in databases, such as general data, vacation leave dates and data for trainings and education. The greater implementation of contemporary human resource management practices is associated with lower labour turnover and higher profit per employee [16], thats why self-service is very common in many organizations today. The presence of direct human resource management practices has a positive effect on employees motivation and retention, if they are used in the right way. Satisfaction with certain human resource management practices, such as career development, reward and recognition, and health and safety, has a significant motivating effect on employee retention than the absence of the same HR practices [17].

Conclusions and recommendations

Contemporary dynamic environment has influenced the character of contemporary crises. Traditional responses not only become ineffective in countering contemporary crises, but are often counterproductive. Contemporary crisis is complex in nature: it consists of new combinations of known crises that point to solutions, which, however, are proving to be precisely the sources of escalation.

The process of modern crisis is turning into a vicious circle. There is no return to normal as future crises reappear in altered forms [18].

The functioning of human resources management in times of crisis is a very important issue in any business organization. Successful crisis management should recommend and define the functions of human resources in times of crisis. Reducing number of employees and reducing financial compensations, in order to achieve better financial results, should be applied only as the last option. When employee leaves the organization, his/her knowledge and skills also leave. Organizations, before reducing the number of employees, should carefully consider whether they can replace the employee, and with what real costs (costs of hiring a new employee, costs of onboarding, lost productivity, training costs, etc.). Reducing the number of employees, just for the sake of reducing costs, causes the loss of other people from the organization. The best employees leave the organization first, because their qualities are recognized by other employers and there is a demand for them in the labor market.

Alternatives to reducing the number of employees could be various forms of flexible work, part-time work, remote work, redistribution of working hours, etc. All these forms of flexible work engagement lead to a cost reduction, and on the other hand provide employees with a better work-life balance. A well-established work-life balance has a positive impact on employee engagement and loyalty.

The changing characteristics of contemporary crises has directly influenced the crisis management. Traditional crisis management actions, in the form of prevention are not appropriate for contemporary crises, which are increasingly complex and interdependent. Business organization needs to learn from every crisis, to learn from their own and others' mistakes. Occurrence of similar events would lead to application of organizational crisis experiences in a way to achieve results without long-term negative consequences for human capital, profitability and sustainable business, as the ultimate goal of every organization. Successful crisis management and development of good programs for its prevention and quick resolution are the best way to overcome the two most important mistakes of management in relation to the crisis: ignoring early warning signals of the crisis and denying the existence of the problem.

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Network Technologies in E-Learning and Factors Influencing the Quality in the Covid-19 Period

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***Abstract**: Nowadays, network technologies of E-learning have been applied as support to adapt the teaching and learning in higher education. Therefore, E-learning is the utilize of network technologies to develop, adapt, address, and facilitate learning, anywhere, and anytime, which proved to be a very useful tool in the COVID-19 period. This research aims to determine whether there are statistically significant differences in students' responses to their demographic characteristics and their attitude towards the key determinants of the quality of e-learning at the time of the pandemic. The research was conducted by an online questionnaire among the students at the University of Belgrade, Serbia in the emergency. The questionnaire was fulfilled by 417 respondents. The paper examines the influence of gender, years of study, and the frequency of use of E-learning tools on the perception of quality. Obtained results show that students most recognize that E-learning is useful for studies during the pandemic, while they least recognize that the use of E-learning improves their efficiency during learning in the COVID-19 period. It can be concluded that quality assurance in education is a primary requirement for E-learning development by the modernization of teaching, the promotion of network technologies, and the establishment of a unique E-learning platform.*

***Keywords**: Network Technologies, E-learning, Quality Perception, Higher Education, COVID-19*

5 INTRODUCTION

As a blended, supplemental or only approach in higher education, E-learning has been becoming an emerging practice (Wong & Sixl-Daniell, 2017) among universities all around the world. Although widely popular and useful, this virtual learning carries with it certain risks, limitations, and issues such as just-in-time knowledge acquisition, interactivity, flexibility, and multimedia-integration (Zhang et al., 2004). However, in an emergency such as a pandemic, this way of learning has proven to be the only and most effective in all countries (Favale et al., 2020). Individual adaptation respecting their skills, knowledge, experience, and at the same time trying to, as lecturers, show a high level of empathy is not an easy task. E-learning is a process of "learning and teaching online through network technologies" (Hrastinski, 2008, p. 51) or, in more detail, it is "a web-based learning ecosystem for the dissemination of information, communication, and knowledge for education and training" (Cidral et al., 2018 p. 2). There are several papers deal with effects of gender, roles, age, race, and length of experience among students (Ruthotto et al., 2020). Even though these differences are the most common conducted research within E-learning contexts, limited studies are focusing on the demographic difference and other factors influencing students' perception of the quality of E-learning.

Hence, the paper aims to investigate if there are differences among University of Belgrade students perception of the quality of E-learning when it comes to gender and year of study. It is also explored whether the frequency of usage E-learning additionally influenced student perception of the quality of E-learning.

The paper will present the sections in the following order: after the introduction in the first section, and a review of the literature in the second, the third section is devoted to the explanation of the methodology. The results and discussion are presented in section four followed by the conclusion in section five.

6 THEORETICAL BACKGROUND AND HYPOTHESES

Gender difference has traditionally been associated with the attitudes that men and women showed toward network technology in E-learning (Padilla-Meléndez et al., 2013; Savara & Parahoo, 2018). Previous research confirms that there are differences in the attitudes, willingness to learn, aptitudes and behvaiour of students depend on gender. For example, through literature review, González-Gómez et al. (2012) came to the knowledge that male students are keener on using and learning about computers in comparison to female. Additionally, González-Gómez et al. (2012, p. 287) researched E-learning satisfaction based on gender differences and found that in their evaluation of E-learning, "female students showed a greater degree of satisfaction than male students". When it comes to quality perception, Jung (2012) showed that there were mean dissimilarities

between the female and male Asian learners in rating the quality dimensions in distance education. Yang (2008) found that male gives higher scores toward quality than female. On the other hand, Savara and Parahoo (2018) indicate that the same factors may be used to enhance the quality of learning experiences of both male and female students. Therefore, the following hypothesis is considered:

H1: Gender indicates a different perception of the Quality of E-learning.

When it comes to the connection between the perception of the quality of E-learning, ie. student satisfaction and the year of study, several articles deal with this issue. Cole et al. (2014) in their three-year study finds that there were no statistically significant variations in the degree of perception of quality based on gender or year of study. This implies that learners nevertheless employ the particular E-learning platform the university selected despite its quality. Similar relationships without mutual significance have been confirmed in other study (Cidral et al., 2018). On the other hand, a variation in the perception of quality has been noticed between the first and second year of study, where better perception was expressed by older students as they used network technologies for longer (Hernández Jorge et al., 2003). Therefore, the hypothesis is set:

H2: Higher maturity of students indicates a better perception of the Quality of E-learning.

In some review papers, it has been reported that the frequency of network technology use is related to the advantages of using the E-learning system (Petter et al., 2008). Students of Tripura University answered that about 50% of them are daily users of E-learning sites and about 20% of them use it on on weekly basis (Mishra et al., 2020). Similarly, the study showed the majority of undergraduate students in Nigerian universities employed E-learning technologies on a regular basis (Nnadozie, 2018). Kim-Soon et al. (2014) found that within the Malaysian University degree of quality of E-service supporting learning and the frequency of use from the E-service tools for coordination were rated as very good. Hence, the next hypotesis is developed:

H3: A higher frequency of using E-learning tools indicates a better perception of Quality of E-learning.

7 METHODOLOGY

To examine the impact of students' demographic characteristics on the Quality of E-learning during the pandemic period, a survey was conducted using an anonymous online questionnaire. The survey was carried out in March 2020 and involved 417 students from the University of Belgrade who answered two sets of questions from the questionnaire. The first group of questions in the questionnaire was related to the demographic characteristics of students, while the second part of the questionnaire referred to the items related to the quality of E-learning. For the

gradation of the obtained answers in the second part of the questionnaire, the Likert five-point scale was used. For the analysis of the obtained results SPSS 20.0 software was employed.

3.1. Descriptive data analysis

Based on the obtained values of descriptive data analysis, it can be concluded that in this research were gathered from a total of 417 answers. In research participated 26.3% male and 73.7% female. All respondents were separated in three groups from 18 to 26 years and above. It can be seen that most of the respondents are from the age of 22-25 years (51.4%) and the least respondents were from the group of 26 years and above (only 3.4%). In research were investigated the students from all years of study. Students from the first year participated 4.8%, from the second year 27%, from third-year 23.2%, followed by 47.8% form fourth year. In regards to E-learning knowledge before the pandemic period, the respondents indicated that most of them have good knowledge (45.7%). In terms of using the platform for E-learning before the state of emergency, 52.6% of respondents were used them, and on the other hand, 47.4% were not used E-learning platforms. In regards to the frequency using E-services during the pandemic period, 80.6% of the students indicated that they using E-services for learning 1-5 times per day and 12.2% are using E-services 6-10 times per day, whereas 1% of students use E-services more than 10 times per day, lastly, 6.2% of students did not use E-services during the state of emergency.

8 DISCUSSION OF RESULTS

The measurement of the reliability of the initial data for further analysis was performed using Cronbach's alpha coefficient. The obtained result presented in Table 2 indicates that the analyzed items within factor Quality of E-learning are reliable for further statistical analysis because the value of Cronbach’s Alpha coefficient is more than the recommended 0.6 value (Nunnally 1978).

The results of the descriptive statistical analysis (Table 2) of the sample (N=417) show that students most agree that E-learning is useful for studies during the pandemic (M=4.11, SD=1.013), while they least agree that the use of E-learning improves their efficiency during COVID-19 (M=3.37, SD=1.173). Figure 1 presents the mean values of student's opinions related to each of the six items of Quality of E-learning. The mean values for communication, rapidity, productivity, effectiveness, and quality of learning are similarly and amount between 3.37 and 3.67, except for usefulness which amounts is over 4.11.

Exploratory Factor Analysis (EFA) was applied in order to determine the theoretically assumed structure of factors and to assess the reliability of measuring instruments related to the Quality of E-learning. The factors loadings range from 0.543 to 0.856 are presented in Table 1 and indicates high coexistence of variables within the considered factor. Principal component analysis (PCA) that represents the technique of factor analyze, was used to investigate the construct of the validity of the questionnaire (Fırat et al., 2017). The results of this analysis show that one component with 3.843 eigenvalues, explain 64.046% of the total variance.

Table 1. The Quality of E-learning

Items	Components	Mean	Std. Deviation	Cronbach Alpha
Q1_I think E-learning useful for my studies during the pandemic period	0.837	4.11	1.013	>0.7
Q2_Using E-learning would enable me to achieve learning tasks more quickly	0.846	3.58	1.163	
Q3_Using E-learning in my studying would increase my learning productivity during the pandemic period	0.856	3.57	1.247	
Q4_Using E-learning will improve my effectiveness during the pandemic period	0.837	3.37	1.173	
Q5_E-learning increases the quality of learning during the pandemic period	0.835	3.61	3.67	
Q6_Communication and feedback between the professor and student are effective	0.543	3.67	1.091	

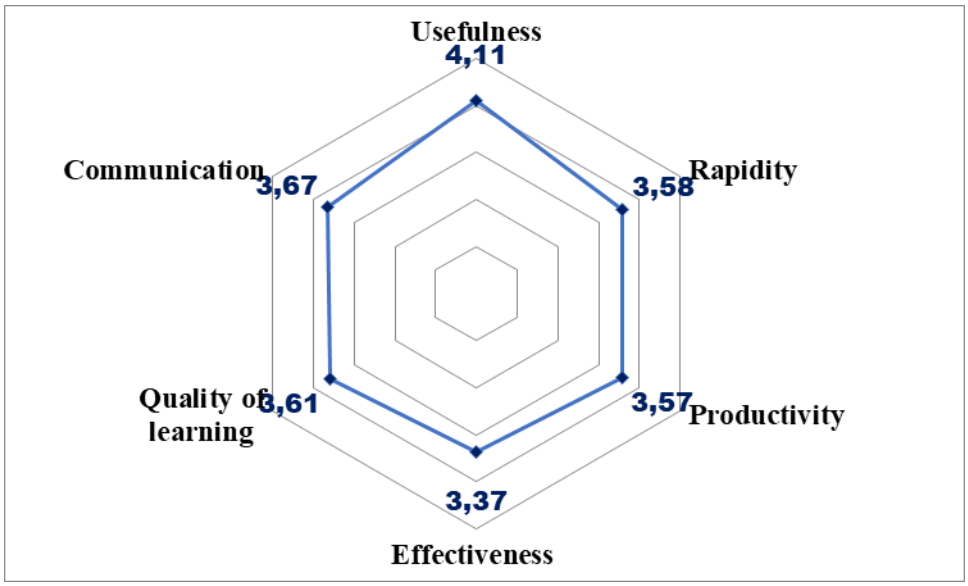

Figure 1.

The mean of items in Quality of E-learning

Pearson correlation was used for analyzing the relation between questionnaire items. The obtained results (shown in Table 2) were statistically significant at $p<0.01$ level.

Table 2. The analysis of Pearson correlation for the Quality of E-learning

Items	Q_1	Q_2	Q_3	Q_4	Q_5	Q_6
Q_1	1					
Q_2	.722**	1				
Q_3	.638**	.687**	1			
Q_4	.604**	.614**	.686**	1		
Q_5	.609**	.579**	.680**	.695**	1	
Q_6	.383**	.392**	.325**	.346**	.387**	1

** Correlation is significant at the 0.01 level

To test hypotheses and to determine does statistical significance exist in responses from students' point of view on the Quality of E-learning, the analysis of variance with one factor (ANOVA) was used, and the set of statistical tests in SPSS 20 was employed.

The obtained results of the first analyzed hypothesis indicate that this H1 is rejected because the assumption about the homogeneity of variance is confirmed, as the value of the F test is small, F(3.65)=0.000, and the level of statistical significance is more than recommended value (p=0.987>0.05). That indicates that it does not exist gender differences in students' responses related to the Quality of E-learning. The mean value for males and females is the same and amount is 3.65. The same results (showed no significant difference) were obtained by the authors Mahvash and Maghsood (2014) when analyzing the quality of e-content from the students' viewpoints of Mashhad University of Medical Sciences. The authors Savara and Parahoo (2018) obtained the same results in research.

Within the second analyzed hypothesis, all students were analyzed according to the year of study they attended and were classified as students from the first to the fourth year of basic academic studies. Furthermore, the Quality of E-learning was analyzed with six variables: usefulness, rapidity, productivity, effectiveness, quality of learning, and communication. Analyzing all dependent variables the statistically significant differences have been found in usefulness question F(4.11)=5.252, p=0.000; rapidity question F(3.58)=5.262, p=0.000 and communication question F(3.67)= 3.313, p=0.011. The calculated arithmetic means indicate that first year students gave the least values of the usefulness of E-learning (3.20), while with the increase in the years of study, the level of quality perception is increasing as well, and for the fourth year students amount is 4.24. Identical results were obtained when it comes to speed to achieve E-learning tasks. The average grades of first year students are 2.90, while the average grade of fourth year students is 3.81. Further, a pronounced difference in student responses was observed in the satisfaction with mutual communication and feedback between professors and students that is achieved in E-learning. The lowest average grades had first year students 2.95, while the third year students gave higher rates (3.89). On other dependent variables, have not been determined the important differences in respondent opinions. Summarizing the results, it can be concluded that hypothesis H2 was confirmed, because there is an evident difference in the answers of students regarding the year of study students attend. The same conclusion is observed by Hernández Jorge et al. (2003).

The third analyzed hypothesis refers to the frequency of use of E-learning tools by students. A statistically significant difference was found in all variables related to the Quality of E-learning, and the obtained results indicate next: usefulness question F(4.11)=14.700, p=0.000; rapidity question F(3.58)=5.767, p=0.001; productivity question F(3.57)=5.223, p=0.002; effectiveness question F(3.37)=8.751, p=0.000; quality of learning question F(3.61)=8.110, p=0.000, and communication question F(3.67)=3.518, p=0.015. The opinion of students differed a lot when it comes to the frequency of using tools for E-learning. What is interesting is the fact that students who did not use any tools (6.2% of the total number of respondents) gave the lowest scores ranging from 2.50 to 2.92. The students who use more than 10 times per day some of the E-learning tools gave

higher value to the level of Quality of E-learning, so their average grades ranging from 3.84 to 4.25. Apparently, there are different students' viewpoints about Quality of E-learning during the pandemic period, and all these results indicate that hypothesis H3 is confirmed. These findings are corroborated by Dura and Mihăilescu (2014), and Martínez-Argüelles et al., 2013.

Conclusion

In higher education at Universities, the progress information and communication technologies open new perspectives for improving the teaching activities of students. The students' perceptions of service online quality in the pandemic period have become a very important aspect of differentiation in today's learning system. The University of Belgrade, which have a long learning tradition, is one of the higher education institutions in Serbia, which included the possibility in its development strategy the implementation of distance learning, which is in line with the adopted Strategy development of education in Serbia until 2020 (www.mpn.gov.rs).

In this research, the ANOVA test was performed for all considered hypotheses. The obtained results showed that not exist a significant difference between variables of Quality of E-learning concerning gender, indicating that the first tested hypothesis H1 was rejected. Considering the frequency of use of E-learning tools and year of study of students, they have diverse attitudes toward any of the dependent variables within the Quality of E-learning, which indicate that hypotheses H2 and H3 are accepted.

The model of tested hypotheses can be applied to many other research problems, but some constraints are inevitable. One of these constraints is respondents which were included in the research. Data of this research were collected in a short period to maintain the compatibility and coherence of data. The pandemic period that hit the education system all over the world forced professors to adapt their teaching activities to the online environment. Therefore, the results of this research are regarded as a snapshot of a certain time, and these results can vary as time passes. Another constraint of this research is the features of the sample. All participants in the survey were from Serbia. Nevertheless, the participants in the survey also can be included from other countries where students are faced with the same situation during the pandemic. Therefore, future research will be focused on performing another study on a larger scale level.

As a recommendation, the University should observe quality issues from a total quality perspective in higher education through a systematic approach of the network technologies and the establishment of a unique E-learning platform.

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Modern recession forecasting systems: The signals approach

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Abstract: *Global recession fears have been rising with the worldwide outbreak of the COVID-19 pandemic. Could we have predicted the outcomes of the events that led up to the current liquidity crisis? Could economic indicators potentially forecast recessions? If yes, what are those indicators, and how should average people interpret them?*
This work aims to create a crisis prediction model as an independent forecasting system for giving an estimation of the likelihood of a recession. To establish the connections between indicators of financial stability, we represent a literature review. Then the operability of these indicators and their updated thresholds are analyzed for the European market. To determine the effectiveness of the chosen indicators, we used the "Signals Approach" method. In the end, the results are presented and discussed. This article generally describes quantitative indicators. Further analysis is needed to make a conclusive statement about the economic condition.

Keywords: *recession, forecasting system, financial indicators, Signals Approach.*

1 Introduction

The COVID-19 pandemic has stopped a 10-year growth streak in equities markets and brought them down to prices of pre-2008 levels [1]. The twin shocks simultaneously hit the global economy in the form of a major disruption of supply chains. A massive shift in the supply-demand curve of energy resources has been seen; the 30% overnight drop in the price of oil because of a newly emerging Saudi Arabian-Russian price war has driven the global economy to a standstill [2]. Most of the business has, on average, roughly from 17 to 30 days until they entirely run out of money, so they will be forced to file for bankruptcy [3]. The notorious "fear index" (VIX) that measures market risk is likely to bring significant contributions to future market selloffs and growing distrusts in the equities markets [4]. Most of Europe's leading economies now charge negative interest rates on the bonds, basically meaning that the investors pay for the borrowers to hold their money [5]. The toll that the coronavirus pandemic has on the European economy is going to be the greatest in Italy, with GDP growth

nearing -3.4 percent [6]. By the end of the first-quarter GDP growth is expected to be 0,1 % and one of the most important economic indicators in a country, the trade balance, is likely to contract by an enormous 20 billion euros, introducing a trade deficit [7].

Should the pandemic be longer than estimated, or should the protective measures imply to fight the virus fail to achieve substantial results? Researchers have concentrated on creating models that would be capable of foreseeing economic instability and correspondingly react to it based on its intensity and spread.

This work aims to gather a database of all the possible banking and currency crises indicators, evaluating their feasibility, and, if viable, model their behavior. The contribution of a currency or banking crisis prediction model would be that of an independent forecasting system that would give an estimate of the recession likelyhood. To establish connections between particular indicators of financial stability, we represent a brief literature review. Then, operability of the indicators and their updated thresholds are analyzed for the European market. To determine the effectiveness of the chosen indicators, we applied the "Signal approach" methodology. The results of the proposed method for financial stability analysis are evaluated and discussed. This research is limited by the study of the sole indicators determined here. Our conclusions and future work are drawn in the end.

2 Related work: Financial stability indicators

Economic security can be characterized by a state of financial institutions where the protection of national interest is guaranteed, altogether with a socially oriented development of the country as a whole [8]. Fisher proclaims that instability is closely correlated with macroeconomic cycles, in particular, with the dynamics of the so-called "big debt crises" [9], also defined by Dalio [10]. To identify threats, determine the accumulating and potential disbalances, early warning systems were developed. Financial crises are likely to result in an indirect loss in the form of a decline in the GDP. From 1973 to 1997, in roughly 70% of the cases, banking, or currency crises were followed by economic crises [11]. In 58 out of the 113 financial crisis episodes that happened from 1980 to 2007, a significant decline in economic growth, or a more severe recession was observed [12]. Economic crises followed by financial crises have culminated in a cumulative reduction in the GDP in a range from 7.6 to 13.8%.

The authors of the neoclassical paradigm studying the possibilities of forecasting models since the 1990s put forward an ambitious, original, hopeful, and refreshing idea [13], [14], [15]. They contributed to synthesizing different methods of forecasting economic crises and creating an early warning system that will be relevant, looked up upon, and used not only by politicians and economists but by average people as well. Nonetheless, the analysis of the construction of such early warning systems around international developed economies shows that the majority of these indicators fail to predict crises around half of the time. This,

however, doesn't stop the social-sciences community from developing a secure and well-trusted approach toward the risk evaluation of pre-crises episodes. The absence in Europe, and in particular in Hungary of an effective early crisis warning system highlights the relevance of analyzing international experience in this sphere.

To predict crises events, several methods can be used, from logit models, Markov switching models to unique individual models developed by Nobel-prize winning economists [16]. The evaluation of the frequency of choosing a specific crisis forecasting method is explained by Yucel [17]. The first and most complex step to build an early warning system is to select a small quickly updating simple to interpret list from a vast array of possible economic indicators that would predict crisis periods in advance, with some probability [18], [19]. The difficulty of choosing the proper macro indicators manifests itself not only in the lack of information, or in its quality but also the uniqueness of each crisis. Blindly following the experience of the international community may be troublesome, as each country has its geopolitical role and level of development. All of these problems resulted in a broad discussion [13], [18].

Eichengreen, Frankel, and Wyplosz have studied the regularities of the dynamics of indicators [20], [21], [22]. In their works, they applied a graphical approach that provided rich and structural analysis to be conducted regarding the behaviors of variables on the currency. Frankel showed that parameters in the identification of currency crises could be determined in four groups: indigenous variables, exogenous variables, variables characterizing national debt, and the outside economic condition [21], [22]. Banking crisis signaling indicators (in the group of the internal macroeconomic policy), international economic conditions, internal financial structure, currency exchange rates, were found to be successful in the predictions of crises based on the data in the work of Edison [23]. To examine the correlation between the two types of crises (banking and currency), Kaminsky and Reinhart analyzed the indicators that showed levels of financial liberalization in countries, development of monetary sectors, and fiscal variables [15]. Aziz and Caramazi examined the crises episodes from 1975-1997 in developing countries, and they found a set of base indicators such as currency exchange rates, export, terms of trade, inflation, M2 reserves, and global interest rates [24].

Other authors concluded that the probability of a crisis grows as the M2 supply of gold and foreign currency reserves decreases [13]. Similar dazzling and unobvious theories [25] have arisen from the work of Oviedo [26]. His results showed there is a direct correlation between the cyclicality of economies and interest rates. Lower interest rates are tied to periods of economic growth; during these periods, the probability of a crisis emerging is the lowest. The dependence of crisis' situations and interest rates is also explored by the researchers [27].

Kaminsky suggested to include the index of volatile sock markets into the set of crisis forecasting indicators [15]. Russian economists devoted to finding

statistically meaningful indicators [28], [29]. It was concluded that GDP growth rate, gold and foreign currency reserves, the real exchange rate, current account balance, export, internal debt, real interest rates, inflation, outflow of capital, M2 supply and terms of trade, have with the highest predicting power and the lowest uncertainty boundary. One of the most accurate indicators featured in topics related to early warning system crisis prediction models is the exchange rate of the domestic currency. Low gold and foreign currency reserves is also regarded as a popular indicator of a potential future crisis. The inability to cover short-term expense obligations from the reserves of the central bank could provoke speculative attacks on the national currency [25]. A high external or internal debt to GDP ratio of the government is almost always a cause for alarm in the financial sector. Same as the rapid rise in M2 supplies. Adverse shocks on important stock markets also increases the chances of financial instability reappearing in the whole economy.

Regarding Kumar, trade integration can be considered as a crisis indicator [30]. Fedorova emphasized financial and trade channels during the 2008 crisis and analyzed the concept of channels where crises could spread [31]. To introduce the trade integration index, Kumar puts forward the idea of export correlation coefficient [30]. Nitschka defines it as a financial integration index inferred from the cross-correlation coefficient of stock indices [32]. The financial liberalization crisis indicator has proven to be accurate at the 99% level for the crisis events from 1980 to 2002 [25]. The authors put forward unemployment level indicators, which have worked on 95% levels [33]. Some authors regard these economic indicators as simply risk indicators, expressed through the parameters of GDP volatility, rise in credit provision, trade, inflation, etc. Depending on the specifics of the countries or economic communities' peculiarities, an advised base set of predetermined and precalculated indicators can be added to or redacted from [25].

3 Methodology

The procedure for determining the cumulative predictive power of any given indicator varies from research to research. Some methods could potentially yield the same results regarding the predictive power, in which case the one that is generally easiest to use is applied. As it was mentioned above, the procedure involves a set of actions by which a formal macroeconomic indicator is turned into a signaling one. When that specific newly composed signaling indicator's value gets below, or over a certain pre-determined threshold level, it would produce an interpretable signal, by which the indicators predictive power could be measured. First, let's view a time-series graph of an economic indicator. For instance, it could be a quarterly report of national GDP growth, or it could also be a composite of several indicators with a linear or nonlinear dependence $X = X(T_i)$, where X is the value of the indicator at the time T_i (Figure 1).

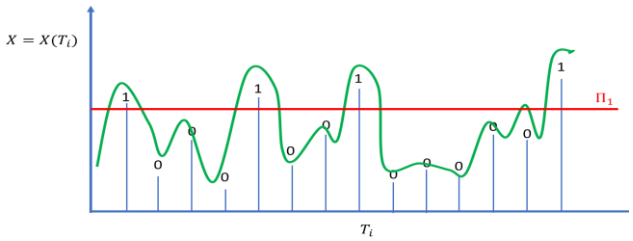

Figure 1

Binary Crisis indicator time-series graph analog. Created by the authors.

To determine that specific indicators correlation with a binary crisis indicator, we need to construct the latter. The construct will feature a variable that will be projected on the time axis, and it will move between two distinct values: (0- indicating that there is no crisis, and 1- meaning that there is a crisis) (Figure 2) [13].

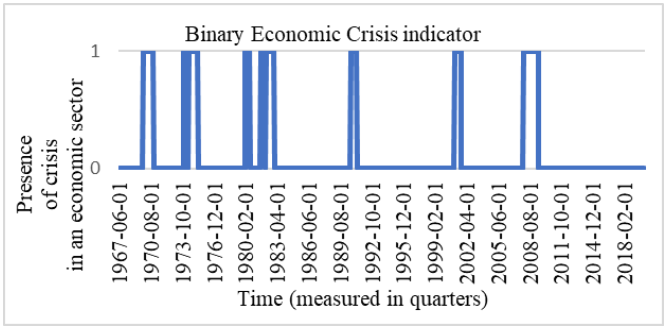

Figure 2

Binary indicator of the presence of crisis. Created by the authors. Referred to: Piger, Jeremy Max and Chauvet, Marcelle, Smoothed U.S. Recession Probabilities [RECPROUSM156N], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/s , Additional conditions - if crisis probability is higher than 20 % than an economic recession has started.

The next step is to create a threshold signaling indicator from the ordinary economic indicator defined in the first step. We, therefore, declare an arbitrary threshold Π_1 and state that if in the moment of observation T_i the X variable of the $X = X(T_i)$, indicator exceeds the Π_1 threshold, then the indicator worked, and it can be concluded that it gave off a signal, which the observer interprets as 1. If, however in the moment of observation T_i the value of X didn't exceed the arbitrary Π_1 threshold, then we interpret the signal as 0. That's why this signaling indicator is often regarded as a binary indicator (Figure 1). The functioning of the indicator, in itself, is considered as a random event, and X_i is indeed a random

value. we extend our observations towards the full available time horizon of the given database of the now transformed signaling threshold indicator and find out whether any financial instability had occurred during the first three to six months'

as the signal, at the moment T_i was produced. Subsequently, it is concluded that there are four possible outcomes of the observation, they are presented in the following logic (Table 1):

Table 1

Logic Table of the possible outcomes

	Crisis Present	**Crisis Absent**
Signal Triggered	A	D
Signal isn't Triggered	C	B

The sum of A+B+C+D must be equal to N, where N must, therefore, be a large number for the feasibility of the study to be optimal. It can thus be stated that the sets of possible occurrences do not intersect. First, we calculate the probability of the crisis:

$$P(F)=\frac{A+C}{N} \quad (1)$$

Secondly, we calculate the probability that the crisis occurred given that the indicator produced a signal- (the event of the indicator being triggered giving off the signal is defined by the letter S):

$$P(F/S)=\frac{A}{A+B} \quad (2)$$

If the indicator mostly sends "good" signals, then it can be expected that the probability of financial instability occurring given that $P(F/S)$, meaning that the signal was produced will inevitably be more than the unconditional probability of $P(F)$ [11], [25], so the following relationship must hold: P(F/S)>P(F). The most important requirement that has to be met is that the number of correct signals of the indicator must be more than the number of false signals. To measure this, we need a so-called unfitness coefficient *K*. It would be equal to the relation of the conditional probability of the event of the crisis not occurring (this event shall be defined in an equation by the letter *G*) given that the indicator was triggered (S) to the conditional probability of the crisis event occurring given that the indicator gave off the correct signal:

$$P(G/S)=\frac{B}{B+D} \quad (3)$$

The equation for the K coefficient is as follows:

$$K=\frac{P(G/S)}{P(F/S)} \quad (4)$$

The smaller the coefficient K, practically the closer it is to zero, the better the threshold signaling indicator is. Some researchers [11], [13], [25] indicate another way to determine the quality of the indicator:

$$P(C)=\frac{A}{A+B} \quad (5)$$

The choice of indicators and their transformation into signaling ones depends on highly unpredictable variables. As an example, some scientist introduces additional variables like $P(C)$ to measure the predictive power, these variables in themselves are of arbitrary nature, and besides, as the situations, progress may need additional recalculation. Economists also explain their choice of $P(C)$ over the K coefficient by the fact that theoretically, this K coefficient equal to zero.

This reasoning outlines the algorithm for choosing the Π_i threshold for our signaling indicator described in the next section.

4 Results and discussion

As a means of establishing the most optimal objective and unbiased solution to finding the best signaling threshold indicator, we acted in accordance with the following steps:

Step 1: We draw a number of thresholds, each separated from another by a certain predefined constant interval that we shall define as Δ- Delta (Figure 3).

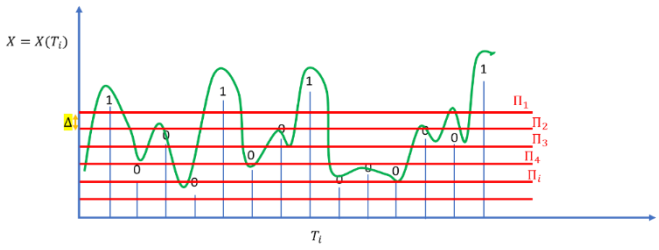

Figure 3

Threshold indicators graph analog. Created by the authors.

Step 2: We choose an arbitrary threshold Π_0 and create a table of observations for this threshold following the logic table (Table 1).

Step 3: Determining the $P(F)$.

Step 4: Determining the $P(F/S)$.

Step 5: Checking the necessary condition whether $P(F/S) > P(F)$. If the condition is met, we move on to the next step. If it's not, then it is concluded that the economic indicator X with the threshold level of Π_0 is a weak threshold signaling indicator, so we go back to the threshold, picking step 2.

Step 6: We calculate the K coefficient for the given threshold. Then, we note K as K_0 and we record it. We move on to the next step.

Step 7: We take another arbitrary threshold Π_1 that is of a predefined Δ-distance away from the previous one, and we go through steps 3,4,5,6 and record the specific K_1coefficient.

Step 8: We do this process for all of the Π_i thresholds and determine each coefficient K_i.

Step 9: We highlight the thresholds where K =0, or as small as possible, and from these threshold levels, also pick the one that yields the highest $P(C)$ value. This will be the optimal threshold level of Π (Figure 4).

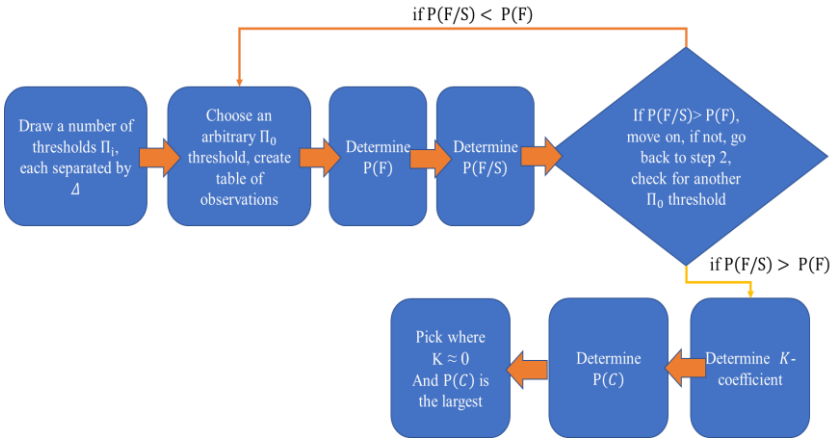

Figure 4

Visualized block scheme of the algorithm of choosing the threshold levels of a signaling indicator.

Created by the authors

To satisfy the incentive of creating an automatization of the algorithm above, a program coded in MATLAB was used.

From the values retrieved as a result of the operation of the program, we choose that threshold, for which the MinK is the smallest of the three and the P(F/S) is the largest.

We suggest that the program should be used for many time series of economic indicators to find the best suiting ones. The limitations of the signaling method manifest themselves in the probabilistic nature of the prediction system. So, there is an inherent element of utter chance that with a 99.9 percent confidence level of making a type 2 mistake, there is still a chance that a crisis occurs while still not being considered as a "black swan". The disadvantage of using a discrete binary variable as an explaining indicator in the predictive power determination algorithm is that it is based on historical data, which is often unreliable, depending on the country, meaning that it's not quite accurate or applicable in their case.

Conclusions

Among the numerous ways of finding financial instability indicators presented in the corresponding section above, it was discovered that most of them heavily rely on subjective opinions, assumptions, outdated ideas inapplicable for modern monetary policy, and data of questionable quality and origins. Therefore, this reasearch paper aimed to introduce an objective way of analyzing signaling indicators and finding an algorithm for determining the best fitting one for crisis prediction purposes and enhance it with a program. The advantage of the application would be that of an independent forecasting methodology. The disadvantages of the method are slight. However, they are inherent to the model. As the program is going to develop, it will be enhanced with Machine learning and AI technologies to make more accurate evaluations of the signaling indicator.

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Digital Divide: A Technological Generation Gap

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***Abstract**: Generation Z and Millenials grew up in our digitalized world. Due to their increased digital expertise, compared to the rest of the population, they use digital technology as an integral part of their lives. Technology has an obsoleting impact on those without the proper skills; thus, older generations have to face the need to keep up with technological advancements. Digital communication changes the way we handle our emotions in an online environment. Emotions have been tied to social media usage, especially for adolescents. Due to the individual and age-related differences in emotional regulation, emotional intelligence (EQ) and self-control are crucial elements of the successful and controlled online presence of each generation. This quantitative research aims to analyze the possible differences between the generations regarding their habitual and problematic smartphone usage and compare the impact of EQ and self-regulation on each generation's behavior in the digital world.*

***Keywords**: generations, Millenials, Generation Z, Gen X, digital natives, generation gap, digital divide, emotional regulation, digital media use, internet addiction*

1 Introduction

Nowadays, most of the population uses digital media and digital tools to deal with everyday challenges. We order our food online, we download our learning materials, share our photos via Facebook and Instagram, and stay connected with friends even from the other side of the world. The younger ones born into the digitalized world and learned to use smartphones and tablets before they even learned to read and write at primary school. The older generations started to use digital advancements in their midlife and had to develop new digital skills to be able to perform at work. On the other hand, the increased loneliness at older age motivates the enhanced social media use. In many cases, this is the only role of smartphones and social media in the life of older generations: in this way, they can stay connected to the world and foster relationships.

Numerous studies examined the role of social media and smartphones in the life of Generation Z and Millenials, but less focused on older individuals who may use

the advantages of digitalization but have different motivations. Our study aims to identify the technological generation gap between the generations and expose its connection with other variables. Our explorative, quantitative study has been built around the following research question(s): Is there any significant difference between the different generations regarding their emotional intelligence (EQ), social stress, self-regulation, habitual, and problematic mobile use?

2 Technological generation gap

The word generation is derived from the Latin word "generare" and means of people born roughly in the same period [1]. Previous studies define the groups differently based on culture (Figure 1).

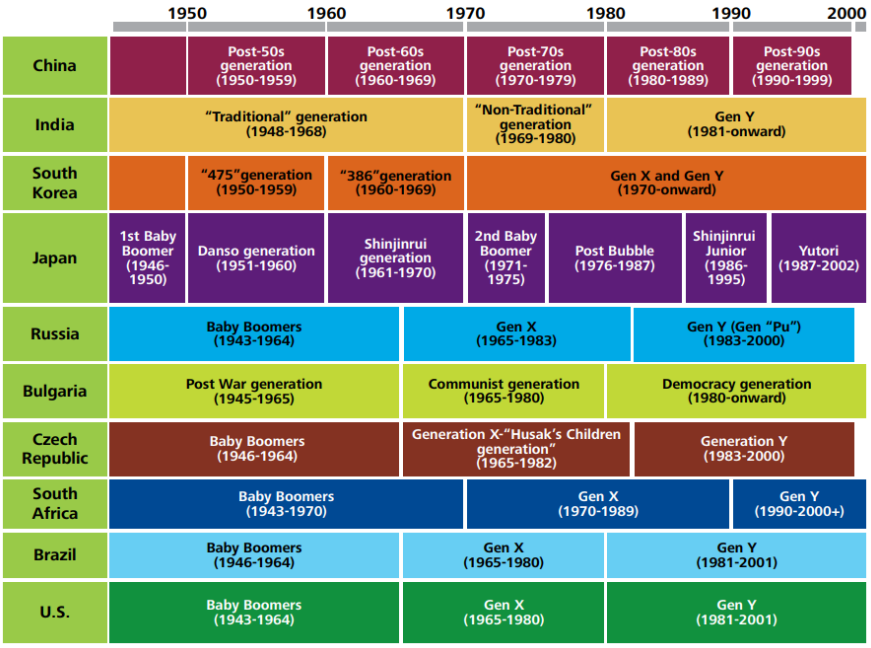

Figure 1
Classification of generations based on different cultures
Source: Hole et al., 2010 [2]

The growing number of people born after the world war and before 1960 created the generation of Baby Boomers. This age group has significant problems to find their place in the new and increasingly digitalized world and feel these changes as a loss of security and predictability [3]. People born between approximately 1960 and 1979 were named the Generation X or Gen X. During their adolescence, the manual typewriter has been replaced by computers, and they had to face the fact that manual work would slowly decrease and being replaced by technological advancements [4]. Generation Y or Millenials was born into a digitalized world [5]. Workplace safety, known from their grandparents' stories, does not mean

much to them, and the vast amount of opportunities opposes their desire for stability. They are the first generation whose communication moved into the online world, and they need to construct a desirable image on social media [6] to stay socially connected. Generation Z or Gen Z was born after 2000, and 99% of them use smartphones. 89% of 15 years old teenagers have social media profiles [7] and favors immediate consumption and experience [8].

The differences between the generations are significant, in which technological progress plays a significant role. The experience of the elderly is already unimaginable for the younger generation, for example, the drastic change in the process of forming relationships without messaging applications. This phenomenon is called the “generation gap” in the literature, which faithfully reflects the gaps between generations [1].

3 Role of emotional regulation in the digital age

According to Van Deursen's findings [9], older people are less likely to use digital technologies, and they prefer to use social media just for communication purposes and show a more regular smartphone usage pattern. Older people spend less time on the internet, and experience less social stress than the younger ones. They are better in self-regulation while getting older might result in increased social isolation, and it can strengthen the need for belonging, which can be satisfied by smartphones and social media.

3.1 Self-regulation

Nowadays, more and more activities have moved to the online world. Self-regulation has an essential role in social media “etiquette” (e.g., boundaries of self-expression via Facebook and Instagram during online communication). It can be defined as the ability to control one's behavior, thoughts, and emotions. Emotion regulation can also refer to processes such as the tendency to focus one's attention on a task and the ability to suppress inappropriate behavior under instruction. Thus, emotion regulation is a highly significant function in human life, and every individual engaged in some form of it almost all the time, because controlling destructive thoughts and emotions is essential [10]. Poor emotional regulation is associated with different kinds of problematic behaviors [11]. Based on previous studies, internet and mobile-phone addicts are more likely to have problems regarding decoding emotions and facial expressions as well; thus, regulation of emotions plays an essential role in avoiding problematic smartphone usage. Individuals with difficulties in coping with negative emotions prefer to turn to the internet [12], and social media use, unlimited browsing of Instagram, can become a “safe place” for adolescents [13]. Pressure from peer-groups can cause significant social stress for teenagers, but the older generations have to face the consequences of the cruel world of social media as well through FoMO (Fear of Missing Out) and constant comparison [14]. Decision making becomes more

complicated with age, and spontaneous use of cognitive, emotional regulation skills increase as well [15].

3.2 Social stress

Social stress or fear of negative evaluation (FNE) can be defined as distress over negative evaluations by others, and the expectation that others would evaluate one negatively. FNE is related to anxiousness and even social avoidance. It is essential to distinguish between FNE and social anxiety. In comparison, FNE is related to the fear of being evaluated negatively in social situations, social anxiety in an emotional reaction to this type of situation. Social media is increasingly used to construct a desirable image, which is a strong motivational factor in sharing any content [16]. Socially anxious individuals prefer to use social media and their smartphones than communicate in person with others [17]. Individuals with high FNE scores were more affected by social endorsements of others than non-socially anxious people [18]. Many people are firmly attached to their smartphones, and if it is out of immediate reach, that causes stress and increases the feeling of FoMO as well [14].

3.3 Emotional Intelligence (EQ)

Emotional intelligence (EQ) is the ability to understand and manage one's own emotions and those of the people around them. There are currently several models of EQ: there is a clear distinction between ability or competence-based EQ and personality trait-based EQ. The latter can be defined as behavioral dispositions and self-perceived abilities [19], while the ability model focuses on the individual's ability to process emotional information and use it to navigate their social environment. This model defines EQ as “the capacity to reason about emotions and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions to promote emotional and intellectual growth” (page 197.) [20]. EQ has four dimensions: (1) ability to control emotions, (2) ability to understand emotions and apply emotional knowledge, (3) ability to integrate emotions, (4) perception and expression of emotions. Based on previous studies, EQ positively correlated with better social relations for children and adults, better academic success, and increased job performance [21]. It can help reduce the probability of problematic internet use or mobile addiction [12].

4 Measure and Methods

The Hungarian participants filled in an online survey, which took approximately 15 minutes to complete. It was pilot tested with 4 participants (aged 14, 28, 45, and 64) to examine the clarity of the questionnaire. The survey contained general demographic questions (gender, age, educational background, employment) and more validated measurement tools as well. In case to improve the scales' Cronbach

alpha, a few questions may have been removed from the items after the pilot-test. *Schutte Self-Report Emotional Intelligence Scale (SSREI)* has been used to assess the level of emotional intelligence (EQ). This instrument consisted of twenty-seven questions rated on a 5-point agreement scale [22]. The items on the test relate to three emotional intelligence components: appraisal and expression of emotion, regulation of emotion, and utilization of emotion (α_{EQ}=0.89). *Brief Fear of Negative Evaluation Scale (BFNES)* has been used to assess if the respondents felt stressed in the social context [23]. The main objective of this instrument is to measure social anxiety. It contained twelve items rated on a 5-point agreement scale (α_{Stress}=0.96). *Self-Regulation Questionnaire (SRQ)* has measured the level of self-regulation [24]. It contained twelve questions, which can be answered on a 5-point Likert scale. ($\alpha_{Self\text{-}Regulation}$=0.84). To measure addictive smartphone behavior, the *Mobile Phone Problem Use Scale* has been used, which was developed by Bianchi and Phillips [25]. The twenty-six items cover to escape from problems, craving, negative consequences, and social motivations as well. 5-point Likert responses have been used. *Habitual mobile phone usage* was measured with an instrument adapted from Van Deursen [9]. The instrument contained eighteen items rated on a 5-point scale. Chronbach's alphas exceeded the required threshold of 0.7 ($\alpha_{Habitual\ use}$=0.91, $\alpha_{Problematic\ use}$=0.92) which implied high internal consistency of the smartphone behavior scales. The data were analyzed with SPSS 20.

5 Discussion of the Results

In total, 932 people who use smartphones answered the survey. The answers of individuals younger than 14 years old, and that ones which contained missing values have been excluded. It resulted in 844 answers (22.3% men and 77.7% women). The younger individual was 14, the oldest 78 years old (mean=39.06, SD=18.787). The generational distribution is shown in Table 1.

Table 1 Number of study participants per generation and their age

Generations	Mean	N	SD	Min.	Max.
Ganaration Z	16.99	235	1.803	14	20
Millenials	28.85	190	6.360	21	40
Generation X	50.69	271	5.885	41	60
Baby boomers	65.93	148	3.742	61	78
Total	39.06	844	18.787	14	78

Although the sample is not representative of the Hungarian populations, it suits the purpose of the current study. Concerning the educational activity, 60.4% of the respondents had no student status, 39.6% was a part-time or full-time student. The respondents' educational and employment background is shown in Table 2.

Table 2 Educational and employment background of the respondents

Education		**Employment**	
Primary school	23.70%	Not in employment	41.70%
High shool	35.50%	Full-time job	35.90%
Bsc	27.60%	Part-time job	7.60%
Msc	13.20%	Retired	14.80%

5.1 Mobile use

Habitual (regular) mobile usage contains phone calls, writing or reading emails, checking weather forecasts, reading news on the internet, chat, and messaging with others. Habitual use is perfectly normal nowadays if the lack of these actions does not cause anxiety or distress for the individual, or excessive use does not lead to addiction. A high problematic mobile use score predicts mobile addiction or compulsive usage.

5.1.1 Habitual mobile use

The total score of the habitual mobile score reveals that there are significant generational differences. It ranged between 18 and 90 (mean=57.71, SD=14.627). Table 3 shows that Generation Z uses the mobile most frequently (score=63.32), which reflects that this generation was born into the technological and digital advancements, and their connection with their mobile seems to be a natural process. The score of Millenials is 61.44, which is quite close to Gen Z's. There is a more significant decrease between Millenials and Generation X who had to actively learn the use of mobile phones at one point in their lives. Baby Boomers have the lowest score, just 48.34, which reveals the score of older individuals who use mobile phones daily (we measured the mobile usage of older individuals who use the internet regularly because the online questionnaire was available via Facebook).

Table 3 Habitual mobile use score of each generation

Generáció	**Mean**	**N**	**SD**	**Min.**	**Max.**
Generation Z	63.32	235	11.441	20.00	90.00
Millenials	61.44	190	12.764	22.00	89.00
Generation X	55.41	271	14.248	20.00	86.00
Baby boomers	48.34	148	16.413	18.00	87.00
Total	57.71	844	14.627	18.00	90.00

ANOVA posthoc test (Tukey) reveals that Gen Z and Millennials have no significant differences, but both generations differ from Generation X and Baby Boomers significantly ($p < 0.01$). Generation X has lower scores than Millenials

and Generation Z (mean difference: -6.12 and -8.00), while the difference between Baby Boomers and previous generations are significant as well (Gen Z: -14.97, Millennials: -13.09, Generation X: -6.96). It is a modest, significant negative correlation between habitual mobile use score and age ($r = -0.374$, $p < 0.01$), which means the older individuals are attached to their mobile phones less even if they use the internet daily.

5.1.2 Problematic mobile use

Problematic mobile use scores ranged between 26 and 112, while the highest possible score was 130 (mean=55.46, SD=16.850). Most of the individual used their phones without any addiction problems (96.4%), just 3.4% showed the sign of addictive behavior (an excessive amount of time spent on the internet or with messaging). The score of generations reveals the same pattern as in the case of habitual use: the mobile addiction score decreased with age (Table 4).

Table 4 Problematic mobile use score of each generation

Generation	Mean	N	SD	Min.	Max.
Generation Z	63.50	235	14.911	30.00	112.00
Millenials	56.43	190	16.088	26.00	104.00
Generation X	52.19	271	16.101	26.00	115.00
Baby boomerek	47.42	148	16.614	26.00	95.00
Total	55.46	844	16.850	26.00	115.00

ANOVA and Tukey posthoc test revealed significant differences ($p < 0.05$) between each generation. Baby Boomers and Generation X are the less prone to face problematic mobile usage, while the younger generations (especially Gen Z) spends much time on their phones. Regarding the correlation between age and problematic usage, the results revealed modest, negative significance ($r = -0.349$, $p < 0.01$).

5.2 Self-regulation & social stress

Self-regulation score was ranged between 9 and 45 (mean=31.84, SD=6.080) and increased by age ($r = 0.261$, $p < 0.01$). Figure 2 shows that high level of self-regulation can help decrease the social stress ($r = -0.440$, $r < 0.01$), mobile addiction ($r = -0.401$, $p < 0.01$) and reduces habitual mobile usage as well ($r = -0.287$, $p < 0.01$).

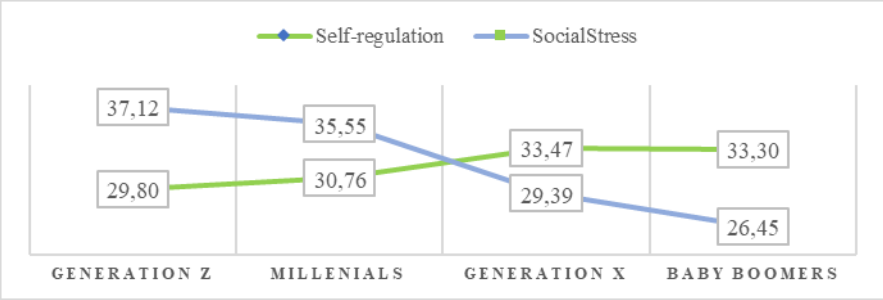

Figure 2
Comparison of average social stress and self-regulation scores of each generation
Source: own data

There is no significant difference between the score of Gen Z and Millenials ($p = 0.334$), but both generations differ from Generation X and Baby Boomers ($p < 0.01$). The same similarity appears in the case of Baby Boomers as well; they do not differ from Generation X significantly ($p = 0.992$) just from the Gen Z and Millenials ($p < 0.01$).

Regarding the social stress score, the results indicate significant differences between the generations. The average score was 32.41 (between 11 and 35, SD=12.562), which shows that most of the individuals have problems with the fear of negative evaluation, but the social stress is reduced by age ($r = -0.336$ $p<0.01$) and EQ ($r = -0.220$, $p < 0.01$). It correlates with habitual mobile use ($r = 0.432$, $p < 0.01$) and mobile addiction as well ($r = 0.447$, $p < 0.01$). Results of ANOVA and posthoc tests (Dunnett T3) indicate significant differences between younger (Gen Z and Millenials) and older generations (Generation X and Baby Boomers).

5.3 Emotional intelligence (EQ)

The result of analyzing the EQ score indicates that the connection between age and EQ is very week, but significant ($r = 0.141$, $p < 0.01$). The average EQ score was 104.75 (SD=13.196) and ranged between 51 and 134 (the possible maximum is 135).

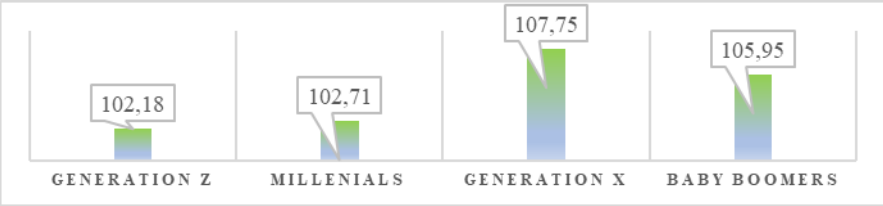

Figure 3
Average EQ scores of each generation
Source: own data

ANOVA posthoc test (Tukey) reveals that there is no significant difference between Gen Z and Millenials (Figure 3), but both generations have significantly lower EQ than Generation X ($p < 0.01$) and Baby Boomers ($p < 0.05$). The score differences between Generation X and the Baby Boomers are not significant. Baby Boomers' results follow the same pattern; they differ significantly just from Gen Z and Millenials (the digital generations). The higher EQ scores can reflect a better emotional expression and empathy in the case of the elders due to the more offline communication.

High level of EQ does not affect the daily mobile use ($r = -0.220$, $p = 0.530$) but can prevent the addictive behavior ($r = -0.127$, $p<0.01$) and lower the level of perceived social stress ($r = -0.220$ $p < 0.01$). The result of the analysis indicates that the connection between EQ and self-regulation is significant ($r = 0.476$, $p = 0.00$).

Individuals with higher EQ can communicate better and handle the emotions of others more effectively. Higher EQ leads to better stress and frustration handling, and due to the stringer self-regulation, older individuals better at goal achievements as well.

Conclusion

The present study investigates the differences between the generations regarding smartphone use, EQ, social stress, and self-regulation. The results show that habitual and problematic mobile usage decreased by age, and there are significant differences between the generations. Self-regulation increased by age and negatively correlated with both habitual and problematic use. It helps reduce social stress, and we found substantial differences between the younger (Gen Z and Millenials) and older groups (Generation X and Baby Boomers). The average score of social stress showed that most of the respondents had problems with the fear of negative evaluation, but the impact was more influential in the case of teenagers and adolescents. A high level of social stress has been related to regular and problematic smartphone usage as well, which confirms previous studies' results [17]. Emotional intelligence (EQ), which increases by age, can help prevent addictive behavior but does not affect the everyday mobile use. The key is the self-regulation, which is significantly correlated with EQ. Individuals with better emotional regulation can manage their relations better in real life and online as well.

Younger generations spend an enormous amount of time online (especially on their phone), while their fear of negative evaluation is intense. This kind of stress reduced by age, and due to the increased self-regulation ability, older generations use smartphones wiser. They do not feel the pressure to construct a perfect image on social media and use smartphones mostly for information seeking and communicational purposes.

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Fear of COVID-19 and its impact on holiday planning and working abroad

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***Abstract**: Fear of COVID-19 displayed moderately behavioral changes in the population. It motivates people to follow the public health regulations to aim to reduce the chance of spreading the virus (such as social distancing), which leads to further psychological consequences. It has a significant impact on tourism due to travel restrictions. WHO predicts that international tourist arrivals will decreased markably worldwide in 2020. The coronavirus pandemic affects the student mobility programs (such as Erasmus+) as well, and individuals who have planned to study or work abroad has to face significant uncertainty. Our research aims to adapt the Hungarian version of the Fear of COVID-19 Scale (FCV-19S) and the exploration of the impact of fear of coronavirus on the plans to travel, study or work abroad among the Z and Y generations. The role of emotional intelligence, perceived stress and social media consumption and the anxiety caused by coronavirus pandemic will be examined as well. The study study explain our reasearch plan and preliminary results too.*

***Keywords**: COVID-19, perceived stress, well-being, emotional intelligence, EQ, social media, Fear of COVID-19 Scale, FCV-19S, safety*

1 Introduction

COVID-19 pandemic, caused by the SARS-Cov-2 virus, affected each country and fundamentally changed our everyday life. The virus spread from Asia in December 2019, and it quickly reached Europe. The first coordinated restrictive measures were applied in March in Hungary in order to save lives, followed by strict safety public health messages such as obligatory facemask wearing and social distancing. Employees have been sent back home to work remotely, and the

educational institutions have been closed due to the lockdown. People faced drastic changes and had to deal with the economic and psychological consequences of social isolation. In this situation, feelings of fear and anxiety became more pronounced than ever before.

When this paper was made in June 2020, half of the world's population has been tired of the restrictions, social isolation, and economic consequences, and the other half need further safety measures and afraid of "another wave" of COVID-19. This study aims to explore differences in the age group 18-30 regarding the sense of safety. The first group rejected their original plans and decided to stay in Hungary during the summer. The second group insisted on their previous holiday or employment plans. We were looking for answers to the following questions: Are there any significant differences between the traveler and non-traveler group regarding the fear of COVID-19, general, and mental well-being? How social media (especially Facebook) impact the information-seeking behavior related to coronavirus? Does it play a role in stress reduction in this situation? Are there any significant differences between males and females regarding the sense of safety? What does make a hotel safe during the pandemic?

In this study, the research plan and hypotheses will be shown in detail, and the preliminary results will be described as well.

2 Effects of COVID-19 pandemic

Nowadays, dealing with coronavirus pandemic is one of the biggest challenges of the whole world. This quickly spreading virus has a mortality rate of 3.6% based on the data of 2020 first quarter [1], and almost every country confirmed cases until mid-March [2]. Countries react to the pandemic differently, but infection control and finding effective treatment became the primary goal of almost every culture. Cultural differences may play a significant role in protective measures. Collectivist countries may accept the restriction and social distancing need quicker than individualist cultures [3]. While each country works on reducing the transmission rate, the economic aspects of the lockdown in tourism, travel restriction, and the psychological consequences of the long-term social isolation of people have to be considered. Tourism is a labor sensitive sector in the European Union and directly contributes approximately 6.9% of employment on average to OECD countries. The sector employs many seasonal and temporary workers. The hotel industry heavily relies on international recruitment [4]. If the crisis continues in the peak season of the Mediterranean (June - July - August), many of the jobs will be affected, and many hotels have to face serious financial problems. The situation is almost the same everywhere globally and causes a more significant impact on countries where tourism contributes to the GDP highly (Figure 1). The latest UNWTO report estimates an approximately 22% decline in international tourist arrivals in the first quarter of 2020, and a total of 58 - 78% decrease is predicted for the whole year [5].

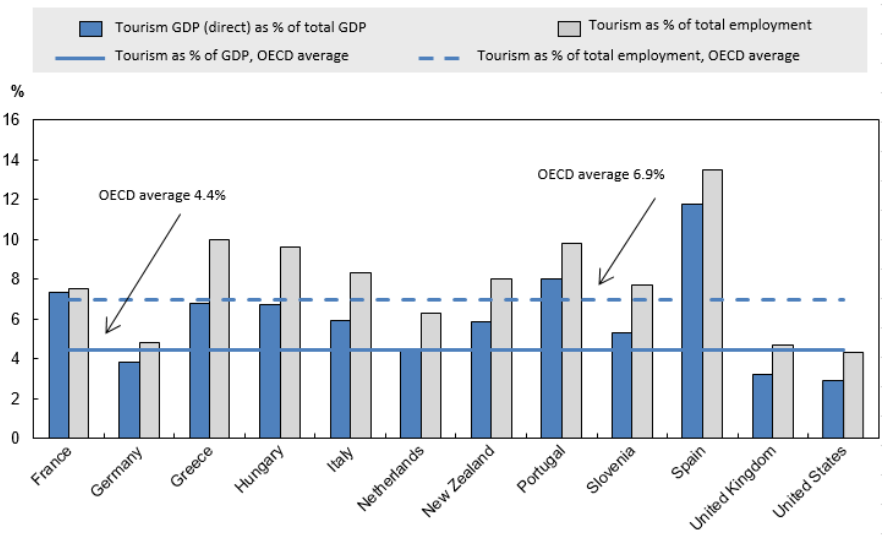

Figure 1
The direct contribution of tourism in OECD economies
Source: OECD Tourism Trends and Policies [6]

The pandemic also has a severe impact on tourist behavior. Due to the fear of infection, they may modify their holiday plans and even cancel seasonal employment contracts abroad. Due to the lockdown and travel restrictions in March, the seasonal workers and sojourners (such as Erasmus+ students and interns) returned to their home countries and faced increased employment and educational uncertainty.

Based on the high infection rate, people quickly started to fear the coronavirus and agreed to apply many restrictions to avoid the further spread of COVID-19. While fear may motivate people to accept public health measurements such as necessary social distancing and wearing face mask [7], it may also lead to numerous psychological effects [8]. The fear about COVID-19 lies in the lack of vaccine and high mortality rate, and it can be overwhelming. Social distancing causes social isolation, and many individuals feel lonely. Due to the lack of personal connections, they turn to the internet, which is flown by fake news about the coronavirus and its possible long term effect [9]. Employees who are affected by the economic consequences of the pandemic worry about the loss of their job. Parents who have to stay at home and take care of their children (because most educational institutions are closed) face a stressful period, where their work-life balance vanishes momentarily. The central phenomenon of COVID-19 and its long-term effects are fear and uncertainty.

3 Research methodology

Our research aims to identify the variables related to the fear of COVID-19 and measure this emotion's effect. We prepared a quantitative study with an online questionnaire[2], which consisted of validated measurement tools and an excessive amount of questions related to the present pandemic situation. The final Hungarian language questionnaire was launched on June 1, 2020, and we plan to collect responses until August 31, 2020. Our survey contains three main blocks. The first one consisted of *demographic questions* (such as age and gender) and validated tools. Our previous study confirmed the connection between *emotional intelligence* (EQ) and increased stress and uncertainty endurance during the COVID-19 pandemic [10]; thus, Schutte Self-Report Emotional Intelligence Scale (SSREIS) [11] have been used to assess the emotional skills of the respondents. It contains twenty-six questions, and the respondents have to express the level of agreement on a 5-point Likert scale for questions such as "I like to share my emotions with others." *General well-being* and *mental well-being* were measured by the Satisfaction with Life Scale (SWLS) [12], which contains five items, and The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) [13], which contains fourteen items. The *strength of fear of COVID-19* was measured by the Fear of COVID Scale (FCV-19S) [14], with seven questions such as "It makes me uncomfortable to think about coronavirus." This scale focuses on the psychological and physical signs of fear. The respondents could use a 5-point agreement scale. To assess the respondents' general stress level, the Perceived Stress Scale (PSS) has been used [15]. It contains ten questions, and a 5-point Likert scale has been used for the answers.

Based on previous studies on the effect of negative news on social media, we hypothesized that coronavirus news on Facebook creates further anxiety, and most of people do not use social media as a reliable information source during the pandemic. We use the Information Seeking in Facebook Scale (ISFS) to assess the *role of Facebook in information-seeking*. The measurement tool was adapted to the pandemic situation [16]. Twelve items of the original tool have been used.

We assessed the actions and behaviors that can increase the individuals' sense of safety against the coronavirus. Eleven preventive measurements (e.g., handwashing, wearing face maks or gloves, social distancing) have been listed, and the respondent had to choose on a 5-point scale how essential for them to that specific action in order to feel safe in general. We hypothesized that the more troubled an individual is due to the COVID-19 pandemic, the more actions they will welcome to apply in their everyday lives.

[2] The online questionnaire in Hungarian is available via QuestionPro: https://www.questionpro.com/t/AQTicZhwNh

The second block of our survey contained questions regarding the *plans of the respondents*. We form groups based on their answers: individuals who (1) stay in Hungary and rejected previous holiday plans, (2) instead abroad, they choose a domestic holiday, (3) plan a holiday abroad, (4) plan to work abroad in a hotel. Based on the country of destination, we plan to make further comparative analysis. Respondents who will not go on holiday in 2020 can submit the survey at this point; the others had to answer further questions.

Thirteen questions assessed the aspects of the *selection of the country of destination.* The respondent could use a 5-point agreement scale to express their viewpoint. The list contained aspects related to the management of the coronavirus, the public health actions, the health care system, and the number of confirmed infections and deaths related to coronavirus. Thirty-seven questions assessed the core of the *fear of COVID-19 concerning travel abroad*. The respondents could use a 5-point agreement scale and had to rate items such as "I cannot travel back home by plane due to travel restrictions.", "I have to spend time at quarantine.", "I will die.", "The hotel will not apply enough safety actions, and I will be ill." This part of the online survey was hidden for the respondents who will spend their holiday in Hungary.

The third, last block of our survey, contained a list of *preventive measurements in the hotel, which can increase the tourists' feeling of safety* or the employees. This part's main goal was the possible distinction between the aspect of tourism and employee regarding preventive measures. The respondent could express on a 5-point agreement scale how much of a safety measure can increase their sense of safety. This part included items related to the hotel's communal spaces, room service, hotel entertainment, restaurants, and conditions of bookings, social distancing rules, and employee regulations.

4 Preliminary results and discussion

The survey is not closed until the end of summer; thus, the following report contains a preliminary analysis of respondents' perception of the effect of COVID-19 pandemic. Due to the low number of respondents and the unbalanced female-male ratio at the time of the MEB Conference (June 25, 2020), more complex correlation and variance analysis have not been applied, and the results are not triangulated with the rest of the data. Thus, this study provides an incomplete picture that should be interpreted with caution. A more complex summary overview of the research results will be available once the survey and the research project are closed.

The 62 received answers have been analyzed by SPSS 20 statistical software. The respondent are aged between 18 and 30 (mean = 23.41, SD = 3.421). The results are not representative, but the received answers, and its pattern confirmed that collecting more answers is worth further efforts.

4.1 Effect of COVID-19 on daily life

The fear of COVID-19 manifests primarily in anxiety due to news related to the coronavirus (2.62), followed by a general uncomfortable feeling due to the pandemic (2.54). Fear of possible death is in the respondents' consciousness (1.62), sometimes accompanied by sleep disturbances (1.57). Physical symptoms of anxiety (sweating of palms, heart palpitation) are not characteristic features of fear of coronavirus (1.08). In conclusion, the pandemic's most stressful aspect is the constant flow of news, which creates further uncertainty and anxiety.

Respondents have been asked what preventive measures contribute to their sense of safety in their daily life (Figure 2). As a result, the most important aspects are regular hand sanitizing (4.68 out of 5) and regular hand washing (4.54). Almost all of the respondents think that these safety measures are essential to avoid the coronavirus's negative consequences. Both protective measures significantly contribute to the respondents' sense of safety. It is followed by keeping physical distance during shopping (3.77) and wearing face masks in closed environments (3.54). Not everybody agrees with the restricted physical activities such as handshakes and different welcoming traditions (3.31). It is in line with the difficulties of the social distancing and the psychological consequences of the isolation. The least sense of safety is provided by wearing face masks outside of the buildings (2.00) and gloves (1.85), which can be interpreted as "not important" and "absolutely not important."

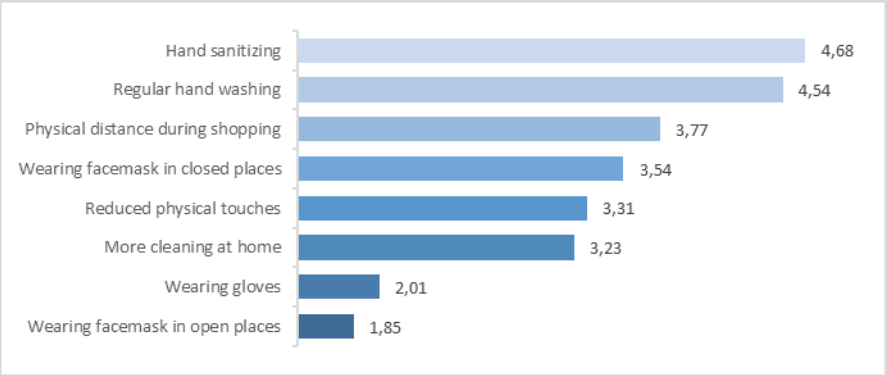

Figure 2
Aspects of sense of safety in Hungary
Source: own data

Respondents were asked how they view Facebook and the information it contains about COVID-19 in terms of obtaining information. Surprisingly, respondents use Facebook in relation to the coronavirus mostly for entertainment purposes: they

find memes[3] about COVID-19 can relieve stress and be entertaining (3.62). Most of them do not use Facebook as a useful information source regarding pandemic (2.17). Neither the news posted to Facebook nor the respondents' Facebook friends are considered a reliable and credible source of information (1.5). If we refer back to the results of the fear of COVID-19, the most critical factor was the anxiety caused by the news. Interestingly, respondents tend to avoid social media content related to coronavirus because it causes extra stress but finds relief in Facebook's entertaining content, minimizing their anxiety.

4.2 Effect of COVID-19 pandemic on travel plans

Most of the respondents (33.33%) will stay in Hungary and gave up on holiday this summer due to the pandemic. 23.92% canceled international travel and planned to spend their holiday in a Hungarian hotel. Also, 24.35% insist on their holiday plans abroad, but change the date and the country of destinations as well. Plans of 10% of the respondents stay constant. Less than 5% of Hungarians change the date of holiday/employment or destination country due to the pandemic (Figure 3).

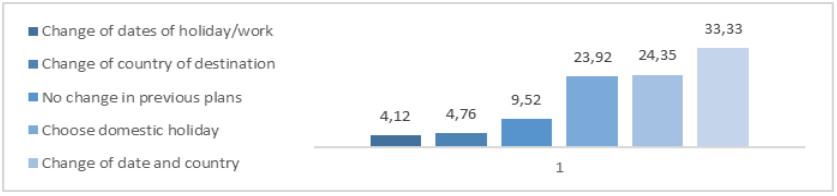

Figure 3
Changing of travel plans due to COVID-19 pandemic (%)
Source: own data

Regarding the summer plans, respondents could define the most crucial aspect of selecting a destination country (Figure 4). Cost-effective travel solutions and the healthcare system's general quality were emphasized as the most determining factors; both items have 3.2 average points out of 5. The least influential factors are the number of confirmed infections (1.8) and the number of confirmed deaths (1.6) in the destination country.

[3] Meme, unit of cultural information spread by imitation. The term meme (from the Greek mimema, meaning "imitated") was introduced in 1976 by British evolutionary biologist Richard Dawkins in his work The Selfish Gene. https://www.britannica.com/topic/meme

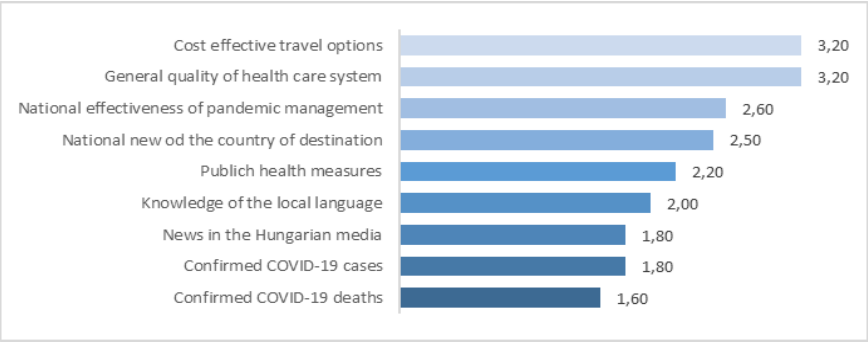

Figure 4
Essential aspects of selecting the country of destination
Source: own data

The judgment of a country by the Hungarian media was almost irrelevant for the responders (1.8), respondents were mainly interested in the international news (2.6), and this aspect (news itself) was more important than the local management of the coronavirus pandemic (2.5).

Respondents who plan to go abroad for work or holiday were asked to rate their fears related to a possible coronavirus infection in the country of destination (Figure 5). According to the test results, they are most afraid of becoming seriously ill (3.56) and being hospitalized (3.45), or being quarantined abroad (3.2). Interestingly this fear is more significant than the infection itself (2.00). The most unimportant aspect of the fear is that the hotel does not comply with proper hygiene standards (1.6). It seems that respondents trust the hotel safety protocols in general. As a result, respondents afraid of the health consequences of the illness (hospitalization, being sick), and the travel restrictions (quarantine, inability to travel back home) more than the COVID-19 infection itself.

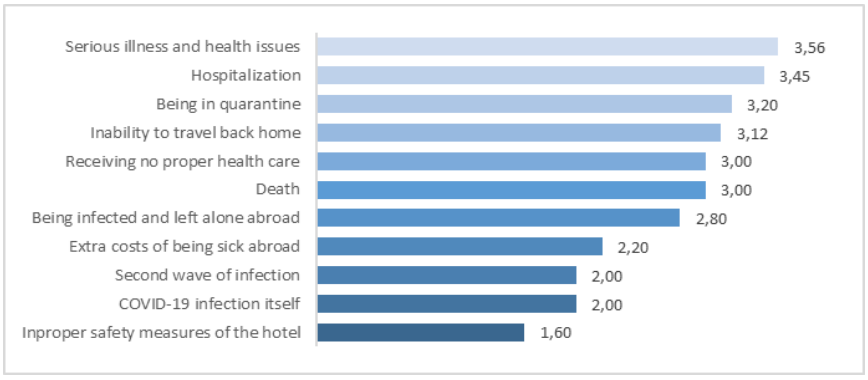

Figure 5
Most important fears related to traveling abroad
Source: own data

4.3 Role of hotel safety measures in the sense of safety

Based on the country of destinations, the hotels have to follow specific rules related to COVID-19 prevention and apply several safety measures to avoid further spreading the virus. Hotels who plan to operate during the summer season (many stays closed in 2020 due to financial reasons), may implement further safety actions and offer a safe but comfortable environment to the guests. As Figure 6 shows, respondents rated the frequency of the cleanings of community spaces (entrance, hall, reception desks, bar, outdoor spaces) as the most critical factor(4.00), which was strictly linked to the continuously available hand sanitizers at the hotel and more intensive room cleaning such as air sterilization with UV light or ozone (3.89). Social distancing within the hotel's community spaces has been rated highly (3.33), and the obligatory face mask (3.22) and gloves (2.78) wearing of the employees added to the sense of safety of the guests. On the other hand, respondents expressed their need for available face masks and gloves free of charge in the rooms too (3.11) but did not agree with the guests' obligatory facemask wearing (2.67). They want to feel safe, but they prefer if the actions are done by the hotels' employees, not them.

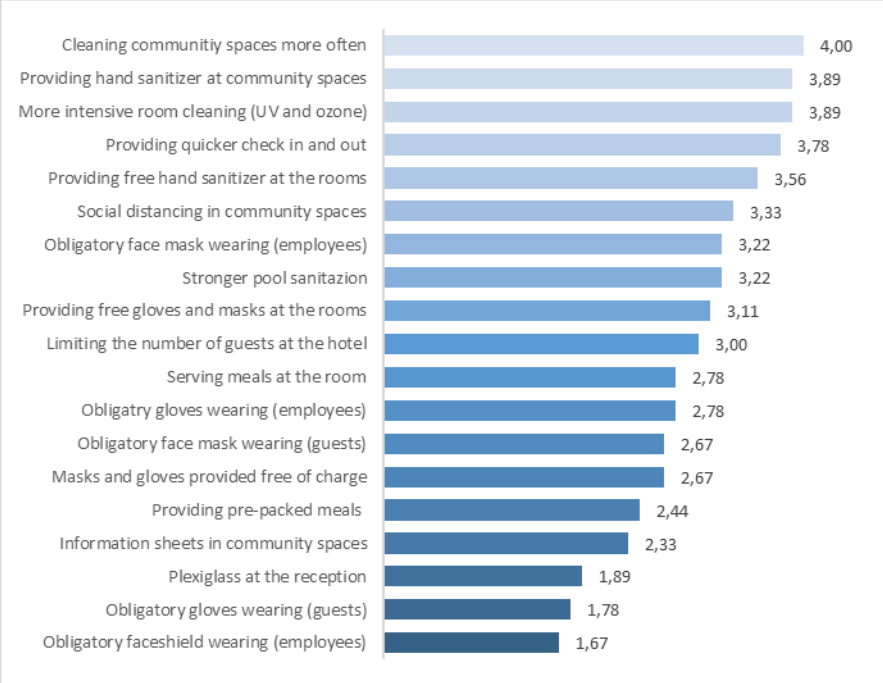

Figure 6
Safety measures at the hotel which strengthen the sense of safety
Source: own data

Safety measures, which could reduce the service quality at a hotel (lack of buffet, no all-inclusive service, restricted restaurants/bars, pre-packed meals, and the lack of classic á-la-carte restaurant experience) have not been rated as essential aspects of the sense of safety. Guests still want this kind of hotel experience. Physical panels (e.g., plexiglass) at the reception, between tables or even sunbeds, seemed unimportant. Interestingly three safety measure was rated "absolutely not important": Plexiglass at the reception (1.89), obligatory gloves wearing of the guests at the community spaces (1.78) and obligatory face shield of the waiters and hotel employees. These are the most "scenic" expressions of the coronavirus pandemic and the fear related to it. Thus guests and employees would like to avoid these. It resulted that the best safety measures in a hotel are that one, which can maximize the protection but minimize the impact on service quality. Guests would like to spend their holiday as "COVID-free" as possible while staying safe and healthy.

Conclusions

COVID-19 pandemic has drastic economic consequences, especially in the tourism sector. It causes outstanding financial problems for the hotels, that has to face the reduced guest numbers and increased cost of safety and preventive measures as well. The uncertainty will last until the first round of successful vaccination. The psychological consequences of prolonged lockdown and social isolation lead to the increased need for freedom during the summer: many people do not want to cancel their previous holiday plans. Seasonal hotel workers wait for the end of the travel restrictions and the good news from their employer that they can travel and start (or continue) working. On the other hand, numerous individuals are against the opening of the borders and afraid of the "second wave" of infection and support further and even stricter safety measures.

Regarding working abroad and holiday planning, we explored exciting findings. Preliminary results of our complex research show that 34% of the young Hungarians canceled their previous summer holiday or working plans and stay at home this year. 56% had to modify plans (date or country of destination), and just 10% of the respondents' plans stayed unchanged. In general, the most relevant factor of fear of COVID-19 belongs to the news, which causes anxiety for most people. This aspect is more remarkable than the physical symptoms of anxiety. While flown of (fake) news stress people, they use Facebook to find relief in entertaining content such as coronavirus memes. On the other hand, they do not rely on social media as a valid information source. The necessary preventive actions based on the respondents are hand sanitizing, keeping physical distance in general, and wearing face masks in closed environments. Wearing gloves or face masks outdoor or face shields are not welcomed by most of people. We can see the same pattern in case of a hotel stay: people agree with more regular and intense cleaning at the hotel and strict safety regulations regarding the employees (obligatory face mask and gloves), but do not want as much safety protocol, which can affect the service quality of the hotel (plexiglass, lack of buffet). In general,

people are most afraid of the coronavirus infection's physical and health consequences (for example, serious illness, hospitalization, or quarantine). This fear determines the importance of factors related to the selection of the country of destination. The most important aspects are cost-effective travel opportunities and the country's health care system's general quality. If somebody plans to travel abroad, they seek information from international sources instead of Hungarian ones. Most people do not trust Hungarian media, and the number of confirmed infections and deaths is not relevant information for them when they plan their holiday or employment abroad.

After the closure of the survey (Aug 31, 2020), we expect exciting results that can explain the connection between the fear of coronavirus and the emotional intelligence, stress level, and well-being and its overall effect on the sense of safety.

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Promoting the internationalization of SMEs through clusters

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***Abstract**: Internationalization has become increasingly important forthe competitiveness of enterprises ofall sizes. With limited time or capacity, lack of financial or human resources,certain opportunities or potential partners, SMEs need support to enterinternational markets. Clusters are recognized as an important instrument forpromoting innovation, sustainable industrial modernization and interregionalcooperation. The aim of this paper is to discover a theoretical andanalytical basis for clustering and internationalization, to review the best internationalizationpractices from clusters in Europe and to explore empirical issues of the internationalizationof Bulgarian SMEs.*

***Keywords**: internationalization, SMEs, cluster*

1 Introduction

Internationalization has become increasingly important for the competitiveness of enterprises of all sizes. While large companies are ready to anticipate the potential and risks of globalization for their respective business models, SMEs are at risk of falling behind global competition. With limited time or capacity, lack of financial or human resources, certain opportunities or potential partners, SMEs need support to enter international markets. Clusters are recognized as an important instrument for promoting innovation, sustainable industrial modernization and interregional cooperation.

The aim of this study is to discover a theoretical and analytical basis for clustering and internationalization, to review the best internationalization practices from clusters in Europe and to explore empirical issues of the internationalization of Bulgarian SMEs.

The present paper is a result of analysis of the results of the empirical research preformed under project № DN05 / 15 "Determinants and models of the competitive performance of small and medium enterprises in the international business environment", funded by the National Science Research Fund. The research was conducted from surveys amongst 500 companies in Bulgaria

2 Explanaition of the methodology, data use and sources.

In order to achieve the research objectives and the tas**ks set, the existing literature** was examined, scientific publications and relevant results were analyzed, European Commission reports and strategic documents, the results from the implemented in the European Strategic Cluster Partnership support instruments f**or** internationalization of SMEs. The research analyzes data collected from study performed under a project № DN05 / 15 "Determinants and models of the competitive performance of small and medium enterprises in the international business environment", funded by the National Science Research Fund. The research was conducted from surveys amongst 500 companies in Bulgaria**.**

3 Literature review

The role of clusters for economic development of SMEs began to be investigated early in 1860 when Alfred Marshall in his work “Principles of Economics” [1], brought attention to the causes and benefits of locating specialized industries in specific areas (cities) and defined the cluster as "Concentration of specialized industries in specific locations". His theory was developed further by Schumpeter's theories for Swarm (1939) [2], Giacomo Becatini's "Industrial Zone" (1991) [3]. The cluster theory gained wide popularity through the Michael Porter’s famous work "On Competition" in 1998 [4] where the concept of cluster as "the geographic concentration of interconnected firms, service providers, related industry firms, as well as institutions specializing in certain areas, competing and cooperating with each other" is detailed explained . At present, the concept of clusters is complex and is covering various forms of cooperative initiatives and competitive strategies, which often occur inside and outside the territory. Kettels and Memedovich (2008) published an article on cluster initiatives, in which they conceptualize clusters and validate them as facilitators of economic development. European Commission gave the following definition on clusters; “clusters can be broadly defined as a group of companies, related economic actors and institutions that are in close proximity and have reached a sufficient size in terms of providing experience, specialization, resources, suppliers and skills” . European Commission’s Europe 2020 Flagship Initiative, states that “internationally competitive clusters play a vital role in bringing together (…) large companies and SMEs, universities, research centers and communities of scientists and practitioners to exchange knowledge and ideas” .

Cluster organizations can play a key role in supporting companies in their internationalization yet this requires that clusters have the competences for internationalization and a strategy supporting these efforts.

There are around 3000 clusters in Europe, accounting for 54 million jobs. They nurture growth and jobs, e.g. 3% higher wages and the 67,700 fast-growing enterprises in clusters employ more staff than other enterprises

4 Cluster internationalization

European Commission promotes international cluster cooperation by intensifying cluster and business network collaboration across borders and sectorial boundaries within and beyond Europe. It supports clusters to partners with other clusters from different industries and countries so they can lead international cooperation in new areas, helping European SMEs integrate into global value chains. The main instruments are:

- European Cluster Collaboration Platform (ECCP) [6] - 1000 registered cluster organizations from across Europe. It represents the main instrument for European clusters to profile themselves, exchange experiences and identify potential partners for transnational cooperation within and beyond Europe.
- International cluster matchmaking events - These events offer cooperation opportunities for European clusters with partners within and beyond Europe. Matchmaking events take place in third markets as well as in Europe. They bring together cluster delegations from Europe and third countries to promote business opportunities and partnerships in strategic fields of mutual interest. Some European events target different sectors to promote cross- sectorial cooperation and help create new value chains in Europe.
- European Strategic Cluster Partnerships for Going International (ESCP-4i) [9]encourage clusters to work together to develop and implement a joint strategy that supports the internationalization of SMEs in third countries. Each ESCP-4i developed a series of joint actions for their members (i.e. business missions, cooperation agreements, gateway services, export consortia, etc.) strengthening European SMEs access to specific third markets and putting in motion a long-term cooperation agenda with strategic partners in third countries

4.1 ESCP's results and impact on SMEs internationalization

There were 3 generations European Strategic Cluster Partnerships.

The first generation (2016 – 2017) - 25 ESCPs involving about 150 clusters across 23 European countries have developed and implemented joint strategies to support SME internationalization towards third countries. The overall achievements:

- 2000 SMEs have been involved in activities targeting international third-markets generating 85 concrete business cooperation cases with international partners
- 370 Cluster-to-Cluster events and
- 3010 Business-to-Business events have been conducted,
- whilst 39 Memoranda of Understanding (MoU) and
- 45 collaboration projects implemented between EU clusters and international peer organizations

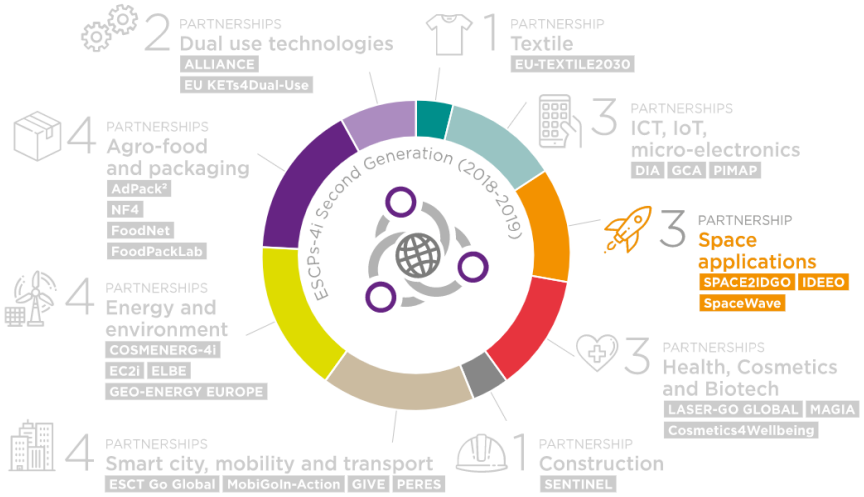
Fig. 1: Industrial focus of the European Strategic Cluster Partnerships

Source: European Cluster Collaboration Platform

The Second generation of 23 co-funded ESCP-4i (2018-2019) involve 123 cluster organisations from 25 European countries active in various industrial sectors. The primary target markets include the USA, Canada, Japan, China and Singapore.

Together, they represent a potential to support more than 17,000 European SMEs.

Fig.2. Industrial focus of second generation European Strategic Cluster Partnerships



Source: European Cluster Collabration Platform

The third generation European Strategic Cluster Partnerships should have started on April 2020 but due to Covid 19 Pandemic it is postponed to start on 1st September 2020 and will last 2 years.

4.2 Clusters in Bulgaria

Over the last few years in Bulgaria hundreds (more than 240) of clusters have emerged, but not more than 20 are active in supporting SMEs. In the table bellow it could be seen that only 26 Bulgarian clusters are registered Cluster collaboration platform and only 6 of them are partnering in ESCP. 2 of the clusters are leading ESCPs

Table 1: Bulgarian clusters registered in European Cluster Collaboration Platform and partnerin in European Strategic Cluster Partnerships Goin International.

Name	ESCP-4i Membership
Cluster for development and training of doctors in dental medicine	-
Automotive Cluster Bulgaria	GIVE, EACN
Black Sea Energy Cluster	-
Bulgarian Fashion Association	-
Bulgarian Furniture Cluster	-
CASTRA	-
Cleantech Bulgaria	-
Cluster for Digital Transformation and Innovation	MOVE C2Future
Cluster Green Transport	MOVE
CLUSTER HOISTING DEVICES LTD.	-
Cluster Mechatronics and Automation	-
Cluster Microelectronics and Embedded Systems	-
Cluster Sofia Knowledge City	-
Culinary Arts and Hospitality Association	-
DIGITAL HEALTH AND INNOVATION CLUSTER BULGARIA	-
E-Business Cluster	-
Electric vehicles industrial cluster	MOVE, SmartCTClusters
European Industrial Cluster	-
Green Synergy Cluster	NATUREEF
ICT Cluster	GIVE
ICT Cluster - Blagoevgrad	-
ICT Cluster Burgas	-
ICT Cluster Plovdiv	
Industrial Cluster Srednogorie	-
Knowledge-Intensive Development Association	-
Marine Cluster Bulgaria	

Source: European Cluster Collaboration Platform

Green Ict deVElopment (GIVE) is one of the partnerships leaded by Bulgarian cluster – ICT Cluster Bulgaria. [11] Automotive Cluster Bulgaria [12] is a partner

The general project objective is to build up strategic cluster partnership in the field of smart green technologies among the three vital industries - automotive, renewable energy and ICT. 8 clusters form 6 countries (Albania, Bulgaria, Latvia, North Macedonia, Romania, Serbia) are partners in GIVE. Among the achievements of the partnership are:

- It surveyed 256 SMEs about interesting new markets
- more than 250 companies and interested stakeholders took part in 4 webinars
- Identified third markets China, Egypt and Taiwan, 8 MoU signed with partners from target markets
- Organized 6 B2B events in 6 different countries and provide opportunities to SMEs to go and meet new partners, extend their business in Europe and cross-industry
- more than 100 companies, clusters and interested stakeholders took part in the B2B
- Internationalization strategy developed to provide SMEs with financial and capacity support to go to China, Egypt and Taiwan to explore business opportunities in these third markets.
- Organized webinars for opportunities in internationalization in Third countries markets – Taiwan, India, Egypt, China

Move – Moving the future [13] ESCP is the other partnership where Bulgarian cluster is involved – Cluster for Digital Transformation and Innovation (ex name: Bulgarian Cluster Telecommunications"). Partners are: Cluster Green Transport (BG), E-Mobility Cluster Regensburg (DE), Bavarian ITLogistics Cluster (DE), North South Logistics & Transport Cluster (PL), Bulgarian Cluster Telecommunications (BG), CLEVER (IT), Electric vehicles industrial cluster (BG), Canary Cluster for Transports and Logistics (ES), NUMELINK (FR) and Logistics in Wallonia (BE). The main objective of the partnership is to create a new value chain from cross-sectorial and cross border cooperation, as well as to foster SMEs' internationalization in North Africa and Latin America. Some of the achievements of the partnership are:

- +600 SMEs received useful information,
- 91 express their full interest in the internationalization activities planned by the MOVE partnership, and the internationalization strategy.
- Established contacts during study visits and brokerage events in Saint-Etienne, France, Sofia, Brussels, Canary Islands, etc.

- Development of an intelligent transport center in Morocco with dozens of SMEs - members of the partnership;
- Joint training simulator for drivers between Spain (Titsa) and a Bulgarian public transport company.

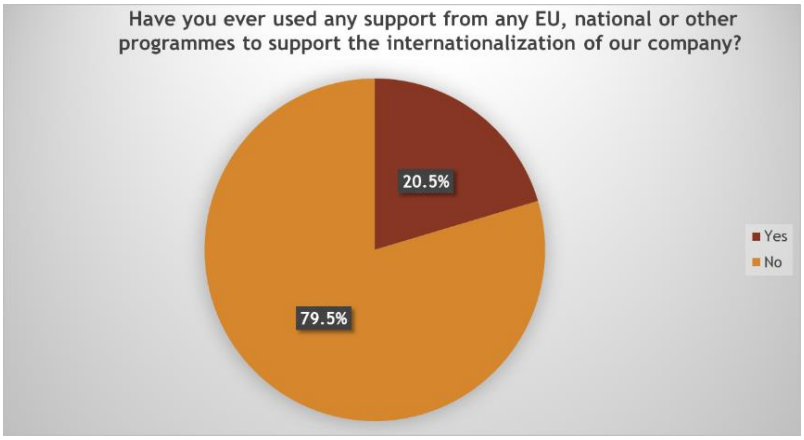
5 The impact on clusters for internationalization of Bulgarian SMEs – Results from a research

A survey was conducted within a project funded by Bulgarian National Science fund among 500 companies from different industrias in order to analyse their level of internationalization, challenges they meet, level of support from different actors.

40 % of analyzed companies report to participate in some networks, mainly partnering with supplyiers. The level ot membership in business support organization is bellow 10 %

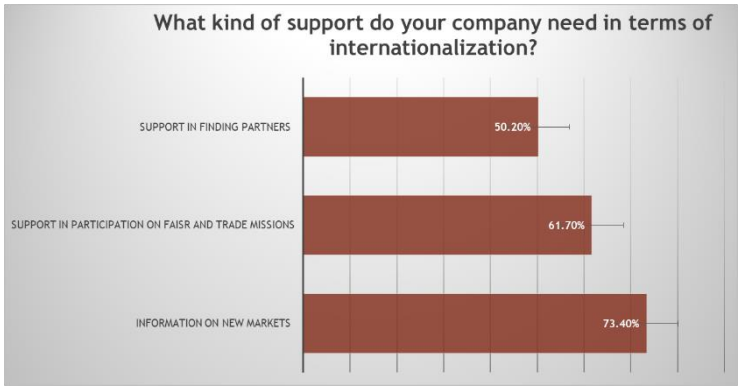
From 488 answers, only 20.5 % reported they used any EU, national or other support for their internationalization

Fig3. Answers of the question: have you ever used any support from EU, national or other programmes to support internationalization of the company



73.4 % of participants answered that they need support in receiving information for new markets and 50 % they need support in finding partners.

Fig. 4. Support needed from the companies in terms of internationalization



Conclusions

With limited time or capacity, lack of financial or human resources, certain opportunities or potential partners, SMEs need support to enter international markets. This study contributes to the extant literature on importance of clusters for SME internationalization performance by attempting to explain the characteristics of Bulgarian cluters and their potential to support SMEs in their internationalization journey

SMEs benefit from business support services of clusters, like the organization of international study visits, "matchmaking" events, market research and etc. These services enable SMEs to find international partners for research and prototyping as well as to bring products and services to new markets. European Strategic Cluster Partnerships are successful instrument for supporting SMEs internationalization trough clusters

In the last few years, cluster support initiatives have become significantly focused on their international dialogue and cooperation between different cluster initiatives from different sectors and across national borders;

Only few Bulgarian Clusters are well presented on European Level, and are aware about the instruments of European Commission and are active in supporting internationalization of SMEs. These clusters are from Technology and automotive sector.

Bulgarian SMEs, especially from non – technology sectors are not aware about the opportunities that clusters could provide to help them access new markets.

Based on this study, future research need to analyze the different models and perspectives for improvement the cluster support services for boosting the internationalization performance of SMEs in Bulgaria

Acknowledgement

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Virtual Collaboration

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Abstract: *Humans have always created and organized groups to work and learn together to meet challenges. During the centuries, people have become able to cover even larger distances and cooperate with new people. Nowadays, the fast-developing technological system created the era of virtual collaboration, which benefits and difficulties we are still just learning. Due to the current circumstances that the world encounters, it is a priority to implement such collaboration methods.*

In our secondary research, we study scientific articles and research papers to create a broad picture about this collaboration. Moreover, we analyse the global situation and practices of the business and the education system. This research not only introduces and explains virtual collaboration methods, but also gives an overview about its impacts. Our main purpose is to facilitate this type of collaboration and to provide best practices for utilizing it in the most efficient and effective way.

1 Introduction

Nowadays, teamwork and collaboration play an essential and indispensable role not only in our personal lives, but also in the educational and professional fields. This cooperation allows us to exceed our individual capabilities and opportunities and also makes it possible to overcome many mistakes by helping each other. In this way, we can constantly set new, more difficult and complex goals, as well as rise to unprecedented heights. Due to the objectives and goals of globalization and also to the fast-changing and developing technological system and background, the era of the virtual collaboration has arrived. These days, with the proper technical devices and support, we can reach anyone at any time. In just a few years, virtual collaboration has gained key importance – especially in this situation – in our lives, due to its innovative nature and wide-range of possibilities.

In the beginning of our research, we formulated the following aims and objectives:

A1: Our first aim is to create a comprehensive and complex picture about the virtual collaboration and its impacts.

A2: Our second aim is to analyse the current situation of both the business and education systems.

O1: Our first objective is to analyse and collect the most important advantages and disadvantages of virtual collaboration.

O2: Our second objective is to provide best practices for utilizing this collaboration in the most efficient and effective way.

2 Secondary research

In our secondary research, we study international scientific articles and research papers to create the above mentioned broad picture about this collaboration. Due to the nature of this topic, we have always tried to use current and the latest available material.

2.1 Basic information and platforms

Collaboration is a fundamental factor with emerging importance not only within the organizations, but also in the education system. It is an intentional process that is aimed to create something new, or to solve a specific problem. It usually requires decision making of participants, thus enhancing common responsibility taking [1].

This cooperation process usually have some kind of "routine steps", as first we need to generate ideas individually (or in pairs), then we can develop and build on those together as a group and finally we are working on the defined tasks again alone. The more complex the task, the more important to have this private thinking time [2]. It is important to truly work together and not just work "next to each other", as this way we can be more than just a sum of individuals and become capable of extraordinary acts.

In simple terms, virtual collaboration involves all collaboration and team activities conducted via an online medium. The participants are usually geographically dispersed, but for example these days – during the restrictions aimed to moderate the effects of COVID-19 – companies encourage online meetings and schools are organizing online final exams and matriculations even if all the participants are in the same building. Due to the outbreak, we are forced to slow down and change the pace of our whole lives, like working from home office, meeting only family members and becoming conscious and self-sufficient [3].

This collaboration has three main groups, audio-, videoconference and computer-mediated communication methods. Audioconferencing manifests mainly in the form of phone and conference calls. The mostly used platforms are WhatsApp, WeChat (Work) and the ones that we list in case of videoconferencing. Video

conferencing is gaining huge popularity nowadays - mainly within organizations - as the bandwidth of the Internet and the capabilities of the devices are developing rapidly. The most well-known and used platforms are Skype, GoToMeeting, Webcast, Microsoft Teams, Zoom, Viber and Facebook Messenger. Finally, computer-mediated communication methods are all data exchange activities that are taking place with time delay. These can be emails, data shared by the help of servers and software, instant messages and so on [4] [5]. The platforms that are mainly used are the followings:

- emails: Outlook, Gmail
- data sharing: SharePoint, Google Drive, Dropbox
- instant messages: Facebook, WeChat, WhatsApp

As there are countless such platforms, in these lists we only collected the commonly used ones with the highest popularity and impact. All of the above mentioned (and not-mentioned) platforms have their own opportunities, advantages and disadvantages that we need to consider. This is why it is important to first define the exact needs and choose the proper platform only afterwards.

2.2 Benefits and obstacles

As any form of cooperation, virtual collaboration also has its own benefits and obstacles. In this part of the study, we collect and explain the main ones. In case of the benefits, the most important factor is that virtual collaboration enables teamwork at any time (real-time) and any place, so we can save both time and money on the organization processes. Also, due to the same reason, this collaboration broadens the reach, as we have the chance to meet people, we otherwise would never. Moreover, it is far easier to record the audio and video conferences and check back later if needed. Furthermore, sharing information takes only a few seconds and will be immediately available for everyone. Another benefit is that many platforms give the opportunity to edit the files and material at the same time and also record the changes if needed.

In terms of the obstacles, the main one is to find and use the proper platform. Also, we need to consider the existing infrastructure of the company or school that may narrow the opportunities. Another obstacle is that this kind of collaboration is always accompanied with a higher level of anonymity due to the lack of personal contact, thus gaining the trust is more difficult. Moreover, during a virtual collaboration in-group and out-group phenomenon can appear much easier than in case of face-to-face cooperation. These are the reasons why it is harder to motivate each other. However, virtual collaboration enables communication with many more people than we could otherwise, but it can also cause the feeling of being isolated.

We can state that there are almost as many obstacles as benefits of virtual collaboration, but we still need to use this kind of cooperation, so the key is to learn and practice it. Fortunately, many obstacles can be overcome by paying

attention to the previously mentioned purposes, capabilities and most importantly to the participants.

3 Situation considering business

In this and next part, considering the situation of the business and education system, we collect, introduce and also explain our connected personal experiences based on the fact that all of our authors are working during the study for an MSc degree in the same university in Hungary.

1. Time is saved, money is saved. During the COVID-19 epidemic management time in Budapest, most individuals' work is done at home. Companies do not need to pay rental fees or other fixed costs, thus saving money. For example, a start-up corporation does not need to afford the rental fee of a physical office as it just starts business. And the money on public resources for members is also saved. Common companies can also save much fixed fees, like training costs, utilities and management fees. As for members, we do not need to spend even several hours per day on the round-way routine, meanwhile the traffic costs are saved.

2. Work can be implemented more efficiently. A task leader can organize a meeting or task feedback as soon as possible using media tools. And it is very convenient to get everyone's time schedule and no need to consider the problem of physical distance and time of members. Members can see everyone's task deadline and content easily and clearly just by opening an app on their smartphone or notebook. A task leader can pick a meeting time with minority members very freely based on the flexible and convenient schedule. Sometimes a task can be done well even in a few minutes, which is much more efficient than physical work style.

3. Less possibility of conflict, less joint and more possibility of harmony. Nevertheless, sometimes it is hard to avoid conflict and misunderstanding with colleagues or managers. When work and tasks are divided by emails, data sharing and instant messages methods, people can not react immediately and have to have time to think passively, even though they are in an excited mood. After calm thinking, some misunderstandings can be solved before putting it forward to others. Usually, when we write something, we try to be polite and sometimes the emails, data sharing and instant messages methods cannot express bad mood as vividly as face appearance, hence the virtual business can not annoy others like speaking words. However, it means we, members, can not feel each others' real emotion, so we are just unemotional workers like robots to some extent. We can not know each other more, and we just try to avoid conflict and finish the task. In other words, it does not support team building and creating group passion.

4. Good opportunity to record the task process and feedback. Every task delivering and training context are exposed to everyone in the common apps and everyone can share and find the task sponsor. It is really easy for everyone to track, reflect and analyse their work process and results.

5. Less feedback from communication. When we consider real physical talk, sometimes we can create innovative ideas by getting some feedback from the speaker. Instead, in the case of virtual business we are just facing a screen, like watching a movie, so we cannot get more information stimulated by a counterpart than during real face to face collaboration.

To summarize, virtual business is more flexible and convenient, but sometimes it is better to meet colleagues face to face to improve team passion. The biggest problem is the influence of the bad quality of the Internet, which can waste a lot of time and enthusiasm. Proper combination of virtual and real businesses can be the perfect way.

4 Situation considering education system

The COVID-19 pandemic has released the largest unpredictable influence on the education system after the post-war era, which affected over 91% students (more than 1.6 billion) who have to transfer to online courses. For example, during the 30 days between April and May, there are 10.3 million enrolments in courses on Coursera, up 644% from the same period last year [6].

1. Virtual education releases students' physical pressure. In our university all of the international students have to live in a student hostel, which is so far from our faculty. It means every day we need to spend approximately two hours on the round-way road. Staying at home to attend lectures just costs one minute to switch on a notebook, computer or even smartphone.

2. Final exams format is easier. Final tests and exams format could be a presentation and essay, instead of a real face to face exam. It can lower students' anxiety and pressure of meeting a formal and serious personal exam. Therefore, we can avoid the unpredictable difficult questions and avoid the mistakes caused by nervousness when we are encircled by professors and colleagues.

3. Easier to pass the necessary exams. When we have to take an exam for some special courses that consist of many calculations, instead of memorizing them, we can use a sheet of the necessary formulas. Also, we can use for example Microsoft Excel to write these formulas in advance, to help us do the exam. So, we do not feel much pressure to remember the exact formulas, instead, we just need to know which formula we need to use in the particular question or exercise. On the other hand, some students may not understand the reason why they use that exact formula for the question, they just automatically use it.

This kind of study style towards professional knowledge is unhelpful or even harmful for a master student to conquer his or her own work task in the future, but it is really relaxing and easy to pass at present. In other words, this style taught us how to find the essence of solving a question in a really short time and how to use efficient tools to work out our difficulties.

4. Studying can be more efficient with various kinds of tools. As for the students whose master degree (teaching language is English) is so different from bachelor (not English) and English knowledge is not perfectly good, mainly

because of the poor vocabulary. It is relatively hard for them to follow the professors in lecture and even sometimes professors and classmates are very interested in their experiences and home country. In these cases, they have to reply or answer questions, but it can make them absolutely too nervous to think, or they feel more nervous and not confident due to the frozen air and silence. In virtual lectures, all of these anxieties from real people disappeared. Furthermore, these kinds of students can gain the required knowledge more efficiently, because they can get familiar with the meaning of the strange words as soon as possible by automatically translating them in just one second. Also, everyone can search for useful information to understand some professional terms amazingly quickly.

5. Higher education, wider scale. As almost each university offers the online courses beyond campus walls to global learners, students can study more resources from the worldwide famous universities, such as Harvard University, MIT, Stanford University and so on. Meanwhile, universities can also work together to launch a common credit or grading system for virtual learning spaces. They are able to personalize education for millions effective outcomes by advanced AI-powered adaptive learning [7].

6. Time and money value are improved via commoditized courses for both students and universities. Colleges can commit more resources to research-based teaching, personalized problem solving, and mentorship via commoditizing courses. Thus, campuses can facilitate social networking, field-based projects, and global learning expeditions that require face to face engagements. At the same time, students can have more resources at their disposal and use the precious time for electives, group assignments, faculty office hours, interactions, and career guidance, something that cannot be done remotely - via commoditized courses online at any convenient places and time, but under a cheaper cost - instead of four full years at campuses[8].

7. Our reaction and attitude to study are much closer to real situations. Sometimes we are not motivated enough to study, so we just spend our time with relaxing. This situation is similar to that, even though we attend classes, we do not think about them at all. It can happen that students join the lectures, but put it on mute to be able to do anything except studying. Also, sometimes students mute their own microphone against a professor's question, just like during physical lectures when they want to keep silent.

In short, virtual education makes students feel much relaxed and comfortable, but not helpful to improve and practice real life skills, which are necessary in the future work and study land. Moreover, it is especially difficult for those students, who lack professional knowledge, for international students studying in English and not good at it (but want to improve) and for other students, who fear social interaction.

5 Best practices

In general, managing teams can be considered as a challenging process, because team collaboration is the key element of success for projects, despite their

complexity and size. Virtual collaboration, due to the current situation of COVID-19 epidemic, has become the international trend for team collaboration in order to keep every project within its proposed schedule and outcomes.

Alignments and accountability are critical parts for successful virtual collaboration projects. According to Cambridge dictionary, alignment is an arrangement in which two or more things are positioned in a straight line or parallel to each other. It involves schedule and task orders for projects. Accountability is the fact of being responsible for what you do and able to give a satisfactory reason for it. In other words, assigning tasks for team members and holding them responsibilities to accomplish their tasks properly. Alignments and accountabilities should be given so much attention as they will result in successful projects progress and outcomes.

Virtual collaboration is nowadays the driving force of sustaining global economies and minimizing losses. There are many practices observed and proven by our personal experiences, in education and business, as the most efficient practices.

For educational purposes, recorded lectures using E-learning systems such as Moodle and EDUonGo then prescheduled time for consultation or questions, helped the students to review lectures any time and day during the week before the meeting time, no matter their region time zone. For team collaboration, students were arranging meetings by themselves and asking professors for preliminary feedback about the conceptual ideas of the projects and whether to proceed with the ideas or not. It is quite promising that this form of communication and cooperation can be formed into a really interactive learning process that can help early stage students to evolve efficiently in knowledge sharing through creative games, apps or some digital drawings [9].

For business purposes, developing share points helped to continue working consistently and smoothly on project progresses by setting weekly and day to day meetings. Assigning a meeting administrator, who is professionally trained with clear aims about each meeting, prioritizing these aims with items that require more discussions and attention to reach consensus to make better decisions. Evaluating meetings continuously by members beside recording the meeting for review and developing [10]. Reporting on status as a report on the status of their tasks is essential to keeping the project moving toward a successful conclusion. Specialised professional IT teams in charge of adopting these share points and online platforms can be considered as the base for successful adoption of virtual collaboration projects. Finally, continuous learning, observing and rapid response besides reporting systems are the key elements for prosperous projects in workplaces.

Conclusion

All in all, we can conclude that virtual collaboration is the new leading form of communication and cooperation, which globally proved its efficiency and importance in the recent months both in education and business fields. It helped in the continuity of learning processes in schools and universities worldwide. It also

supported sustaining global economies by keeping projects alive through online coordination and follow-up through monthly, weekly and daily meetings.

Virtual collaboration has many benefits and also some obstacles, previously mentioned in the paper, so it is really important in the future to minimize these obstacles. Moreover, it is key to become familiar with this collaboration and to develop the most favourable practices and perhaps adopt them in a wider range. This can be done by implementing R&D processes in such a way that companies and universities can maximize the utilization of the cooperation for the greater benefits of our education and business systems. Virtual collaboration enables us to preserve many financial resources for other uses, which has impact and importance in the sustainability and growth of our economies not only over the next few years, but also in the long term.

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The impact of gamified education on learning motivation

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Abstract: *Due to tense business environment and technological developments, agile organizations are invoked to provide flexibility that is necessary to gain business advantages. Accordingly, employees and the education system also have to align to meet new challenges and to develop new skillsets. Technological progress and changes in society have also impacted the characteristics of how younger generations perceive and learn. Researchers of generation domain report high level of impatience and shorter attention span. One of the attempts to capture and maintain longer-term attention is gamification, a melting crucible of several theoretical domains (pedagogy, applied psychology) and behavioural design professionals use its applications in practise. In this paper I aim to relate motivation theory of learning to gamification in order to utilize its findings in business education. Learning motivation has extensive literature, as well as gamification, however the relation between them is not recognized deeply in empirical research. My work is based on literature review of respective theories and structured review of gamification frameworks, and is the first step in my series of research aiming to quantify this relation.*

Keywords: *learning motivation, goal orientation theory, education, gamification*

1 Introduction

Education today faces tough challenges. Main influencing factors are changes in global business and economy and transformed demand for labour market resulting in changing requirements for skillset of fresh graduates. From the perspective of the latter it is vital to understand that the skills and qualities of the incoming freshmen are also changing. Universities face the following dilemma: their mission is to prepare the subsequent graduates to solve problems that are more complex but at the same time it is more time and resource consuming to make proper knowledge transfer to generation Z freshmen.

This research paper first outlines the general challenges educators are facing in chapter 2. Chapter 3. outlines motivation theories respective to learning, including interventions that seem to be a very important link between learning theories and gamification. Chapter 4. discusses gamification concepts while chapter 5. connects gamification and learning motivation theory, followed by the conclusions in the final chapter. Finally, this exploration aims at business education due to the corresponding corporate and teaching experience of the author.

2 Education in whirlwind

2.1 Gradual changes in economic thinking and education

The prolonged global and system level subprime catastrophe of 2007-2009 has been the first major global crisis since the Great Depression of the 1930s. Mainstream economists have been caught off-guard, even worse, their proposed "therapies" to treat the contagion that has spread – from the relative small sized lending cluster in the US – to basically all economies, did not prove to be efficient. Global economy gradually recovered, but economic thinking seems largely unaffected (Bekaert et al. 2014, Lucas et al., 2017).

Science disciplines tend to get isolated due to specialization, however as scientific challenges become more and more complex, developed and tested procedures are borrowed from different fields and thus interdisciplinary approaches emerge: principles and methods become integrated, synthetized resulting in new knowledge (for example biochemistry or astrobiology).

Such assimilation exists between economics and behavioural science that can be utilized among economists to better understand and approximate reality in their models. The approximation of these fields enables us to study decisions, behaviour or even the impact of gamification on behaviour– as it will be later elaborated in this paper.

2.2 Influence of the digital age

Information is easy to access for anybody with internet connection. As available information has no almost limits, former dependencies between parties have also changed: the relation between retailer and consumer, or teacher and student. This also means that (a) there is too much information to handle and (b) some pieces of information get obsolete quickly, so real time access is of uppermost significance for members of the society. As the on demand access to information has spread, knowledge has become less of a differentiator. Researchers (Schwas and Samans, 2016, Kai-Holger, 2016, Smith, 2017) point out the importance of creative problem solving as well as the ability to connect through different domains to foster innovation. Participants must be able to navigate and locate information and also must be able to understand, interpret and criticise it. Finally, they need to be digitally fluent to communicate effectively through digital media. The question is how to prepare students for this challenge? It is evident, that the learners today are significantly different from the students of yesterday (Jones et al., 2007). The amount of information in the digital age is so overwhelming that students in the digital age are easily distracted and impatient. Digital material shall be specific and available anytime anywhere (Kai-Holger, 2016). For a successful knowledge transfer it seems vital to understand the digital age learners' characteristics better.

2.3 Generations – think different, act different, learn different

The term generation refers to a group of people who live in the same time span (Jones et al., 2007). They are formed by the main influencing factors that shape society in their era. The late 20th and the 21st century has been mostly impacted by developments in technology. New platforms of communications have emerged, distances have shortened, new lifestyle, social connection and brand new consumer behaviour have evolved. For this paper generation Z (also referred to as Millennials) and generation Y (also known as the Silent generation) actors are the target group due to their age and potential university studies.

Tari (2015) describes Millennials as people with the demand for everything right now. They are online all day and experience a significant portion of their personal relations in the virtual world.). Online glimmering and offline anxiety is a part of their everyday life. Whereas you can be anything and everything, you also fell that you can never be good enough and lack of self-confidence. Immediate feedback (likes, reactions, answers) is essential for them. This is where their usual impatience and – compared to previous generations – weaker concentration abilities originate from. Digital addiction exists because social media usage increases dopamine level (Ritvo, 2012), the neurotransmitter that forms feeling of happiness and satisfaction. This works the same way as for example smoking, gambling or drug use. Any motivation system aiming to tie the attention of the impacted actors, must compete with this extremely strong influence (Zichermann and Linder, 2013). As both X and Y generations are impacted by technology and their attributes from this research paper's perspective are similar, I will borrow the denomination of Tari (2015) and use generation #yz for both.

Let's acknowledge that generation #yz actors are extremely efficient in navigating and finding information, professional in multitasking and information processing and have powerful visualisation skills. Building on their tech-savvy skills they are efficient self learners and have strong entrepreneurial approach. These are the attributes that educators have to build on.

2.4 Implications for educators

In order to effectively fulfil their teaching roles, universities are looking for answers to such questions, as how can universities create more value for students, employers and the world? How do fast pace technological advancements influence business education? Business schools cannot continue to teach standardized solutions to predictable problems (Kai-Holger, 2016). Learning experience must be engaging and relevant. In best case curriculum development shall be designed in a learner centered way and aligned with real "business-like" objectives.

Educational material and activity has be a mixture of formal, informal, collaborative (social) and experimental vehicles. "The right format for the right purpose, mixing formats makes learning more effective" (Chasse, 2017).Digital

age learners. need access to study resources, information, connect to peers as well as experts, or even the educators. Vice versa, feedback and support with regards to progress shall also available. Though learners of this era own their development and do it continuously, the quality of knowledge transfer is key, therefore the quality of attention and effort is vital. This is what learning motivation is about.

3 Motivation theory of learning

Publications relating to learning motivation usually do not offer quick wins and easy recepies to tackle student motivation. Reason being that learning motivation itself has quite complex mechanisms, mainly, being highly dependent on context. Therefore research suggests that motivating students shall be tailor made, on demand, on the spot, based on learning environment, student profiles. (Fejes, 2015)

Learning motivation research tries to find out why individuals invest time and energy to study and what factors influence their motivation. Zeynali et. al. (2019) approaches learning motivation from students perspective, and argues, this is a factor that makes the student feel the academic action meaningful. Deci and Ryan (1985) thought academic performance and underlying motivation is meant to engage the individual to invest effort into learning, in order to reach their academic goals.

Fejes (2015) argues that quick changes in technology and work processes bring about the constant evolution of relevant skills and the appearance of lifelong learning. it seems that competences required in the future can not be taught as such, because nobody is able to foretell what skills and pieces of knowledge will be required later. Therefore the most important task of educators is to support students in developing skills of acquiring new knowledge.

Pintrich (2000) summarizes learning motivation research under 3 directions. Task specific motivation research focuses on one specific task and the respective goal motivation and the individual's self assessment on actual performance. However, this domain does not investigate why the specific goals are chosen. Substance specific motivation research takes general approach on goals and the reasons as well, aiming to determine the reason behind the behavioural patterns to achieve the goals. Goal orientation motivational research is the middle ground between these, focusing on underlying reasons as well as perception on performance, thus creating the perfect toolset for education related motivation research. Therefore I focus on goal orientation theory.

3.1 Goal orientation theory

Goal orientation related literature divides the motives into goal mastery and performance related goals. Mastery related motivation relates to acquiring new pieces of knowledge and improvement of competences, while performance motivation is about the pursuit of presentation of personal capabilities. Literature

seems equivocal (Fejes , 2015) about the priority of mastery goals over performance goals due to the clear difference of aiming at learning itself or rather at comparison between classmates that could result in negative feeling of failure. Those individuals who follow mastery goals compare their achievement to themselves ("did I learn it?", "did I develop?") while students with stronger performance goal relate themselves to "competition". Below I refer to Maehr and Meyer (1997) to summarize the concept as a whole. As literature emphasizes interventions mainly relating to mastery goals I will use only the mastery ide of the goal orientation theory to map with applied gamification logic.:

	Mastery goals	Performance goals
Success	Self-improvement, innovation, creativity	Better grades/performance than peers
Value	Effort, try to solve complex challenges	Avoid failure
Satisfaction	Improved competences, knowledge	Be the best in the team; success vs. effort
Work/performance	Learning, exploit individual learning capabilities	Be the best in the team; success vs. effort
Source of effort	Internal; individual "doing" is important	Demonstrate own values and achievements
Evaluation criteria	Absolute, focus on improvement	Social norms, comparison
Mistakes	Part of development, provides information	Failure, shows lack of capabilities
Competence	Improved by effort	Inherited, constant

Figure 1 - Comparison of mastery and performance goals
Source: Maehr and Meyer (1997, p. 388.)

The above-mentioned driving factors have their counterparts in the gamification framework shown later on in this paper.

3.2 Interventions

Based on Epstein L. Joyce's 1989 work on Family structures and student motivation Kaplan and Maehr (2007) highlight the importance of interventions with regards to student motivation. Interventions are classroom level programs, or even types of behaviour of the educator to strengthen learning motivation. The authors cite a representation of interventions with regards to domains of Task, Authority, Recognition, Grouping, Evaluation, Time (TARGET dimensions). Relating to mastery goals, and the corresponding link between mastery goal interventions and gamification, I used Kaplan and Maehr (2007) table to summarize this model.

Domain	Dimension description	Support in mastery goal
Task	Types of learning activities and tasks	Diversified, challenging tasks
Acknowledgement /Authority	Formal and informal positive feedback, encouragement	Focus on the individual improvement
Responsibility	Offer independent work and feeling of control	Encouragement of active participation, personalized tasks
Group work	Seating, group tasks allocation	Individual and team assignments
Evaluation	Evaluation and feedback of work	Offer opportunity for growth relating to tasks, diverse methods for demonstration of results
Time	Quantity of work, speed of work	Involve students into schedule preparation

Figure 2 – TARGET dimensions
Source: Kaplan and Maehr (2007, p. 159)

It has to be highlighted that learning motivation is highly context dependant. The essential task of educators is to support students in developing their capabilities to acquire new knowledge. Pedagogical practise and theory emphasizes potential interventions among TARGET dimensions in order to motivate learners, increase their attention and willingness to do their work.

A possible set of methods to anchor attention and increase engagement is within the field of gamification. In the last part of this paper the overall scheme of gamification will be explained among a practical toolset of gamified approaches, followed by the explanation of relation between gamification elements and learning motivation.

4 Gamification

Gamification is the use of game design elements in non-game context as defined by Zichermann and Linder (2013). Practically, these are a set of methods, mechanics that are used to draw and maintain attention. The flow of a seminar session, testing, homework preparation, the whole course or even entrance tests can be gamified by mechanics, such as narrative, feedback, point or badges, or missions (Rigóczki, 2016).

4.1 Gamification frameworks

Mora et al. (2015) in their literature review of gamification frameworks enlist 22 structures of gamification. They categorize them by being complete framework (or not), being generic (or specific) and academia or business relations. Within the enlisted frameworks Yu Kai Chou's Octalysis (Chou, 2017) is acknowledged to be generic and complete. Its building blocks are motivational drivers and as such, in my opinion, are comparable to learning motivation theories. Finally, though having scientific base, Octalysis has been developed in practise, through examination of computer games, resulting in practical and applicable toolset for designing, or analysing processes. After careful consideration of the models and

deeper understanding of Octalysis I propose to compare practise and theory through Octalysis and goal setting theory.

4.2 Octalysis

Octalysis is a framework for process analysis and design. The idea behind is that individuals making decisions about taking part in an activity, and to what extent, can be driven by 8 basic psychological drives.

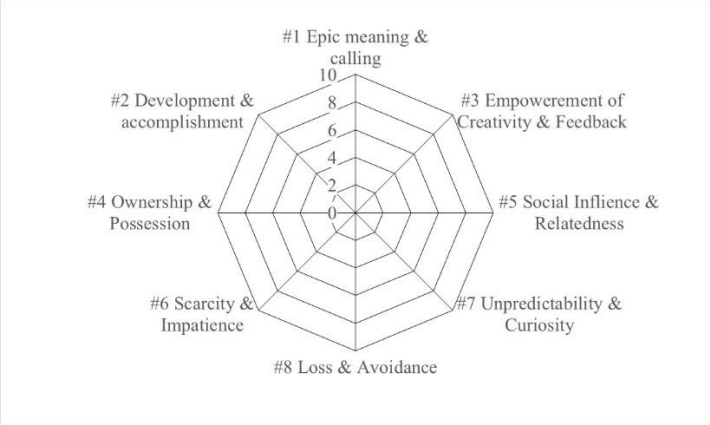

Figure 3 - Octalysis Framework
Source: You-Kai, 2017

These drives described by the author as follows. ***#1 Epic meaning and calling*** is a drive experienced by those who feel that they are a part of something bigger/more important and strive to contribute to this greater good. Such behaviour is the voluntary contribution to free Wikipedia article related work, or other contribution to a forum or other community**.** ***#2 Development and accomplishment*** is an intrinsic motivational force about progress, personal development and defeating challenges. It is important to note that gamified gifts (badges, points, etc.). do not reflect the same meaning without challenges. ***#3 Empowerment of creativity and feedback*** relates to piloting and repetitions of activities to find out the best solution. It is essential to live out the creativity from within and also to be able to see its result, hence feedback**.** ***#4 Ownership and possession*** drives people by endowing them with the feeling of actually possessing, or owning something, or feeling in control. Most of the points, badges and virtual remunerations belong here. ***#5 Social influence and relatedness*** accumulates social factors that motivate people, such as mentorship, social acceptance, companions and social reactions. Individuals driven by #5 feel being drawn to other people (or places, events) they can relate to. ***#6 Scarcity and impatience*** drives people who want something just because they do not have that. Typical example would be appointment dynamics on a web page (visit again at a later point to gather badge, etc.). ***#7 Unpredictability and curiosity*** steers individuals' attention to what will happen next. Very frequently used concerning TV series, books or any other material with

narratives. Finally, ***#8 Loss and avoidance*** drive makes us try to avoid a negative event. Fading opportunities, potential loss of work done are such examples.

4.3 Relation between Octalysis and the goal orientation theory

As discussed earlier learning motivation in practical terms can be applied through interventions, changes in pedagogical methods. In this chapter I aim to connect TARGET related activities with Octalysis, therefore forming a relation between theory and practice. Though these relations are based on the author's grammatical understanding of the phrases of Octalysis as well as learning motivation, the terms are quite abstract and the author judges that such level of abstraction leaves space for comparison of seemingly separate ideas.

The comparison is made by assigning Octalysis core drives to TARGET dimensions. **T**asks relate to #2 Development and accomplishment. **A**cknowledgement can be connected to #3 Empowerment of creativity and feedback as well as #5Social influence and relatedness. **R**esponsibility is linked to #4 Ownership. **G**roup work can be attributed to #1 Epic meaning and #5 Social influence and relatedness. **E**valuation has much in common with 2 Development and accomplishment and #3 Empowerment of creativity and feedback. Finally, **T**ime is accounted for in #6 Scarcity and #8 Loss avoidance.

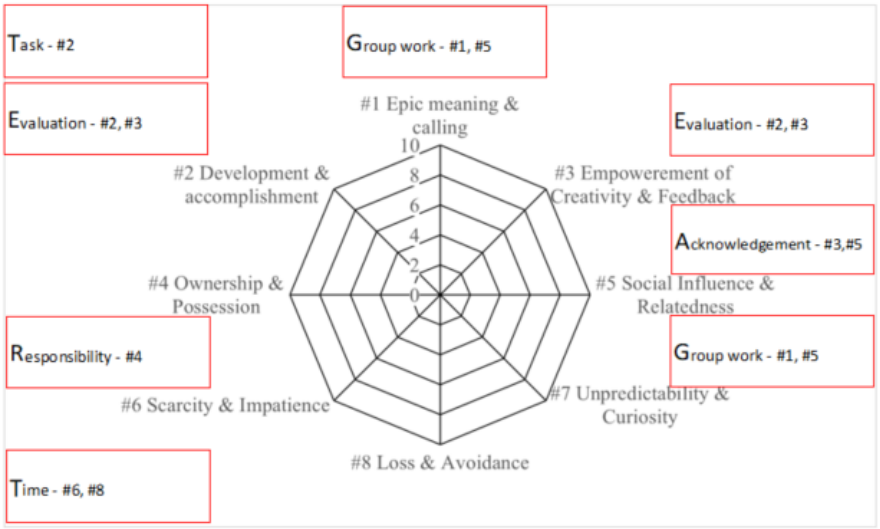

Figure 4 - Octalysis and learnin motivation building blocks together (edited by the author)

The importance of learning motivation connected to practical (actionable) gamification concept is that academic literature as well as business practice is rich

in examples of game elements[4] that are connected to core motivational drives. Though learning motivation is strongly determined by context, having a wide plate of possible tricks and hints up the sleeve of the educator gives opportunity for a new educational experience.

Conclusions

Education is in facing serious challenges, driven by digital age relating to changing habits, information technology and social media. Within the set of education, business and economics educators meet their own challenges originating from the even more complex markets, organizations and systems.

The impact of the most conspicuous generation #yz attributes has been discussed. Generations evolve over each other and differ from the previous generations, determined by changes of their era. The education system must adapt at least due to two reasons. On one hand, primary and secondary schools have already started alternative approaches to effective teach students who develop new learning behaviour and tactics. Students, who enter universities tomorrow, will learn in a different way. On the other hand, future jobs will require skills, such as creativity, initiative, critical thinking, resilience, attention to detail and complex problem solving (Schwas and Samans, 2016) which gives new direction for the education system. From pedagogy perspective the core challenge is to receive and anchor the attention of students and for this reason gamification seems a viable solution. There is wide literature with empirical research about the beneficial impact of gamified teaching, but the link between benefits and learning motivation research has not been fully explored. As learning motivation research has well known methodology it seems useful to connect the two motivational approaches, and if there is correlation, the impact of gamification could be approximated based on a well documented and widely used survey of learning motivation.

The core challenge in the next steps of this research is the mapping of survey questions to their closest gamification / Octalysis pairs potentially by slight changes in wording. Gamification literature offers a rich treasure chest of applied tool for pedagogy, so the outcome of this research can be a validated inventory of gamification tools and their (content dependent) impact on learning motivation.

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Marketing Practices of a Sportorganization – The marketing value of Falco – Vulcano KC Szombathely Basketball Team

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Abstract: *In this study I have been examining the marketing activity and value of the Falco-Vulcano Energia KC. The team does not have a huge legacy or past considering the other teams in the league. The organization is going to be only 40 years old this season (Komodi 1999). Falco has been established in 1980 by „some fanatics", for instance, György Gráczer and István Németh. Due to their enthusiasm, the organization is flourishing ever since. My aim is to introduce the Hungarian sport marketing status and within it, I would like to focus on the Falco Vulcano Energia KC men's basketball team in the 2017th season in particular. A very similar study had been published in this respect [8], but numerous reasons are supported me to carry out this research again. First of all, I would like see what had happened during the past eleven years. Because of this I presume that I can observe some kind of a change, which I can record, whether if it is showing a positive or a negative trend. Once I have done this, I would like to inspect the performance in the international stage and its effects. These two have never been studied before. Therefore, my research definitely provides some new, unknown information.*

Keywords: *sport economic, sponsorship, satisfying the sponsors*

1 Introduction

The Hungarian sports funding system had been changed during the past period, by which we can observe certain sings connected to this. At first, we can see that the supporting mediums of sports are being created still to this day, and their existence are supported [9][18]. Secondly, the adjustments in the taxation system, provided an increase in the founding sector, which of course contributed to the welfare of the clubs in general. On top of this, a serious amount of government funds have been transferred to the sport sector. These actions mentioned above, contributed significantly to the income of the Sports Non-Governmental Organizations (NGO), and in parallel the sports businesses earnings are multiplied, however it is worth to mention that this is not just a Hungarian trend. We can see this worldwide [9][12]. It is absolutely important, that the organizations and the league must use these increased funds to cover the long term goals, and to think in longevity, not just in short term expenditures. Racking up talented players in one team, does not mean a championship trophy immediately, but the amount of talents has an effect on the performance. They go side by side. [5][6][17].

Agreeing with the thoughts above, in professional sport, the performance or efficiency is vital. In order to maintain the funding of these organizations, they have to

win. These organizations are based on business funding, which means they can create their own income from the 5 markets of sport [1][2].

In my research, I had been looking for numerous answers for my questions. First of all, I would like to know that, one of the oldest member of the Hungarian first league, which had been established by today's president György Gráczer in 1980 [13], whether they were able to successfully utilize the opportunities, which these changes provided throughout these years. And how big is the marketing value of the organization.

The team begin their competition in the international series back in the 2015-2016 season, where they could achieve notable victories, but in the perspective of my research, the effect of these victories on the sponsors were relevant and significant.

2 Literature research

2.1 Advertiser or sponsor

For my study, these terms - sponsor, advertiser and patron - or in other words supporters, are inevitable to understand. Unfortunately, these terms are mixed in many literature and they are confusing in terms of difference related to each other. The common sense thinks, that these terms are synonyms. That is why I would like to clarify their exact meanings, in order to avoid any kind of confusion.

"In a sponsorship agreement the sponsor commits liability to support the selected athlete, team organization or the federation via funds or provides "benefits in kind", the sponsored, in turn allows that, his sporting activity can be and will be used in the sponsor's marketing activity" [19]. Within the sponsor law, this definition is specified, that the sponsor can expect some kind of a counter service, for their marketing activity. The sport itself is a vital and important tool for the companies to advertise, because the traditional media had become very expensive. [4][11].

The sport events and matches are extremely good platforms to the advertisers and sponsors [12]. The advertisers main goal is the create a connection between the spectator in the easiest way possible. They want to use the team, to advertise those goods, definitely to put some charming in it. They can earn financial and emotional benefits against their rivals or competition. [3][4][8][10][11].

The advertiser is orientated in the selling of the goods, whilst a sponsor is interested in the development of the image, and to raise awareness or gain acquaintance. Besides of these two, the patron also plays an important role in the life of a sports organization. The main difference between lies deep in the

mutuality. While the sponsor and the advertiser gets back some value, the patron's and organization's relationship is one-sided and there is no return value. [7][8][14][15][16].

Nowadays patrons expect social capital in exchange for the donation. The sponsors can be divided into sub groups by numerous principles. Which can be seen in the 1st table. According to Brooks (1994) there are four types.

1. table: Types of sponsors, based on Christine M. Brooks (1994) own editing

Type of Sponsor	Characteristics	Advantages	Disadvantages
Exclusive Sponsor	The denominator of the events or teams. They have full rights and say.	They merge with the team Can reach a lot of spectators. They have the full income	Way too much commitment Big responsibility Enormous amount of investment
Primary Sponsor	A team has numerous primary sponsors They have good display platforms	Not a huge financial commitment They share the risks They got the media's attention	They have to cooperate with the other primary sponsors
Secondary Sponsor	The sponsor's goods are connected to the sport. Like stopwatch - running	Spectators might associate to other things Small financial commitment	Weaker appearance platforms Moderate attention from spectators
Official Supporter	Their goods are not connected to the team. That is the main difference between the Official and the secondary sponsor	Can be anything • Alcoholic drinks • Beverages • Tobacco goods • Credit card	It is worth during bigger events • Olympics • Football Word Championship • etc.

3 Survey of the sponsorship research framework

In this current season Falco has more than 100 sponsors. With my study, I wanted to understand, the motivation of the sponsors and advertisers. To achieve my goal, I have created a survey which contained 12 short questions connected to this

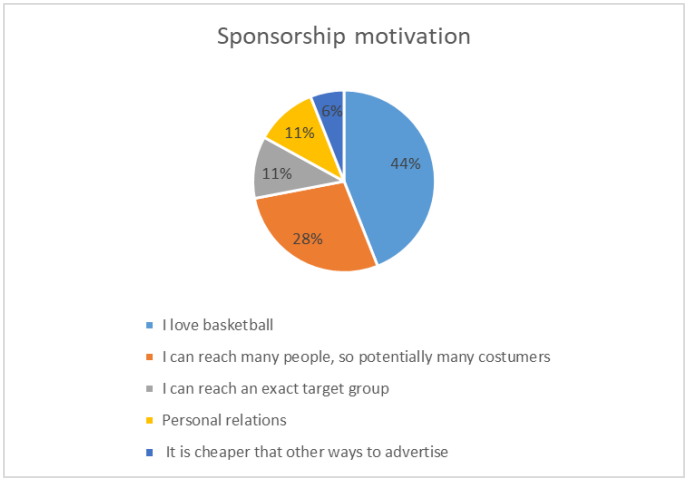
subject. I had sent over 100 e-mails to the backers of the Falco-Vulcano Energia KC. The reply rate was low, so the results are not representative, however from the received answers I was able to figure out some intriguing facts, which I want to show with some diagrams.

3.1 Motivation of the Sponsors

In my research I have previously mentioned that the terms of sponsor, advertiser or patron are easily mixed or confused. I wanted to know that those sponsors whom I asked, that what are they thinking about themselves or what are they considering themselves? As a patron, as an advertise or as a sponsor? I was really curious about it. I would like to show you a graph connected to this.

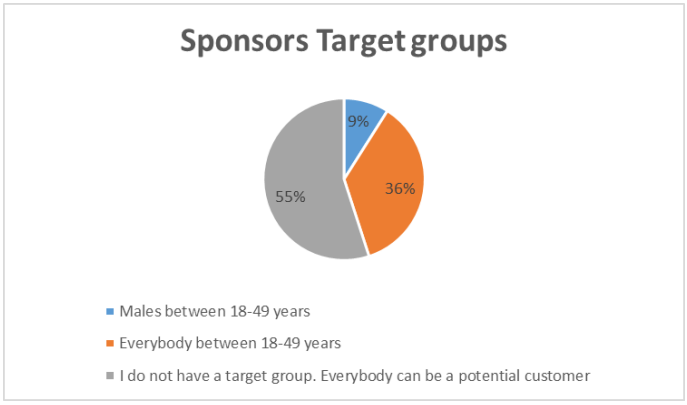
1. diagram: A Falco-Vulcano Energia KC's backers distribution (self created diagram)

The majority of those who had done the survey, made their decisions based on business goals, because they think about a team as an opportunity to advertise. It is a good thing that those wealthy people can and want to support their beloved team. Szombathely has the reputation of being a sport lover city. This statement is backed by the businessmen's support. As you can see on the diagram above. One question was about their exact motivation. I have created an another diagram to show you the results.



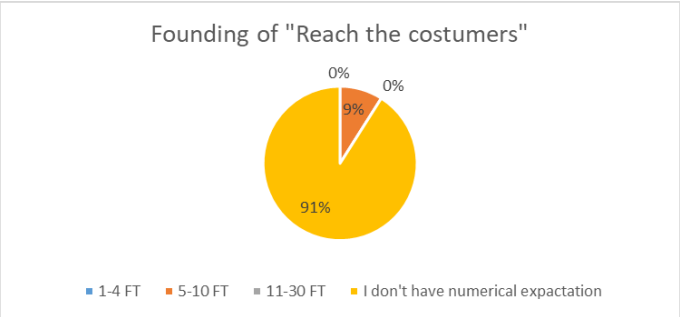
2. diagram: A Falco-Vulcano Energia KC' sponsor's motivation (Self Created diagram)

It is clear from the given answers that the love of sport plays an important role in Szombathely, and in the business life instead. The other main motif is the number of the attendance. When the team plays at home, the spectator's number can reach over 2000 and 2500. During the game, the attendance can meet numerous advertisement throughout the 2 hours' average length of the game. Plenty of companies choose this type of advertising because of the crowd. By the help of my survey I got an answer to this as well.



3. diagram: A Falco-Vulcano Energia KC' target group distribution (Self created Diagram)

However, it is important, to reach a specific target group, but plenty of companies do not have this kind of a requirements.



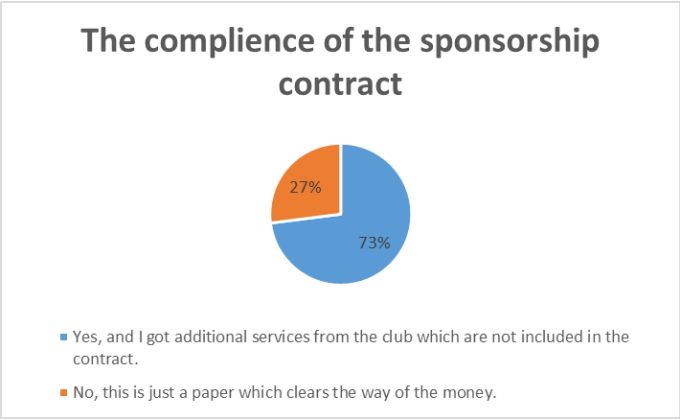
4. Diagram: A Falco-Vulcano Energia KC's sponsor's fund to reach I costumer (Self created diagram)

It is very similar to the target groups, because there are also a lot of companies who do not have a numerical requirement. This is not a business mindset, because the sponsors do not care about the funding of reaching 1 individual.

According to Muszbek (2016)- in the case of football, considering the watchers in front of the television- the funding amount / 1 individual can reach about 0,5-3 HUF, so it is interesting that some of the sponsors have highlighted the amount of 5-10 HUF.

3.2 Satisfaction of the sponsors

I have another aim which is I want to show the satisfaction of the sponsors. My survey's second half included some questions about these factors. In what ways the requirements of the club and sponsors met.



5. diagram: A Falco-Vulcano Energia's sponsoral contrants (Self created diagram)

The diagram shows that the responder's 72% got the facts included in the contract. Moreover, there are additional services from the club. The team provides 4 extra or additional services to their sponsors and backers, so is certain that those man leave with a positive picture about the team. This is a great initiative from the

team, because this can mean an attracting force to other sponsors, to build a social capital during the games of Falco. The team has acted already to create such an atmosphere with the establishment of the VIP room, where members can have conversations before and after the games.

4 Discussion

In my research, my aim was to learn and introduce how the professional basketball team works with their sponsors. We can say that Falco-Vulcano Energia KC's marketing activities is enough and they potentially maxed out. In my opinion, there is still much to learn, but we have a great example. The North American sport teams are the best in every aspect. Of course we cannot draw a parallel between the North American and the Hungarian market, but we can get some inspiration from them. It is also a big problem that because of the TAO (financial support for the visual and team sports) system, the teams are not dealing with the advertising. I would like to do an another research about this topic in the future, which will give us a more specific picture for the teams and the sponsors. During marketing studies there is a method which applies the eye tracking camera in order to figure out what and where to look. Some spectators will apply these "go-pro" like cameras and the researcher can see where are they looking real time. This is important because the advertisers can adjust their advertisements to be more attractive. Muszbek Mihály and the Sportunio have developed a video analyzing system, which can track eye movement and which advertisement catches the spectators' attention. In my opinion it worth a try to initiate such an action during a basketball game, because we can learn a lot new from the results.

The research was made in the framework of NTP NFTÖ-19 - Nemzet Fiatal Tehetségeiért Ösztöndíj (NTP-NFTÖ-19-B-0068)

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Finally, but most importantly I would like to thank to my family and friends for motivating me during this times.

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Diversity of stakeholder perception – Snapshot of family and non-family companies

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Abstract: *In this paper, we report about the first findings of the most recent round of the "In Global Competition" research programme with a focus on differences and similarities of businesses with and without family ownership and management. We explore their perception of and attitude toward various stakeholder groups. Our sample is populated with more than 200 companies operating in Hungary, out of which more than 50 businesses are in family ownership and management. Small and medium-sized businesses have often been seen as firms that pursue a special responsibility towards their employees and local communities, two main directions of their local embeddedness. We are providing our current snapshot suggesting a change in this regard.*

Keywords: *family business, stakeholder management, employees*

1 Introduction

Small and medium-sized enterprises (SMEs), including family businesses, play an important role in the economy, not only in terms of their quantity but also due to their closer links with consumers and their environment. In this paper, we examine the orientation of executives of Hungarian firms towards their stakeholders – their perceptions about the importance of various stakeholder groups, their expectations towards stakeholders, and their perceptions concerning stakeholders' expectations. We aim to explore differences and similarities in the orientation of leaders of family-owned and managed firms and non-family businesses. The empirical study was based on the relevant questions from a survey of more than 200 companies carried out in 2018 by the Competitiveness Research Centre of Corvinus University of Budapest.

2 Research background

The role of family businesses in the economy is significant and growing. Based on the data collected by the Family Firm Institute (2017, quoted by Kása et al., 2019), globally family businesses account for approximately two-thirds of all businesses, 70 to 90 percent of GDP, 50-80 percent of workplaces. 85 percent of startups are launched with the investment of family businesses. In Europe, they account for 70-80 percent of all companies, providing 40–50% of workplaces on average (Mandl, 2008, quoted by Reisinger, 2013). One estimation suggests that in Hungary 50-70% of firms are family-owned and managed (Reisinger, 2013), another arrives at 57-66 percent (Kása et al, 2019).

Family-owned and managed firms are important not only because of their number, but also due to their size and local embeddedness: they may be able to build more direct relationships with their environment and stakeholders as well as maybe more open to corporate social responsibility (CSR) by linking family and business values (Benedek, Takács-György, 2016).

Since our research focuses on orientation towards their stakeholders, let us start with a seminal definition of stakeholders here. Edward Freeman (1984) identified stakeholders as agents that can influence the implementation of the corporate objectives or have an interest in achieving those objectives. He stated that successful companies should take into account their stakeholders' claims and needs if they want their success to be sustainable (Freeman, 1984). A differentiation of primary and secondary stakeholders weas made by characterizing the group of primary stakeholders being composed of actors without whose participation the firm cannot survive. This group includes shareholders and investors, employees, customers, suppliers, and the public stakeholder group (such as government and communities). Contrary to this, secondary stakeholder groups are not engaged in transactions with the firm and they are not essential in its survival Clarkson (1995).

Ever since the seminal paper of Donaldson and Preston (1995) both the normative and instrumental aspects of stakeholder theory and stakeholder relations are discussed, also with the focus of family businesses (see e.g. Neubaum et al, 2012; Marques et al, 2014). One of the most recent articles, Déniz-Déniz et al (2020) not only looks at the orientation of family businesses toward certain stakeholders, but also connects this orientation with economic performance.

In this research, we built on the "performance prism" concept of Neely et al. (2002) who propose to explore the needs and expectations of stakeholders (investors, customers, employees, regulatory authorities, suppliers and strategic partners, local communities, etc.), as well as to investigate how these different actors can contribute to the success of the company. One of the novelties of their approach is the emphasis on the reciprocal nature of the relationship between the firm and its stakeholders, and also the strategic implications of these relationships.

We also build on Wimmer and Mandják (2002), who argue that stakeholder relationships could become value drivers for companies.

Small and medium-sized businesses have often been seen as companies that pursue a special responsibility towards their employees and local communities, two main directions of their local embeddedness (see e.g. Matolay et al, 2007 and Benedek, Takács-György, 2016). Based on a litterature review of 35 articles van Gils et al. (2014) stated that family businesses are more attuned and attentive to social issues and stakeholders than nonfamily business. Noneconomic motivations (e.g., reputation, socioemotional wealth, and stewardship) appear particularly salient to family enterprises. (van Gils et al. 2014) A family business must apply business and family principles at the same time, as Reisinger (2013) highlights, and may also be better suited to CSR, as personal and humane elements may be much more prominent in their operations in addition to purely for-profit principles. (Benedek et al, 2015)

Based on all this, we can assume that social issues are stronger in the case of a family owned and managed enterprises, as well as they can be more embedded, more directly related to their environment and can be more successfully built on direct relationships with their employees, customers, supplier or local communities. Our empirical research examines this orientation.

3 Research methodology

Our empirical research is based on a survey completed in the frame of the "In Global Competition" research programme of Competitiveness Research Centre at the Corvinus University of Budapest. The fundamental goal of the survey was to explore the competitiveness of the Hungarian microsphere. Similarly, structured surveys were conducted in 1996, 1999, 2004, 2009, 2013, and 2018, each with four questionnaires (targeted to executives; managers responsible for finance; operations and services; sales and marketing). The survey enquires executive opinion, its results do not provide an objective truth (Chikan et al., 2002, 2009), therefore it allows for insights to the views, approaches and perceptions of corporate decision-makers.

In our research, we built on the questionnaire for executives of the most recent survey. Its sample of 234 firms represents a group of companies key to the competitiveness of the domestic market. The vast majority (more than 80%) are medium-sized companies, most of them (more than 60%) based in Budapest and Central Hungary. Half of our sample operates in manufacturing, 10% in the construction industry, and 40% in the service sectors. Almost three-quarters of the respondents are dominantly Hungarian-owned, and the proportion of international ownership is slightly higher than 25 percent. (Chikán et al., 2019)

In the database, 56 companies (26%) are considered as a family business, where executives declared that (1) a family has ownership of at least 50% in the company, and (2) the owner and/or his/her family member(s) are actively involved

in the management of the company. This feature of the sample is in line with the definition provided earlier as well as that of Kása et al (2019).

The number of employees is introduced in Figure 1: the entire sample, as well as the family and non-family businesses are shown here.

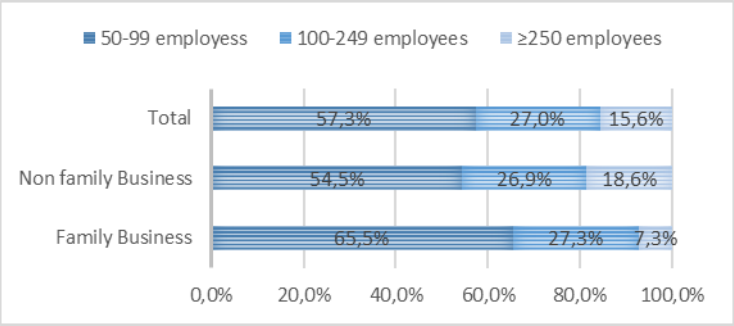

Figure 1
The sample of the research

Source: based on the database of Competitiveness Research Centre, 2018

In our analysis, we built on the questionnaires filled in by executives. They were asked to evaluate the importance of integrating the opinion and interest of various stakeholder groups, as well as different statements concerning their stakeholders' needs and wants; also the expected stakeholder contribution (firms' needs and wants toward the stakeholders). Responses were provided on a 5-point Likert-scale (5 – totally agree and 1– totally disagree).

4 Research findings

In this chapter, we outline the first findings of the competitiveness research concerning executives' views on various stakeholder groups. Table 1 summarizes the opinion of executives with regard to the importance of integrating the interest and opinion of stakeholders into executive decision-making. Owners are considered the number one stakeholder group in this respect in the entire sample – 4,7 on the 5-point Likert scale is the perceived importance when looking at the opinion of all respondents – followed by customers and managers. Non-managerial employees, suppliers and the natural environment are in the midfield, local communities, media, state, and trade unions are declared as relatively less important.

There is no significant difference in the perception of the importance of owners, customers, and managers across the groups of family and non-family businesses. All stakeholder groups are considered less important by family businesses, except

the state. There is a significant difference between the two groups for the media and trade unions – a plausible explanation is the smaller size of family businesses. A remarkable result is the relative underestimation of the importance of non-managerial employees, suppliers, and local communities (see the perceived importance of integrated employees's opinion 4,25 vs. 3,63 in the case of non-family and family-owned and managed firms, 4,21 vs. 3, 41 towards suppliers, 3,44 vs. 2,77 towards loval communities). This contradicts the assumption that family businesses are more embedded and pay more attention to their environment and immediate stakeholders.

	Family business	**Non-family business**	**Total**	***Differencies (Family business – Non family business)***
Owners	4.70	4.75	**4.74**	*0.05*
Customers	4.23	4.40	**4.35**	*0.17*
Managers	4.09	4.29	**4.24**	*0.20*
Non-managerial employees	3.63	4.25	**4.08**	*0.63*
Suppliers	3.41	4.21	**4.00**	*0.80*
Natural environment	3.41	3.79	**3.69**	*0.38*
Local communities	2.77	3.40	**3.23**	*0.63*
Media	2.39	3.30	**3.06**	*0.91*
State	3.32	2.97	**3.06**	*-0.35*
Trade unions	2.23	3.29	**3.00**	*1.05*

Table 1

Integration of the stakeholder's interests and opinions – importance perceived by executives

Source: analysis based on the survey of the Competitiveness Research Centre

In the questionnaires, executives were asked to evaluate statements concerning their stakeholders' needs and wants (their perception about stakeholders' expectations) as well as concerning their needs and wants toward their stakeholders (i.e. expected stakeholder contribution). Results of earlier surveys are presented in Szántó and Wimmer, 2007; Esse et al, 2012. Figures 2-5 present the results by main stakeholder groups (shareholders, employees, customers, suppliers).

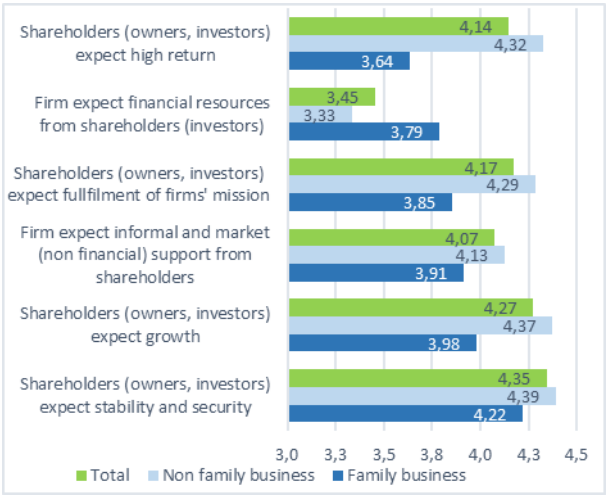

Figure 2
Orientation towards shareholders

Source: analysis based on the survey of the Competitiveness Research Centre

Executives expect reliable, high standard work, as well as loyalty from their employees (4,59, 4,43 average). Looking at their opinion about their employees' needs (see Figure 3), one finds lower numbers for employee expectation for stability (4,37), high salaries (4,32), or good workplace and development opportunities (4,25). These contradictions are much stronger among family businesses: they expect reliable work (4,47) and loyalty (4,4) similarly to other managers, but they are much less receptive to the expectations of their employees (e.g. 3,95 for expectations of a good workplace).

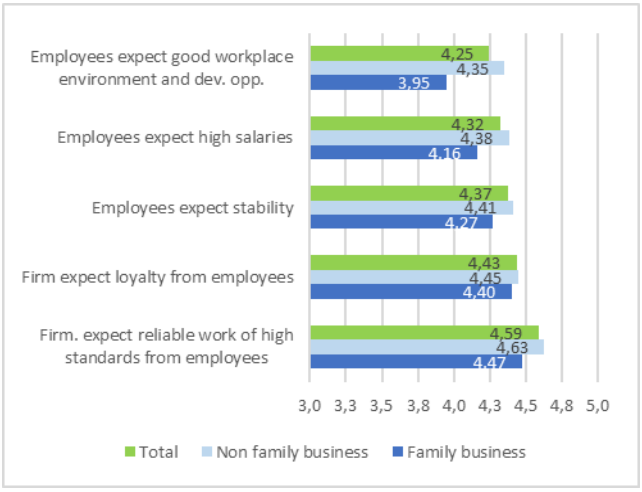

Figure 3

Orientation towards employees

Source: analysis based on the survey of the Competitiveness Research Centre

There is no significant difference in orientation towards customers between family and non-family businesses (see Figure 4). At the same time, family businesses reckon supplier relationships less important, and also seem to expect less from their suppliers than non-family owned and managed firms (Figure 5).

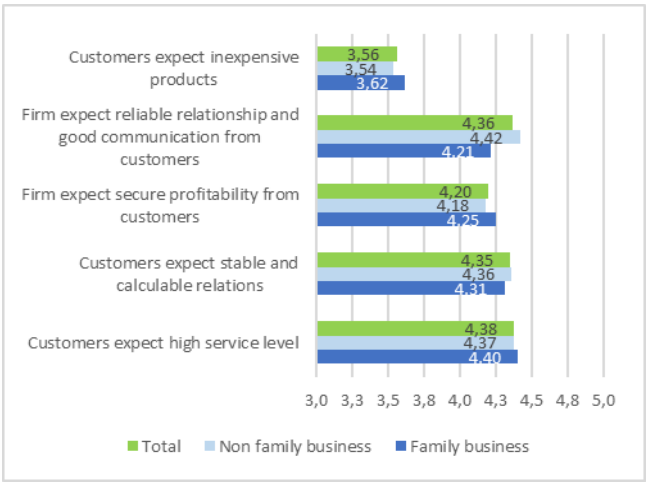

Figure 4

Orientation towards customers

Source: analysis based on the survey of the Competitiveness Research Centre

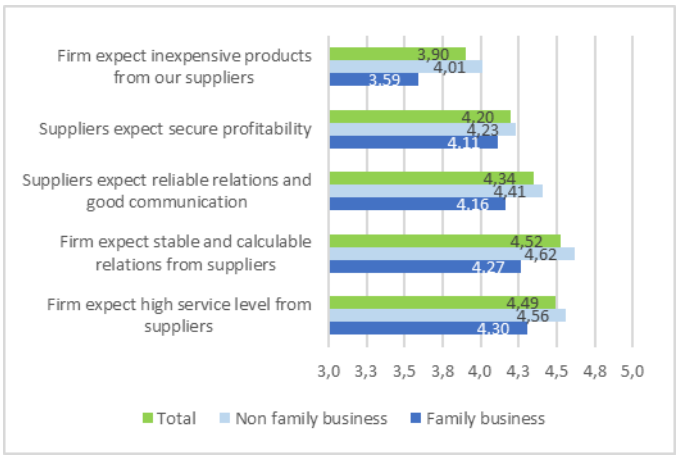

Figure 5
Attitudes towards suppliers

Source: analysis based on the survey of the Competitiveness Research Centre

Although employee and supplier relationships could become important resources for companies, family businesses seem to capitalize on those. They integrate less the opinion and interests of these stakeholder groups into their decisions, and do not consider them as value drivers.

Furthers results of the analysis reveal that the perceived performance of family businesses (based on managerial self-assessment and perception about themselves) lags more behind the industry average than that of the non-family businesses. This difference is less pronounced in terms of operational performance characteristics (quality of product and services, quality management, and technology) and more explicit in terms of market and financial performance (market share, return on sales, return on investments). The exploration of the causes is planed in the upcoming stage of the research. This includes the examination of the productivity, capabilities of the companies to see a potential reason for the harder perception and self-assessment of owner-executives.

Conclusions

The focus of our paper was to compare the attitudes of family and non-family businesses towards their stakeholders. Based on previous research and literature, we assumed that family businesses are more embedded in their environment and have a more direct relationship with, pay more attention to the stakeholders. Based on the analysis of the survey results of a sample of more than two hundred companies of the “In global competition” research programme, we found that family businesses (which account for over a quarter of the sample) have similar attitudes towards customers as non-family firms. There is no significant difference

between family and non-family businesses neither in their approach to managers nor to owners. Not surprisingly, they perceive the media and the trade union as less important. Surprisingly though, employees, suppliers, local communities, and the natural environment are also perceived as less important. Contrary to preliminary expectations, there is no greater commitment to stakeholders among family business leaders. We consider it necessary to continue the research to explore the reasons via qualitative methods.

As the first results of the research show, companies that pay more attention to stakeholder relationships are more successful in terms of various dimensions of business performance. Consequently, a further research question on whether stakeholder relationships can be a value-creating factor for family businesses can be formulated. Value co-creation, embeddedness, information benefits, flexibility, etc. are among potential factors – the question ahead is whether the effect of these can be identified and demonstrated in better performance.

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