MEB 2021

MEB 2021 - 19th INTERNATIONAL CONFERENCE ON MANAGEMENT, ENTERPRISE AND BENCHMARKING

18-19 June 2021 at ÓBUDA UNIVERSITY, BUDAPEST, HUNGARY

Proceedings

Organized and sponsored by
Keleti Faculty of Business and Management
Óbuda University, Hungary

In cooperation with
ERENET Network

19TH MANAGEMENT, ENTERPRISE AND BENCHMARKING
„BUSINESS IN REAL VIRTUAL WORLD"
18-19 JUNE, 2021, ÓBUDA UNIVERSITY, BUDAPEST, HUNGARY

ISBN 978-963-449-265-8 MEB — 19th International Conference on Management, Enterprise, Benchmarking. Proceedings (MEB 2021) (PDF)
managing editor: Keszthelyi András, Szikora Péter
edited by Fehér-Polgár Pál

Óbuda University

Keleti Faculty of Business and Management

Budapest, MMXXI

Table of Contents

The Role of Advanced Technologies on E-Commerce Sales During (Covid-19) Pandemic Time

Sanela Arsić, Đorđe Nikolić, Isidora Milošević, Milena Jevtić, Ivan Jovanović

University of Belgrade, Technical Faculty in Bor

saarsic@tfbor.bg.ac.rs, djnikolic@tfbor.bg.ac.rs, imilosevic@tfbor.bg.ac.rs, mjevtic@tfbor.bg.ac.rs, ijovanovic@tfbor.bg.ac.rs

Abstract: Thanks to the appearance of the Internet and the ongoing digitalization of modern life, today, consumers from all world have a need to use electronic commerce (E-commerce). Nowadays, especially due to the emergence of the COVID-19 pandemic that led to limited human activities, there is a need to clarify how enterprises can find new opportunities in the digital business environment. Hence, the purpose of this study is to examine how using of advanced information and communication technologies (ICT) impact sales which realise through e-commerce in enterprises in the EU countries. This research is based upon quantitative from the Eurostat database for 2020 data. The analysis has involved the enterprises which achieved at least 1% turnover with e-commerce sales. The results obtained using the Multiple Linear Regression (MLR) indicates that cloud computing services the most contribute to e-commerce in COVID-19 time.
Keywords: E-commerce sales, enterprises, EU, information and communication technologies

1 INTRODUCTION

Electronic commerce (E-commerce) represents the process of buying and selling goods in a digital environment using online platforms and websites on the Internet (Ghandour & Woodford, 2020). E-commerce is one of the most dynamic industries to have come up and which change very fast following the modern needs of the market and end consumers. Hence, the number of digital buyers also increase every year. In 2020, over 2 billion people purchased goods or services online, while e-retail sales surpassed 4.2 trillion US dollars worldwide (Coppola, 2021). These are just some of the facts that indicate the mass use of E-commerce. The main advantages of E-commerce to traditional trade are reflected creating an E-commerce website can be fast and easy, the operational costs for setup are lower, the use of websites and applications for E-commerce is easy, there is no time limit during the buying, greater availability of better products (Ghandour & Woodford, 2020). In spite of significant technological advancements, E-commerce and has some drawbacks (Tokar et al., 2021). In an online environment, consumers cannot physically see or try the desired product before making

purchase decisions (Lee et al., 2010), exist additional shipping costs, and the reliability of the seller can be questioned (Jędrzejczak-Gas et al., 2019).

The computerisation of society contributed to the development of E-commerce in EU countries. Today, E-commerce is using frequently, and as such becoming growingly important in all market segments, and occupies a significant share in total trade (Jędrzejczak-Gas et al., 2019). In order to enhance administrative cooperation between the EU countries has been adopted the foundational legal framework for online services and is the E-Commerce Directive which aims to remove obstacles in the provision of cross-border online services (European Commission, 2021). Using modern information and communication technologies (ICT) in enterprises contribute to improve the information management process, increase the reliability and speed of transactions for both business-to-business and business-to-consumer transactions. In addition, digital technologies are an effective tool for improving communication, promote the quality of services for new customers and keeping existing (OECD, 2004). The annual ICT indicators from the Eurostat database provide a snapshot of the active enterprises which use ICT in business, hence, the aim of this paper is to show how using of advanced ICT impact E-commerce sales. It is especially interesting to analyze these data during 2020 due to the COVID pandemic and the limited physical movement of people, when most of them were redirected to online shopping.

In light of previous facts the rest of this paper, through the following sections, is organised. After the introduction section, the second section presents the literature review of the E-commerce sales. The third section provides used methodology based on the Multiple Linear Regression, followed by a presentation of key findings in the fourth section. Finally, the last conclusion section considers the limitations and recommendations for improvements.

2 THEORETICAL BACKGROUND

The COVID-19 pandemic has disrupted consumer activity and business operations of enterprises and had a strong impact on the digital transformation of enterprises (Guthrie et al., 2021). E-commerce during COVID-19 time is a topic evidenced in numerous scientific papers.

The COVID pandemic has significantly affected the expansion of demand for e-commerce, which is why e-commerce has become a daily routine for a large number of consumers (Abiad et al., 2020). However, due to high demand, there were difficulties that appeared during delivery. Namely, many companies faced delays in deliveries because the countries were locked and the import and export of goods were difficult (Hasanat et al., 2020). Kim (2020) and Verma & Gustafsson (2020) were dealing with the investigation of the impact of COVID-19 on consumption behaviour. Ghandour & Woodford (2020) were investigated the impact coronavirus has had on the E-Commerce industry of the UAE before and during COVID-19 and determined a positive relationship in both periods. Based

on a detailed analysis of the scientific literature about COVID-19 research and the environmentally imposed constraints Guthrie et al., (2021) using a case study they investigated underlying behavioural motivations and causal mechanisms. The obtained results showed that consumers hoarded essential pharmaceutical goods during the COVID period. Bhatti et al., (2020) found that this whole new situation has led to high demand for certain products such as protective masks and disposable gloves, alcohol and disinfectants, in addition, people also have accumulated a lot of grocery products.

Changes in the market that have occurred due to the growing number of E-commerce users also have significantly affected the workforce. Biagi & Falk (2017) were examined the impact of ICT and E-commerce activities on labour demand before the COVID-19 pandemic. They determined that in the service industries, manufacturing industries, SMEs and large companies, the increase in E-commerce activities over time has not brought to a decline in jobs. However, The COVID-19 pandemic had a negative effect on the tourism industry, and the plane industry, as flights were suspended and arrangements cancelled (Bhatti et al., 2020), hence, the workers didn't work in that period.

During the pandemic period due to the larger volume of work, in order for companies to be able to operate successfully, it is necessary to effectively manage E-commerce platforms (Tran, 2021). Jędrzejczak-Gas et al. (2019) investigated the level of development of E-commerce in the EU and found that the most developed countries were Germany, Denmark, Czech Republic, while the lowest development of E-commerce found in Romania, Bulgaria, Malta and Cyprus.

In addition to the above, the promotion of E-commerce sales is also an important driver for successful management, development and increase in sales volume. With this issue, Habel et al. (2021) were dealing. This group of authors developed a theoretical framework that indicates important determinants of promotion using E-commerce channels.

3 MATERIAL AND METHODS

Based on empirical analysis of data from the EUROSTAT open database during 2020 in this research examines the impact of ICT usage in enterprises on E-commerce sales. In analyse were involved 26 EU countries that use advanced ICT in enterprises (except Greece, because of missing data) during the COVID-19 pandemic period. Analised information and communication technologies were divided into six groups (3D printing and robotics, Artificial intelligence, Big data analysis, Cloud computing services, Supply chain management, Internet of things). The defined research model is presented in Figure 1.

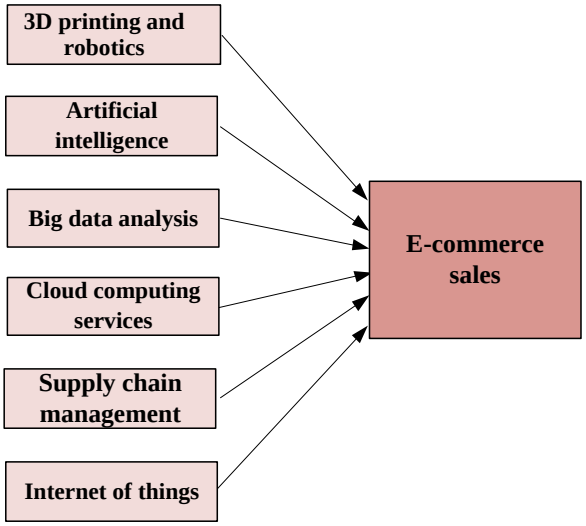


Figure 1.

Defined research model of E-commerce sales

A multiple linear regression model was employed for predicting the impact of independent variables on the dependent variable. In the defined model (Figure 1) E-commerce sales present a dependent variable, while the independent variables are advanced digital technologies that use enterprises today.

3.1 Multiple linear regression model (MLR)

Multiple linear regression (MLR), is a statistical technique that is used when want to predict the linear relationship between the dependent variable (the outcome, target or criteria variable) and two or more explanatory (independent) variables (Shams et al., 2021). Generally, the MLR model can be expressed as in Eq.1:

$$Y_i = b_0 + b_1x_1 + b_2x_2 + b_3x_3 \ldots + b_nx_n + e_i \quad (1)$$

The dependent variable is Y, while, X_1, X_2, …Xn are the independent variables, and b_1, b_2, … b_n are vector of regression coefficients, and e_i is random measured errors (Olsen et al., 2021). In the present study, SPSS 22 was utilized to calculate the MLR models.

4 DISCUSSION OF RESULTS

Statistics of the data set for the analysing impact of digital technologies on E-commerce sales are depicted in Table 1. Mean values of percentage participation of enterprises indicate that Artificial intelligence is least used in enterprises (2.19) and 3D printing and robotics (4.69). On the other hand, enterprises most use Cloud computing services (38.22) and integration systems with customers/suppliers (30.69).

Table 1. Statistics of the data set for the prediction of E-commerce sales

	Min	Max	Mean	Median	SD	Skewness	Kurtosis
3D printing and robotics	2	9	4.69	5	1 .91	0 .329	-0 .440
Artificial intelligence	1	5	2.19	2	0 .98	0 .687	1 .012
Big data analysis	3	29	11.53	9	6 .85	0 .973	0 .182
Cloud computing services	11	75	38.22	34	17 .41	0 .574	-0 .624
Supply chain management	10	95	30.69	22	22 .85	1 .555	1 .742
Internet of things	3	18	6.46	6	3 .02	2 .483	8 .229

It was first analyzed the percentage share of enterprises that achieved at least 1% turnover with E-commerce sales. Based on the use of advanced digital technologies all EU countries (except Greece) were examined and obtained results are represented below. Only Greece is excluded from the analysis because data in this country were not collected for 2020. Figure 2 shows the percentage share of enterprises in EU countries that use 3D printing and robotics technologies in their business.

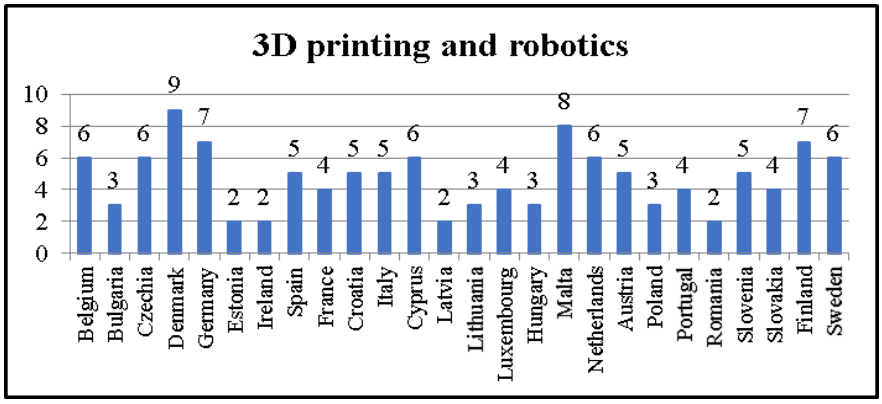


Figure 2.

Percentage share of enterprises in EU countries that use 3D printing and robotics

Three-dimensional (3D) printing construction techniques have been increasingly developed in recent years and a number of enterprises applicant them in practice. Using advanced 3D printing technology can achieve high flexibility and efficiency in production (Xiao et al., 2021). The EU countries whose enterprises use the most 3D printing and robotics are Denmark (9%), Malta (8%), Germany and Finland (7%). These are highly developed countries that follow the needs of the market. The percentage share of enterprises in EU countries that use artificial intelligence technologies in their business depicts in Figure 3.

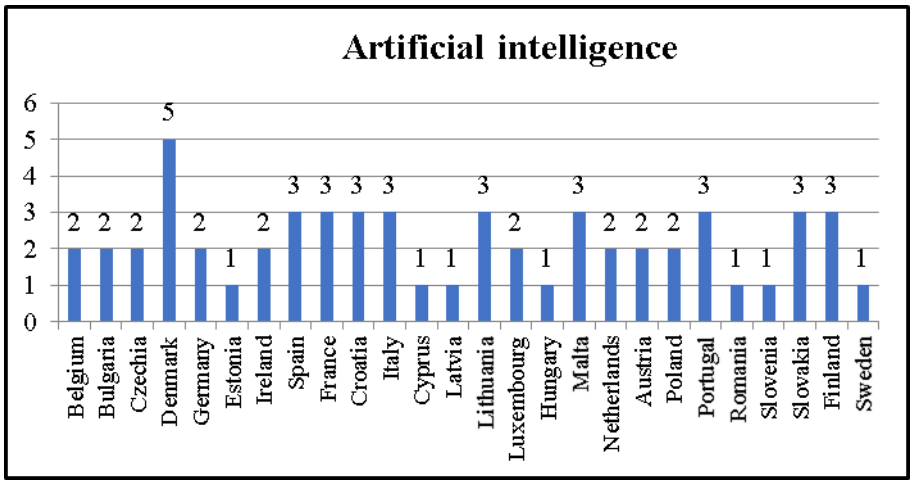


Figure 3.

Percentage share of enterprises in EU countries that use artificial intelligence

Artificial intelligence (AI) is a new generation of information and communication technologies, which has attracted much attention from industries, academia and governments. Artificial intelligence is a compilation of logic, computer science, philosophy, psychology, biology, and many other disciplines, and it has achieved remarkable results in applications such as image and natural language processing, speech recognition, processing, the proving of automatic theorems, and intelligent robots (Zhang & Lu, 2021). Most EU countries use artificial intelligence technologies uniformly, ie, very few, at most 3% of enterprises. Only enterprises in Denmark use AI a little more (5%). Figure 4 represent the percentage share of enterprises in EU countries that use big data analysis.

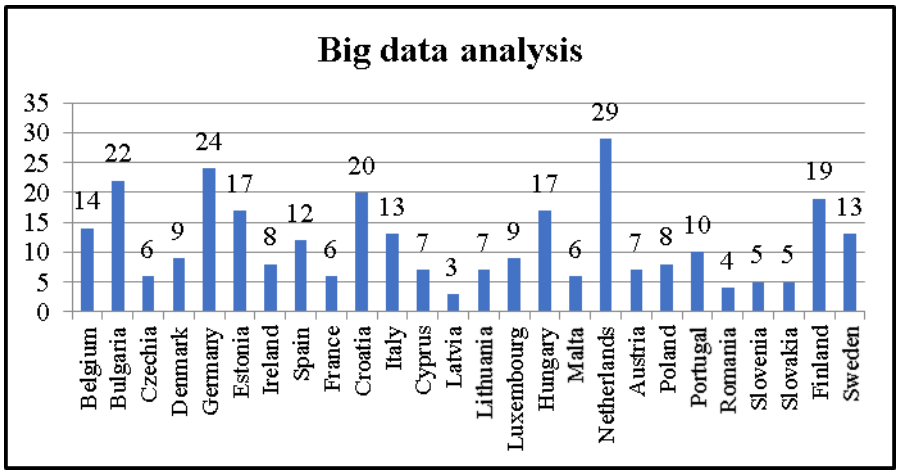


Figure 4.

Percentage share of enterprises in EU countries that use big data analysis

Big data analysis requires analyzing large amounts of data in order to discover the hidden patterns and make correct decisions in the business. Enterprises that use the power of technology and data are more objective data-driven. In many enterprises, the human resources department needs big data from different processes. Big data faced various problems from big data storage security problems (Yang, 2021). This segment of information technologies in all EU countries is significantly more used. The best-ranked country is the Netherlands with as many as (29%) enterprises, followed by Germany (24%). It is surprising that Bulgaria (22%) is in third place because it is one of the least developed EU countries. In addition to Bulgaria, another Balkan country is highly ranked, and that is Croatia with (20%). The share of enterprises in EU countries that use cloud computing services in their business shows in Figure 5.

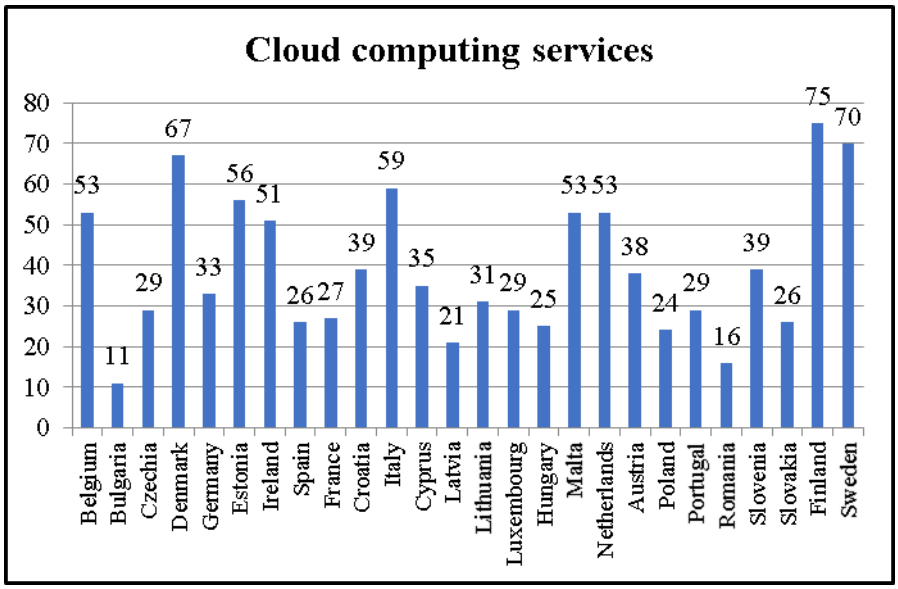


Figure 5.

Percentage share of enterprises in EU countries that use cloud computing services

Enterprises to achieve mass production in lower time, ensure the satisfaction of the customer, achieved dynamic management of customer orders and overcome restricted time to market the product, enterprises use cloud-based technologies (Brintha et al., 2021). This technologies offers leasing and utilizing manufacturing possessions, whenever the needed resources are based on demand to promote elasticity. Cloud computing services are represented in both more developed and less developed EU countries. A very high percentage of enterprises in Finland (75%) use these services, as well as in Sweden (70%) and Denmark (67%), while enterprises in Bulgaria (11%) use cloud computing services the least. Figure 6 shows the percentage share of enterprises in EU countries (except Greece) that integrated with customers/suppliers.

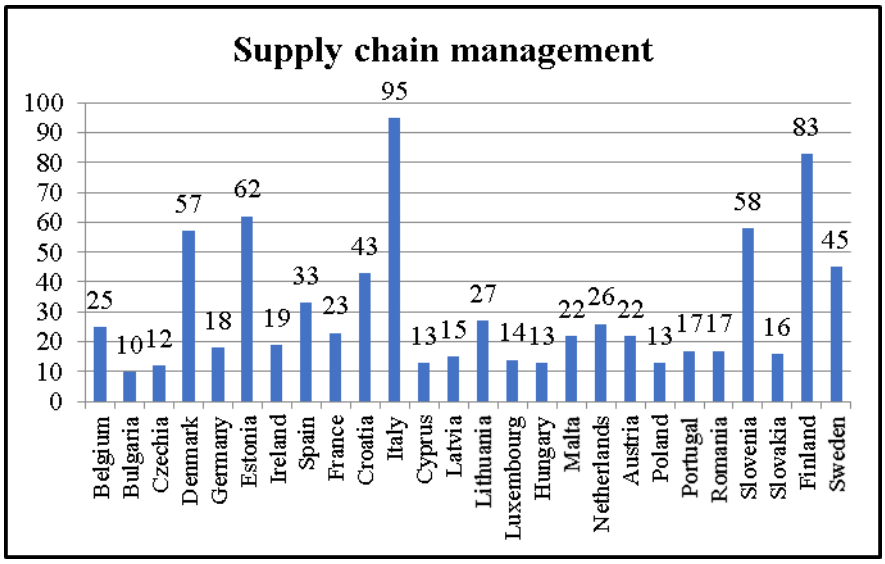


Figure 6.

Percentage share of enterprises in EU countries that use supply chain management

The managing supply chain has become complex due to globalization, strong competition and rising needs of customers on the market (Yadavalli et al., 2019). This process related to the active management of the flow of goods and services and includes all processes that transform raw materials into final products in order to achieve sustainable competitive advantage. This structural process consists of product development, sourcing, production, and logistics, as well as the information systems needed to coordinate these activities (Handfield, 2020). The most dominant country when it is a word about supply chain management in enterprises is Italy (95%), Finland (83%), Estonia (62%), while enterprises in Bulgaria (10%) use supply chain management the least, i.e the enterprises are not integrated with customers/suppliers. The share of enterprises in EU countries that use the Internet of things in their business shows in Figure 7.

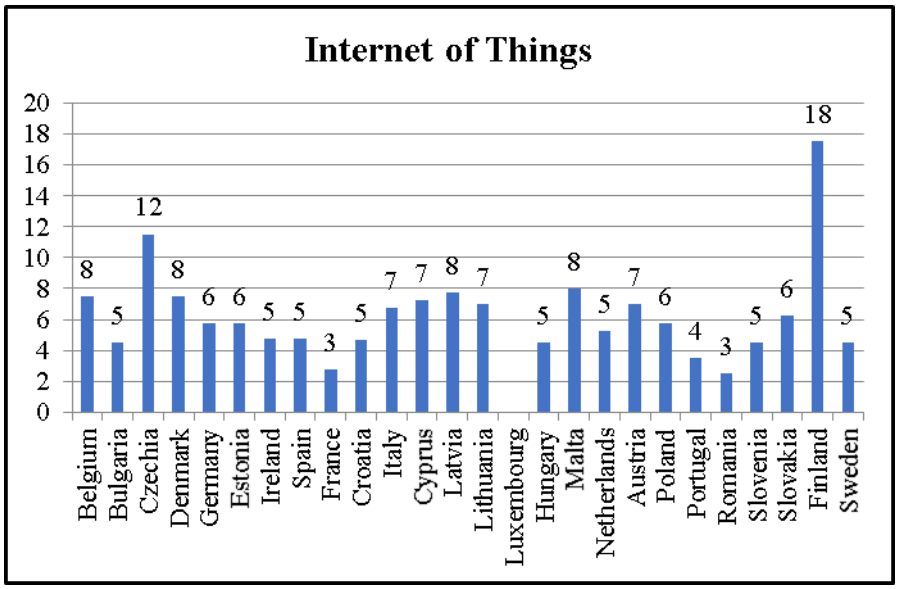


Figure 7.

Percentage share of enterprises in EU countries that use Internet of things

There are a lot of platforms for the Internet of things that have been developed. However, most of them are made for certain implementations and don't manage the current limitations of the recent systems. Internet of things is the key driving factor behind transforming all technology aspects (Ahmed, 2021). One of the advantages of advanced technologies related to the Internet of things is their availability by low costs, distance accessibility and the possibility of the connectivity of devices (Turjman, 2019).

In considered EU countries the enterprises using some of the following Internet of Things types: sensors RFID IP-tags, movement or maintenance sensors, sensors or RFID tags, Internet-of-Things devices. It is determined that within Finland (18%) and Czechia (12%) enterprises most use some of the analysed Internet of Things, while in the other EU countries this percentage is lower than (10%).

Table 2 shows the correlation matrix of the main independent variables. In addition to the values of each of the correlations, an asterisk was shown the p-value for the two-tailed test which indicate statistical significance at the 0.05 level, while two asterisks, which indicated statistical significance at the 0.01 level. It can be concluded that there is a medium and strong relationship between all variables.

Table 2. Correlation table with the two-tailed significance level (p-value) for the correlation coefficent

	3D printing and robotics	Artificial intelligence	Big data analysis	Cloud computing	Supply chain management	Internet of things
3D printing and robotics	1					
Artificial intelligence	0.480*	1				
Big data analysis	0.405	0.970	1			
Cloud computing services	0.571**	0.458	0.557	1		
Supply chain management	0.600	0.574	0.404	0.721**	1	
Internet of things	0.435*	0.208	0.830	0.470*	0.370	1

* Correlation is significant at the 0.05 level (2-tailed).

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

To estimate E-commerce sales the Multiple linear regression was employed. Obtained results are shown in Table 3. Firstly, the multiple correlation coefficient, coefficient of determination and F-test were calculated and obtained the following results. The multiple correlation coefficient (R) represents a measure of the quality of the prediction of the dependent variable and a value of 0.712 in the defined research model points out a good level of prediction. Additionally, the coefficient of determination (R^2) represents the proportion of variance in the dependent variable that can be explained by the independent variables, therefore, in the defined model independent variables explain 50.7% of the variability of the dependent variable (E-commerce sales). The F test depicts if whether the overall regression model is a good fit for the analysed data. The obtained results show that the regression model is a good fit for the data $F(6, 18) = 3.090$, $p < 0.05$.

Table 3. Results of the Multiple Linear Regression model

	Estimate	SE	t value	Sig.
3D printing and robotics	0.050	0.946	0.053	0.958
Artificial intelligence	2.713	1.497	1.813	0.087
Big data analysis	-0.240	0.190	-1.259	0.224
Cloud computing services	**0.375**	**0.126**	**2.973**	**0.008**
Supply chain management	**-0.176**	**0.084**	**-2.109**	**0.049**
Internet of things	-0.293	0.487	-0.601	0.555

In this survey of EU countries (excluding Greece) about the impact of the implementation of contemporary ICT on E-commerce sales, it is found significant relationships between the frequency of Cloud computing services and e-commerce sales, as well as between Supply chain management and e-commerce sales ($p < 0.05$ for each).

Specifically, it was determined a 0.18% decrease (±0.084) in the Supply chain management (integration with customers/suppliers) impact e-commerce sales of at least 1% turnover. One of the reasons is due to COVID 19. International supply chains have become disrupted due to the lockdowns of countries all over the world (Ghandour & Woodford, 2020). If the EU wish to emerge as a leader in the E-Commerce industry of the world, they will have to carefully expand their supplier base by starting trade with new international partners.

Also, it is determined that a 0.38% increase (±0.126) in the frequency of using Cloud computing services impact positive on increase E-commerce sales. The development of cloud computing was caused information technologies to become an inexpensive public resource that is accessible to all people. Additionally, information technologies are not the core competency of an E-commerce enterprise, hence, an E-commerce enterprise can dealing more with management and business processes (Wang, 2013).

The rest analysed variables such as 3D printing and robotics, Artificial intelligence, Big data analysis and the Internet of things were not show statistical significance to the prediction of e-commerce sales, $p > 0.05$.

Conclusion

EU countries have successfully transferred their physical business operations on online E-Commerce channels while maintaining consumer demand during the COVID pandemic. The results obtained using the Multiple Linear Regression (MLR) indicates that cloud computing services the most contribute to E-commerce in COVID-19 time and improved the advancement of digital buying, and selling. These results have several theoretical and managerial implications. The EU policy should draft specific policies that direct all enterprises to use not only cloud computing services but also to intensify the use of other advanced digital technologies. With these findings, our study helps managers to improve their ICT structure and keep pace with the growing needs of the market.

Nevertheless of contributions, this study has some limitations that can provide motivation for additional research. This study analyzed data from 2020 on the EU countries, but in 2021 the world was still witnessing the spread of the COVID-19 pandemic. Due to the growing need for E-commerce sales, the results of this study can not confidently be generalized. Hence, the research model of this study could be tested in further research, targeting larger samples from other continents and markets to confirm these results.

Acknowledgement

The research presented in this paper was done with the financial support of the Ministry of Education, Science and Technological Development of the Republic of Serbia, within the funding of the scientific research work at the University of Belgrade, Technical Faculty in Bor, according to the contract with registration number 451-03-9/2021-14/200131. Also, the authors are grateful to Sandra Vasković, the English language teacher for the English language edition of the paper.

References

[1] Abiad, A., Arao, R.M., Dagli, S. (2020). The economic impact of the COVID-19 outbreak on developing Asia.

[2] Ahmed, M.S. (2021). Designing of internet of things for real time system, Materials Today: Proceedings.

[3] Bhatti, A., Akram, H., Basit, H.M., Khan, A.U., Naqvi, S.M.R., Bilal, M. (2020). E-commerce trends during COVID-19 Pandemic. International Journal of Future Generation Communication and Networking, 13(2), 1449-1452.

[4] Biagi, F., Falk, M. (2017). The impact of ICT and e-commerce on employment in Europe. Journal of Policy Modeling, 39(1), 1-18.

[5] Brintha, N.C., Winowlin Jappes, J.T., Johnny Christo, N., Adam Khan, M. (2021). Adopting cloud computing for service integration – Wind mill blade manufacturing SMEs in India, Materials Today: Proceedings, 45(2), 1568-1574.

[6] Coppola, D. (2021). E-commerce worldwide - Statistics & Facts. Available: https://www.statista.com/topics/871/online-shopping/#dossierSummary Retrived: 17.05.2021.

[7] European Commission, (2021). E-commerce Directive, Available at: https://digital-strategy.ec.europa.eu/en/policies/e-commerce-directive. Retriwed: 24.05.2021.

[8] Ghandour, A., Woodford, B.J. (2020). COVID-19 Impact on E-Commerce in UAE. Paper presented at the 2020 21st International Arab Conference on Information Technology (ACIT), Giza, Egypt.

[9] Guthrie, C., Fosso-Wamba, S., Arnaud, J.B. (2021). Online consumer resilience during a pandemic: An exploratory study of e-commerce behavior before, during and after a COVID-19 lockdown. Journal of Retailing and Consumer Services, 61, 102570.

[10] Guthrie, C., Fosso-Wamba, S., Arnaud, J.B. (2021). Online consumer resilience during a pandemic: An exploratory study of e-commerce behavior before, during and after a COVID-19 lockdown. Journal of Retailing and Consumer Services, 6, 102570.

[11] Habel, J., Alavi, S., Linsenmayer, K. (2021). From personal to online selling: How relational selling shapes salespeople's promotion of e-commerce channels. Journal of Business Research, 132, 373-382.

[12] Handfield, R. (2020). What is Supply Chain Management (SCM)? Available: https://scm.ncsu.edu/scm-articles/article/what-is-supply-chain-management-scm Retriwed: 06.06.2021.

[13] Hasanat, M.W., Hoque, A., Shikha, F.A., Anwar, M., Hamid, A.B.A., Tat, H.H. (2020). The Impact of Coronavirus (Covid-19) on E-Business in Malaysia. Asian Journal of Multidisciplinary Studies, 3(1), 85-90.

[14] Jędrzejczak-Gas, J., Barska, A., Siničáková, M. (2019). Level of development of e-commerce in EU countries. Management, 23(1), 209-224.

[15] Kim, R.Y. (2020). The impact of COVID-19 on consumers: preparing for digital sales. IEEE Engineering Management Review, 1, 1.

[16] Lee, H.-H., Kim, J., Fiore, A.M. (2010). Affective and Cognitive Online Shopping Experience. Clothing and Textiles Research Journal, 28(2), 140-154.

[17] OECD, (2004). ICT, E-business and SMEs. Conference of Ministers Responsible for SMEs, Instanbul, 1-47.

[18] Olsen, A.A., McLaughlin, J.E., Harpe, S.E. (2020). Using multiple linear regression in pharmacy education scholarship. Currents in Pharmacy Teaching and Learning. In press.

[19] Shams, S.R., Jahani, A., Kalantary, S., Moeinaddini, M., Khorasani, N. (2021). The evaluation on artificial neural networks (ANN) and multiple linear regressions (MLR) models for predicting SO2 concentration. Urban Climate, 37, 100837, In press.

[20] Tokar, T., Jensen, R., Williams, B.D. (2021). A guide to the seen costs and unseen benefits of e-commerce. Business Horizons, 64(3), 323-332.

[21] Tran, L.T.T. (2021). Managing the effectiveness of e-commerce platforms in a pandemic. Journal of Retailing and Consumer Services, 58, 102287.

[22] Turjman, F.A. (2019). Artificial Intelligence in IoT, Springer Science and Business Media, Berlin, Germany, 93-105.

[23] Verma, S., Gustafsson, A. (2020). Investigating the emerging COVID-19 research trends in the field of business and management: a bibliometric analysis approach. Journal of Business Research, 118, 253-261.

[24] Wang, D. (2013). Influences of Cloud Computing on E-Commerce Businesses and Industry. Journal of Software Engineering and Applications, 6, 313-318.

[25] Xiao, J., Ji, G., Zhang, Y., Ma, G., Mechtcherine, V., Pan, J., Wang, L., Ding, T., Duan, Z., Du, S. (2021). Large-scale 3D printing concrete technology:

Current status and future opportunities. Cement and Concrete Composites, 104115.

[26] Yadavalli, V.S.S., Darbari, J.D., Bhayana, N., Jha, P.C., Agarwal, V. (2019). An integrated optimization model for selection of sustainable suppliers based on customers' expectations. Operations Research Perspectives, 6, 100113.

[27] Yang, X. (2021). Business big data analysis based on microprocessor system and mathematical modeling. Microprocessors and Microsystems, 82, 103846.

[28] Zhang, C., Lu, Y., (2021). Study on artificial intelligence: The state of the art and future prospects. Journal of Industrial Information Integration, 23, 100224.

Research on Internal Control of Small and Medium-sized Enterprises – Luckin Coffee Inc., a Case Study

Chenhe Ge, Yameng Xue, Linfei Ma, János Rafael Harsányi, Andrea Tick

Óbuda University

tqp3ur@stud.uni-obuda.hu, ucxnw0@stud.uni-obuda.hu, ejm7v3@stud.uni-obuda.hu, harsanyi.rafael.janos.msc@stud.uni-obuda.hu, Tick.Andrea@uni-obuda.hu

Abstract: How to make your personal finances soar and become rich quickly is probably such a chance that everyone is thinking about and tries to snatch, while it is indeed a win-win situation for companies and shareholders to raise their share prices. On the other hand, a reasonable and legal approach is particularly important to avoid illegal activities and fraud. Based on the fraud triangle theory, the paper adopts a combination of qualitative and quantitative research methods, analyses the causes of corporate fraud from the perspective of management accounting by analysing the financial fraud case of Luckin Coffee Inc. The paper is an exploratory case study and the researchers have conducted secondary research based on secondary data and literate. The paper aims to give a deep analysis on fraudulent means such as inflated operating income, inflated costs and expenses, and related party transactions through the specific case study of Luckin Coffee Inc. Despite reforms to the penalties for financial fraud, cases are still emerging, and the amounts involved are not insignificant, so, it is worth to find out what factors attract companies to take the risk. Finally, countermeasures and suggestions are put forward in terms of improving the internal control system of listed companies, the system of independent directors, and strengthening the supervision of third-party auditors. Suggestions are made to the judicial department and social supervision department, aiming to provide insights and references for the prevention and control of financial fraud of listed companies, so as to promote the healthy and orderly development of the capital market.
Keywords: Internal control, Financial fraud, Fraud triangle theory, Luckin Coffee Inc., Small and medium-sized enterprises, Stock prices

1 Introduction

In recent years, with the rapid development of China's market economy, a lot of companies have made the first pot of gold in the capital market with the help of the new business model of mobile Internet, but also exposed a series of problems such as accounting information distortion, low operational efficiency and even forged financial statements. Financial fraud refers to a series of frauds against laws, regulations and financial standards in order to embezzle assets or prepare

false financial reports. Financial frauds include but are not limited to whitewashing financial statements, embezzling assets, and untrue information disclosure. As far as Enron, world com, Lantian shares, as near as Wanfu Shengke, Kangmei pharmaceutical and other financial fraud cases [1], the false financial information will make stakeholders make inappropriate judgments and decisions about market economic activities and interfere with investors' participation in capital market activities.

As a professional coffee retail operator under China's new business model, Luckin Coffee Inc. was founded in Xiamen, Fujian Province in June 2017 and listed on the NASDAQ in May 2019, therefore becoming the fastest listed company among Chinese coffee brands. In January 2020, Muddy Waters Research issued a short report, pointing out that Luckin Coffee Inc. has begun to fabricate financial and operational data since the third quarter of 2019. In April of the same year, Luckin Coffee Inc. issued an announcement admitting financial fraud. Taking this as an example, according to its financial statements, business operation mode and internal control mechanism of the company, this paper is structured as follows: background and significance of the study, relevant theories, causes of fraud, means of fraud, impact of fraud, countermeasures and recommendations. The paper uses the fraud triangle theory [2] to analyse the internal causes of fraud, provide experience for other listed companies, and put forward reasonable suggestions for the capital market supervision department to avoid the recurrence of similar events.

2 Literature Review

With the rapid development of China's market economy, some listed companies use financial fraud means, which not only damages the healthy development of the market economy, but also damages the interests of investors. In April 2020, Luckin Coffee Inc. listed overseas at the fastest speed under the new retail business model, which is a new O2O (online-to-offline) fast consumption retail business model. The combination of online and offline sales method includes the sales of coffee via internet; customers can online book the products through the Luckin Coffee Inc. APP and then go to the store to pick it up or wait by the store for delivery [1]. The new retail model draws potential customers from online channels to make purchases in physical stores. Customers are identified through emails and internet advertisement and targeting potential customers with the online ordering app they enter the shop and complete the actual purchase in the shop. The model includes in-store pick-up of items purchased online earlier or placing orders while queuing and being in the physical store. Similar possibilities and apps are also available for fast food restaurants for example. However, in the end, Luckin Coffee Inc. was involved in a public opinion whirlpool with fake sales of 2.2 billion yuan.

Financial fraud has attracted widespread attention from many scholars because of its pernicious effects on society and economic markets, among others. According

to the overall situation of one company in 2015 that was subject to administrative punishment for financial fraud published by CSRC in July 2019, Wang W. [3] identified the risk of fraud by using the US Auditing Standards No. 99 based on fraud triangle and put forward targeted suggestions. Wang X. [4] takes Kangmei Pharmaceutical as the research object, analyses the causes of financial fraud of Kangmei Pharmaceutical and its falsification methods through GONE theory, and proposes countermeasures to prevent financial fraud of listed companies based on the motives and methods.

The study of financial fraud often requires an inquiry into the reasons behind it. According to Li and Mao [2], the disclosure of various financial indicators is the basis for measuring the development status of enterprises. In order to stabilize the share price, comply with the listing conditions and attract financing funds, enterprises are willing to try to cash in on their interests through financial fraud. According to Zeng [5], the means of financial fraud include inflating business revenue, inflating revenue from other products, inflating costs and expenses, and connected transactions. Among them, the inflated costs and expenses can achieve the result of matching the inflated revenue and diverting the inflated costs and expenses to the loss-making shops, for example erasing the loss-making financial figures and ensuring that the shops have funds to continue their operations.

Financial fraud cases often have a motive behind them. According to Liu [6], the motives can be divided into the following four points: 1. Lagging legislation of legal supervision mechanism and insufficient punishment. 2. Deficiencies in internal corporate governance structure. 3. Imperfect internal control system and lack of effectiveness of external supervision mechanism. 4. Low professional ethical level and professional quality of financial personnel of listed companies.

According to Qi and Wang [7], regulators around the world are not strong enough because of high supervision cost and imperfect supervision system, which provides a "hotbed" for the illegal acts of financial fraud of listed companies.

While legal oversight is important, internal governance is the sharpest blade to kill financial fraud in the first place. According to Li M. [8], independent directors have a positive effect on reducing fraudulent financial reporting. However, the introduction of the independent director system alone, without the control and accountability system for independent directors, cannot substantially improve the quality of financial reporting.

In addition, Zhang [9] has found that there is a close relationship between financial fraud and the design and implementation of internal control. Qi and Tian [10] selected 2,195 listed companies in Shanghai and Shenzhen during 2007-2008 as the research subjects. They created a new conceptual model of the factors affecting internal control deficiencies and used Logit regression as the benchmark for analysis. Li and Wen [11] analysed the influence of the control environment, risk assessment, control activities, information, communication and supervision on the business performance of listed companies in the internal control quality. It has

been found that the quality of internal control has a positive influence on business performance and strengthening the quality management of internal control is beneficial to improving the company's business performance.

Financial fraud is often accompanied by a failed audit system. Huang [12] argues that the causes of financial fraud include not only the lack of Internal Control Mechanism but also the causal factors of imperfect auditing. He has also proposed that a sound corporate governance mechanism is the basis of high-quality accounting information, where the financial fraud of listed companies from the governance mechanism must have defects. Wu [13] argues that audit planning can effectively identify risks arising from financial fraud and internal control deficiencies, especially in the context of big data, where reasonable mining of data has a very important role to play in guiding efficient audit activities.

With the booming audit profession in China, audit failures carried out on companies are constantly emerging. Regarding the causes of audit failure Tackett et al. [14] pointed out that the main reasons include unconscious human error, audit fraud, auditors being influenced by financial interests, and auditors being influenced by personal relationships with clients. Su and Zhong [15], on the other hand, suggest three main reasons for audit failure by combining the Chinese securities market. The first situation is when the management is the auditee and also the audit client puts the auditor in a dilemma. Secondly, the more serious situation is when auditors are financially dependent on their important clients, thus the auditor becomes less independent in the course of auditing.

There are plenty of papers about the case of fraud at Luckin Coffee Inc., the most important financial, economic as well as mainstream media and journals are discussing the topic. Securities and Exchange Commission (SEC) has announced a paper about the punishment imposed on Luckin Coffee Inc. [16]. Well-known famous news portals like Financial Times, CNBC, Bloomberg are reporting up-to-date news around Luckin Coffee Inc. [17, 18]. It proves to be a hot topic and the sources are widely available. This paper will analyze the motives and manner of the fraud case of Luckin Coffee Inc. based on the existing literature and data applying the fraud triangle theory. Finally, conclusions will be drawn on the case and some warnings will be given to other short-time listed companies.

3 Research Design

3.1 Research methods

3.1.1 Fraud Triangle theory

Fraud Triangle theory was developed by Albrecht, founder of the American Institute of Certified Fraud Examiners, who believes that corporate fraud consists of three elements: **Pressure**, **Opportunity** and **Rationalisation**, and that a company will engage in fraud when all three elements are met simultaneously [19].

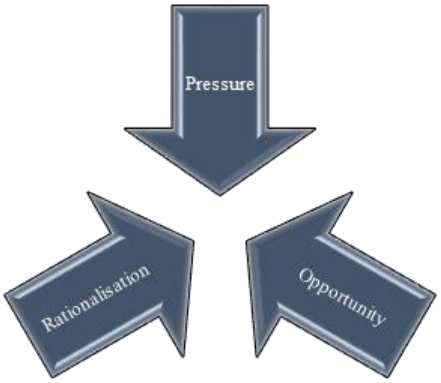


Figure 1

The Fraud Triangle

3.1.2 GONE Theory

The term GONE is an acronym for **Greed**, **Opportunity**, **Need** and **Exposure**. The four factors essentially indicate the four conditions for fraud to occur [20], for example when fraudsters are greedy and are in great need of money etc, they will commit fraud on condition that they have the opportunity and believe that they will not be discovered afterwards. These factors also put forward countermeasures to prevent financial fraud of listed companies based on the causes and ways.

Figure 2

GONE Theory

3.1.3 Related Theories

The right research methods can give us twice the result with half the effort, better reflect the characteristics of the data, more clearly analyse the fluctuations caused by the data and explain the causes in conjunction with relevant professional theories.

(1) *Documentary research*: Firstly, information is obtained through a survey of Chinese and foreign literature so as to gain a comprehensive and correct understanding of the issue to be studied. The information found will be collated, analysed and summarised. On this basis, the analysis of the financial fraud problem of Luckin Coffee Inc. is carried out.

(2) *Combination of qualitative and quantitative analysis*: Expert opinions are explored in qualitative models. In the quantitative analysis, the ratio analysis method is mainly used to analyse the fraud of Luckin Coffee Inc. scientifically and reasonably from subjective and objective perspectives in a scientific and reasonable manner. The research includes pragmatism and critical realism.

(3) *Deductive*: Finally, deduction is made from general principles while concepts lead to individual conclusions. Deduction is a method of moving from the general to the individual. The fraud triangle theory is used to practically analyse its specific existence in the case of Lucking Coffee Inc.

3.1.4 Ethical Guidelines

This study analyses a specific case of fraud at Luckin Coffee Inc., using a valid and correct non-misleading research method such as fraud triangle theory and GONE theory, and the results of the study are closely related to the case. The

researchers voluntarily participate in the study, share the research data and results, maintain a respectful and objective attitude toward the research subject, speak with caution and integrity, do not fabricate and falsify the research results, do not plagiarize others' research results, and consciously take social responsibility and strive to maintain public trust.

4 Analysis of the causes of counterfeiting

4.1 Eagerness to achieve

Generally speaking, it takes time for shops to become profitable, and with the cyclical capital operation and the establishment of brand value, shop revenues will turn from losses to wins. As traditional coffee companies entered the market earlier to seize resources, most of the shops that opened in the early stages of Luckin Coffee's establishment were in a loss-making situation, so the more shops opened, the greater the losses were. However, in order to achieve the goal of "convenient consumption and home delivery", in 2018, Luckin Coffee developed a strategic plan to open 2,000 shops, which it completed ahead of schedule. The fast investment and expansion directly led to a loss of over RMB1.6 billion in 2018. Obviously, for investors in the financial markets, the losses at the beginning of the brand's creation are understandable, but according to the analysis in Table 1 Luckin Coffee's net income in the first three quarters of 2019 equalled 2.929 billion, out of which the company announced 2.2 billion as falsified.

Table 1

Inventory Analysis of Luckin Coffee Inc.

	2018		*2019*	
	Q4	*Q1*	*Q2*	*Q3*
Quarter Revenue/million	465	479	909	1542
Inventory/million	150	189	232	213
Days sales of inventory/d	52	55	41	28

*Source: Luckin Coffee Inc. Annual Report

The company wanted to obtain a large amount of financial support in its rapid development, but such an aggressive and rapid expansion led to huge losses that were not favoured. In order to ensure the stability of the financing channels and to meet the cash flow requirements of the IPO, the company eventually chose to raise funds by fraudulently falsifying its financial statements.

4.2 Opportunity factors Data source: Luckin Coffee Inc. Annual Report

4.2.1 Internal opportunities

Luckin coffee does not employ a cashier at the first place and all transactions are completed through an online app, providing an opportunity for it to inflate its revenue by "skipping numbers" with a "pick-up code". Secondly, the independent director function of Sean Shao at Luckin Coffee. Sean Shao, as an independent director, had negative operating conditions at all of the 18 companies he worked for in the previous period, including four accused of fraud and five accused of reverse takeover. Moreover, in the face of the fraudulent financial data and non-compliant disclosure of related parties in the third and fourth quarters of 2019 at Luckin Coffee, no challenge was raised, indicating that the independent directors themselves lacked a certain degree of professional prudence and independence, and did not play a supervisory and restraining role over the management. The third internal opportunity for fraudulent behavior is the unreasonable shareholding structure. After the listing of Luckin Coffee Inc., Lu Zhengyao, as the largest shareholder, held 30.53% of the shares; Qian Zhiya, as the second largest shareholder, held 19.68% of the shares; and Sunying Wong, as the third largest shareholder (it is important to mention that the controller is Lu Zhengyao's sister), held 12.4% of the shares (Table 2). Lu Zhengyao is very close to both parties, so he has absolute control over company decision-making, execution and supervision of Luckin Coffee.

Table 2

The shareholding structure of Luckin Coffee Inc. when it went public

Lu Zhengyao	30.53%
Qian Zhiya	19.68%
Mayer investment	12.4%
Li Hui	11.84%
Liu Erhai	6.75

* Data source: Luckin Coffee Inc. Official Website

4.2.2 External opportunities.

First, external regulation is limited. As a Chinese stock listed in the US, Luckin Coffee is monitored by the US securities regulator, but its main operating region is China, so the difference in spatial distance and the lag in information and information asymmetry make it difficult for external regulation to be effectively implemented.

4.3 Stress factors

Since its inception, Luckin Coffee has been benchmarked against Starbucks (Table 3), and according to the data it can be concluded that Starbucks' profit per shop in three quarters of 2018 was about 4-5 times that of Luckin Coffee, and in 2019 this ratio did not increase by any significant margin.

Table 3

The comparison of single store income between Luckin coffee Inc. and Starbucks

unit: million dollar						
	Y2018			Y2019		
	Q2	Q3	Q4	Q1	Q2	Q3
Number of Luckin stores	624	1189	2073	2370	2963	3680
Luckin single store revenue/million	19.5	20.3	22.5	20.2	30.7	41.9
Starbucks Single Store Revenue (Asia Pacific)/million	98.6	97.8	96	96.2	99	93

* Data source: Luckin Coffee Inc. Annual Report and Starbucks Coffee Annual Report

On the other hand, the company cash flow was in the red in 2018 and 2019 (Table 4), and although 'cache' shops are the mainstay, they also need a lot of capital to support them. Consequently, having a robust capital chain is particularly important for the company. As a result, the company needs external financing to support its operations. However, "good" financial statements are the only way to make investors happy.

Table 4

Cash Flow of Luckin Coffee Inc.

unit: million dollar							
	Y2018				Y2019		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Cash Flows from Operating Activities	*-124*	*-196*	*-720*	*-271*	*-628*	*-375*	*-123*
Cash Flows from Investing Activities	*-167*	*-145*	*-1297*	327	77	*-2365*	683
Cash Flows from Financing Activities	178	1314	1067	1430	86	5565	*-160*
Increase in Cash and Cash Equivalents	*-113*	973	*-950*	1468	*-465*	2825	400

*Data source: Luckin Coffee Inc. Annual Report

4.4 Low cost of violation

According to Article 20(1) of the Law of the People's Republic of China Against Unfair Competition, "If an operator violates the provisions of Article 8 of this Law by making false or misleading commercial propaganda for its goods, or helps other operators to make false or misleading commercial propaganda by organizing false transactions, etc., the supervision and inspection department shall order the person concerned to stop the illegal act and impose a fine of not less than 200,000 yuan and not more than 1 million yuan [21]. If the circumstances are serious, a fine of not less than one million yuan and not more than two million yuan shall be imposed, and the business licence may be revoked". 0.09% of a $2 million fine was imposed versus $2.2 billion of fictitious profits.

5 Analysis of fraud means of Luckin Coffee Inc

5.1 False increase of main business income

False increase in income is an important means of financial fraud. In order to whitewash the financial statements and exaggerate its profitability, enterprises usually use false means to beautify its real operating level. Since its establishment, Luckin has opened more than 4000 stores in 53 cities in China. Before financial fraud, Muddy Waters Research mobilized a large number of full-time and part-

time staff through sampling to conduct real-time on-the-spot monitoring on some stores and proved that Luckin Coffee really existed with effective data, and its fraud was mainly through the way of taking meal code and jumping number. Jump order is a hidden means of financial fraud in the retail industry, such as jumping from 188 to 205, which will not produce obvious false orders and will not be easily found by other regulatory agencies. In addition, Luckin Coffee has assigned different types of ordering of meal codes according to different types of coffee, so it is difficult for the regulatory agencies to calculate the sales volume by subtracting the initial order from the final order. In addition, Luckin, in its pricing strategy used the large commodity unit price to carry out financial fraud. In the third quarter of 2019, the average price of a single commodity reported by Luckin was 11.2 yuan. Muddy Waters Research found that among the 25 843 customer receipts collected, the actual average net selling price of a single commodity was 9.97 yuan, which means the data inflation rate reported by Luckin was 12.3% [22].

5.2 Falsely increasing income from other products

Like Starbucks, Luckin Coffee sells nuts, cakes, bottled drinks, sandwiches, mugs and other products to consumers while selling coffee as a core business operation. According to the statistics of the 25 843 customer receipts collected, "other products" only accounted for 6.2%, while the report released by Luckin at that time showed that other products accounted for 22%, indicating that the company had inflated revenue from other products.

To ensure the accuracy and preciseness of the analysis results, Muddy Waters Research makes further analysis from the perspective of VAT. According to China's tax law, the tax rate of coffee is 6%, and the value-added tax of other products is 13%. According to the formula: Average tax rate = proportion of coffee income * coffee tax rate + proportion of income from other products * tax rate of other products, the average tax rate is 7.54%, while the average tax rate disclosed in the report is only 6.5%. The difference between the two further indicates that the company has tax evasion or financial fraud.

5.3 Inflated costs and expenses

It can be seen from the previous analysis that Luckin Coffee mainly realizes the false increase of income by falsely increasing the sales volume, but according to the cash basis, it must have real cash inflow to recognize the income. In order to match the revenue with the cost, it is a good choice to inflate the advertising expenditure. According to the survey, Luckin Coffee exaggerated its advertising spending in the third quarter of 2019 by more than 150%. In addition, Luckin Coffee exaggerated the store's operating profit by 397 million yuan in 2019. In the same year, the difference between the advertising expenditure reported by Luckin Coffee and the actual expenditure of focus media tracked by CCTV was 336

million yuan, further indicating that Luckin Coffee may have inflated costs and expenses.

5.4 Related party transaction

Related transaction fraud is another important means of financial fraud. The CEO of Luckin Coffee was the founder of two listed companies, Shenzhou Zuche and Shenzhou Youche, and successively served as the COO of the two companies. Therefore, it is very likely that there will be related party transactions between Luckin Coffee group and Shenzhou group. At the same time, according to the report issued by Muddy Waters Research, Luckin Coffee is the same as the outsourcing team of Shenzhou Zuche, and its first round of angel financing also comes from Shenzhou Youche group [23] .

6 Recommendations

6.1 Improve the internal control system of listed companies

As the company's internal management mechanism, internal control system has a very important impact on the realization of the company's expected goals. To improve the internal control system of listed companies, we need to consider the following aspects:

First of all, listed companies should aim at the development goals and needs of continuous improvement, optimize the internal control system. Listed companies need to set up a reasonable functional organization, clear the division of functions between departments, so that they check and balance each other, mutual supervision can be realised [6]. Besides, it is necessary to optimize the internal equity institutions, so that shareholders can check and balance each other, and enhance the role and voice power of small shareholders in the disclosure of financial information to avoid such a situation that only the majority shareholders have the final say. Finally, listed companies should also pay attention to the establishment of risk prevention and incentive mechanism. They should formulate a series of control measures such as separation of incompatible duties, budget management, authorization approval, asset protection, internal audit, etc., so as to form a new pattern of mutual restriction and incentive within the company and to give play to the function of internal control system. A good internal control system will often lead the company to the predetermined goal at the source [7]. The spontaneous improvement of internal control quality of various enterprises will make the market economy develop healthily and achieve a win-win situation among the government, enterprises and shareholders.

6.2 Improve the independent director system

The independent director system has positive significance in reducing false financial reports. This paper proposes to improve the independent director system from the following aspects:

First of all, the company needs to make clear provisions on the qualifications, tenure, working hours and remuneration of independent directors, so as to ensure the real independence of independent directors. Secondly, the company should stipulate the obligations and responsibilities of independent directors. When they violate the obligation of good faith, cannot independently and fairly perform their duties and effectively supervise and restrict the behavior of managers and controlling shareholders, and moreover they cause losses to the interests of shareholders and the company, they should bear the corresponding responsibility. Finally, the company should also make specific provisions on the legal liability of independent directors, and strictly investigate the civil liability of independent directors who are responsible for false statements [8].

6.3 Strengthen the supervision function of external audit institutions

Relying solely on professional ethics often has little effect on increasing the independence of audit. This paper suggests that we should solve the dilemma that the audit client is also the auditee from the system and mechanism. It is suggested that an organization similar to Public Company Accounting Oversight Board (PCAOB) should be set up [15]. The main responsibility is to supervise the audit institutions of listed companies to issue fair and independent audit reports to protect the interests of investors. At the same time, in recent years, China's accounting firms have been growing. However, with the rapid increase of institutional personnel, the internal quality control and internal management of accounting firms have been ignored. The standards of audit institutions entrusted by listed companies should be changed and focus on quality rather than the number and scale of accounting firms must be emphasized. Audit institutions should not blindly pursue expansion. They can set up professional legal accounting posts, strengthen close cooperation with other professional fields, learn to use big data and AI technology to improve the ability to identify financial fraud, improve audit quality and avoid audit failure [7].

6.4 Sound legal supervision mechanism and correspondingly increased penalties

A new version of the "Guidelines on the Articles of Association of Listed Companies" has been released recently [24], which has been formulated to avoid voting by connected shareholders and prevent insider control, as well as to make relevant provisions on speculation in shareholding by executives and capital

increase and buyback by companies. To put it differently, this has largely blocked the source of counterfeiting [6]. In the process of improving the legal supervision mechanism, the government supervision department should also consider the legal responsibilities and penalties borne by the subjects of financial fraud and give full play to the role of criminal penalties and civil compensation system, so that the cost of violation of financial fraud far outweighs the benefits.

6.5 Improve the regulatory system for listed companies

A comparative study of the United States, the United Kingdom and Canada found that for every $18 million increase in the minimum capital requirement for a company to go public, the probability of financial fraud decreases by 27.4%, which indicates that raising the threshold for admission to listed companies helps reduce financial fraud [7]. The regulator should not only strictly control the listing standards of companies, but also improve the delisting system of listed companies. In the nearly 30 years of development of China's securities capital market, the ratio of the number of delisted listed companies is extremely low compared to that of developed countries, and the number of actively delisted listed companies is even rare. It is necessary to refine the relevant provisions of the delisting system to eliminate the listed companies that violate the rules of fraud, so as to ensure a more rational and healthy development of the securities and capital market. The maximum penalty for financial fraud of listed companies under the Securities Law is only RMB 60,000, and the new Securities Law, which came into force on March 1, 2020, increased the penalty. However, it is still necessary to improve the penalty rules and make timely floating changes according to the economic and social development [7]. Electronic regulation should be developed, for example, by improving the electronic information database of invoices at national level and by combining it with bank reconciliation information, tax system and other aspects of company operations to restore the operation of listed companies more comprehensively.

Conclusion

Based on the fraud triangle theory and GONE theory, this paper adopts a combination of qualitative and quantitative research methods to analyse the factors that have made Luckin Coffee Inc. so desperate to meet the capital flow requirements for listing. The lack of independence of the company's internal independent director system, the dominance of one share, as well as the difficulties of external regulation, the company’s need for "good-looking" statements to beat its competitors and the low cost of breaking the law were all triggers that tempt companies to commit financial fraud.

Thus, the fraudulent methods of Luckin Coffee Inc. were analysed, such as taking meal code and jumping number, inflating unit prices on financial reports, inflated revenue from other products, inflated costs and expenses, exaggerated advertising expenditures and other financial falsification tactics.

Finally, taking the financial fraud case of Luckin Coffee Inc. as an example, governance countermeasures were proposed, such as improving the internal control system, ensuring the independence of independent directors and clarifying related responsibilities, establishing institutional supervision and audit departments, improving the legal supervision mechanism as well as improving the supervision system of listed companies to provide inspiration and reference for the prevention and control of financial fraud of listed companies, so as to promote the healthy development of the capital market.

References

[1] Y. Yang, "Case study of financial fraud of Luckin Coffee--a perspective based on financial analysis," *Marketing Week,* vol. 33, no. 11, pp. 107-109, 2020.

[2] L. Mao and Z. Li, "Rethinking financial fraud in listed companies," *Cooperative Economics and Technology,* no. 03, pp. 154-156, 2021.

[3] W. Wang, "Research on the application of financial fraud identification based on fraud triangle theory," *Contemporary Accounting*, no. 14, pp. 6-8, 2019.

[4] X. Wang, "A case study of financial fraud at Kangmei Pharmaceutical," *Economist,*, no. 02, pp. 98-100, 2020.

[5] Y. Zeng, "A study on financial fraud of Luckin Coffee Company based on management accounting," *China Business Journal,* no. 04, pp. 146-147+169, 2021.

[6] Y. Liu, "A discussion on financial fraud of listed companies in China," *Journal of Yunnan University of Finance and Economics (Social Science Edition),* vol. 26, no. 01, pp. 122-124, 2011.

[7] W. Qi and X. Wang, "Role-playing in financial falsification of listed companies: the case of Luckin Coffee," *Modern Business,* no. 03, pp. 160-162, 2021.

[8] M. Li, "The role of independent directors on financial reporting and their institutional safeguards," *Journal of Nanjing University (Philosophy. Humanities. Social Sciences Edition),* pp. 138-144, 2005.

[9] Y. Zhang, "A literature review on the relationship between internal control and corporate financial fraud behavior," *Shanghai Business,* no. 02, pp. 131-133, 2021.

[10] B. Qi and G. Tian, "A study of factors influencing internal control deficiencies based on financial reportingA study of factors influencing

internal control deficiencies based on financial reporting," *Management Review,* vol. 24, no. 04, pp. 133-140, 176, 2012.

[11] M. Li and Z. Wen, "A study on the impact of internal control quality on operating performance of listed companies," *Finance and Accounting Communications,* vol. 33, pp. 47-50, 2014.

[12] S. Huang, "Eight causes and eight strategies of financial fraud in listed companies," *Finance & Accounting,* vol. 16, pp. 4-11, 2019.

[13] Y. Wu, "Financial statement fraud audit based on big data mining analysis," *Finance & Accounting Monthly,* no. 03, pp. 340-350, 2021.

[14] J. Tackett, F. Wolf and G. Claypool, "Sarbanes-Oxley and audit failure: A critical examination," *Managerial Auditing Journal,* vol. 19, no. 3, pp. 340-350, 2004.

[15] B. Su and L. Zhong, "Insights from the financial fraud incident of Luckin Coffee to the audit," *Accounting Friends,* no. 04, pp. 135-140, 2021.

[16] SEC(Securities and Exchange Commission), "Luckin Coffee Agrees to Pay $180 Million Penalty to Settle Accounting Fraud Charges," SEC(Securities and Exchange Commission), 16 December 2020. [Online]. Available: https://www.sec.gov/news/press-release/2020-319. [Accessed 25 March 2021].

[17] CNBC, "China's Luckin Coffee to pay $180 million penalty to settle accounting fraud charges," pp. 1-16, 12 2020.

[18] R. McMorrow, "Luckin Coffee apologises for alleged fraud," 5 April 2020. [Online]. Available: https://www.ft.com/content/d1d758f2-f66d-47f2-b100-fb43d9e8414e. [Accessed 25 March 2021].

[19] Albrecht, "Fraud Triangle Theory," 1995. [Online]. Available: http://baike.esnai.com/history.aspx?id=671. [Accessed 8 May 2021].

[20] Bologua, "GONE Theory of Fraud," 1993. [Online]. Available: http://baike.esnai.com/history.aspx?id=668. [Accessed 8 May 2021].

[21] G. o. P. R. o. China, "Law of the People's Republic of China Against Unfair Competition," 14 February 2011. [Online]. Available: http://www.china.org.cn/china/LegislationsForm2001-2010/2011-02/14/content_21917135.htm. [Accessed 28 June 2021].

[22] L. Pan and H. Chen, "Analysis on the Causes and Countermeasures of Financial Fraudence of Listed Companies -- A Case Study of Luckin Coffee," *Management Informatization in China (03),* pp. 38-42, 2021.

[23] X. Zhang, "A case study of financial fraud of Luckin Coffee based on fraud triangle theory," *China Forestry Economics* , vol. 03, pp. 117-120, 2021.

[24] "Guidelines on Articles of Association of Listed Companies," 17 04 2019. [Online]. Available: https://baike.baidu.com/item/%E4%B8%8A%E5%B8%82%E5%85%AC%E5%8F%B8%E7%AB%A0%E7%A8%8B%E6%8C%87%E5%BC%95. [Accessed 20 March 2021].

“Strategic Management in Turbulent Times” – A Virtual Student Conference as a Collaborative Online International Learning (COIL) Project

Isabel Lausberg, Sathees Kunjuthamby, Kristina Kähler

isabel.lausberg@hs-ruhrwest.de; sathees.kunjuthamby@coventry.ac.uk; kristina.kaehler@hs-ruhrwest.de

Abstract: The concept of Collaborative Online International Learning (COIL) portrays an educational approach as a means for higher education institutions to deliver curricular internationalization experience at home. In particular, this approach offers students from diverse geographical and cultural backgrounds the opportunity to jointly engage, learn and work in a virtual environment. In our contribution we elaborate how a COIL project with an international student conference on »Strategic Management in Turbulent Times« can integrate internationalization into a course and how it can serve to address and acquire central 21st century skills. We will introduce our concept, critically reflect the lessons we have learned and suggest possible improvements for future COIL projects.

1 Introduction

The concept of Collaborative Online International Learning (COIL) portrays an educational approach as a means for academics and higher education institutions to deliver curricular internationalization experience at home [10]. In particular, this approach offers students from diverse geographical and cultural background the opportunity to come together and jointly engage, learn and work in a virtual environment [5]. Following the definition of de Wit (2013, para. 9, [4]), COIL »combines the four essential dimensions of real virtual mobility: it is a collaborative exercise of teachers and students; it makes use of online technology and interaction; it has potential international dimensions; and it is integrated into the learning process.« In times of isolation, travel restrictions and uncertainty, COILs could be seen as a critical vehicle for academics and universities to create innovative educational content that allow students between different countries to engage in collaborative interactions in pursuit of development of intercultural and digital competencies.

This article wants to elaborate how a COIL project can integrate internationalization into a course and how it can serve to address and acquire central 21st century skills.

Our considerations are based – in addition to the cited research sources – on the experiences obtained from a COIL project between Coventry University (CU) in United Kingdom and Hochschule Ruhr West (HRW), University of Applied Sciences, in Muelheim, Germany, that took place during the winter semester 20/21. The project is described in greater detail in the paper "Internationalization in a COVID-world: A Collaborative Online International Learning (COIL)" [9] which also presents the evaluation of the project.

2 A virtual Conference on "Strategic Management in Turbulent Times"

2.1 Idea of the COIL project

This COIL project was jointly designed and executed by Prof. Dr. Isabel Lausberg from HRW and Sathees Kunjuthamby, Lecturer at CU, an institution which is highly experienced in conducting COIL projects [14]. The first contact and expression of interest in April 2020 was followed by a number of online meetings with exchange and discussion of ideas for a COIL project. This was supported by Kristina Kähler's counselling, a staff member from the HRW didactics team, who helped to transform ideas into a more structured format leading to a COIL proposal document centred around the idea of a virtual student conference as the scope of the project.

With the conference as a specified and public end product we integrated a project-based learning (PBL) approach [7] into our COIL project. The student-centered approach aims at students working collaboratively in a defined period of time (usually weeks or months) and driving their own learning process through inquiry and the use of various strategies to achieve a common goal [1]. (For a review of the PBL literature see [6]).

The students contributed to the virtual conference in working on two tasks: a self-chosen subject-related task and an organizational task. The first task required each group to conduct a strategic analysis of a company of their choice, to develop a strategy proposal in light of the current Covid-19 pandemic crisis and to examine its implications. The second task of our COIL required all groups to take on an additional responsibility which was related to an organisational department leading to the development of the virtual conference (e.g. marketing, IT support, moderation of the conference or a session).

2.2 Objectives of the COIL Project

The objective of our COIL was to address 21st century skills which the changing labour market will perhaps demand more quickly than originally expected – accelerated by the digitalization of almost all work areas by Covid-19. Our COIL as a format is coherent with the COIL literature and previous projects, noting that with the addition of the project-based learning (PBL) approach of putting together

a virtual academic conference, we were responding to the 'new normal' where remote participation and virtual conferences were picking up momentum. In line with the demand of the OECD for fostering 21st Century Skills in higher education [2], we pursued the following objectives for the COIL project (in accordance to [13]): Improving digital skills, improving communication and collaboration skills, improving problem solving skills and improving perseverance and motivationals skills. In addition, the project focused at improving the ability to apply strategic management methods to a »real world« business case, to think analytically as well as to support, appraise and identify solutions to key strategic management issues in the context of a worldwide pandemic.

2.3 Course of the COIL project

Initially, it had to be determined which students were to be the target group, how the module could be integrated into the curricula and how the different semester times of the two universities could be brought into line. 41 students were recruited in total, consisting of 25 HRW and 16 CU students.

The COIL project started in mid-November 2020 and provided a mix of synchronous and asynchronous sessions. Students engaged in further interactions through group online meetings at their own pace and interest. To drive virtual exchange and communication as well as an international learning experience, we used a variety of different software and technology applications for which students from Germany and UK had ready access to and were free to use [12]. With the digital communication and collaborative working tools HRW and CU students were able to be present in real time and thus engage with their peers, share and benefit from different perspectives within their group and outside their group, establish and build common goals and produce outputs jointly [11].

Prior to the first virtual session, a »welcome pack« was issued to all students consisting of a detailed communication of how we were moving forward, a »COIL card«, a »COIL welcome video« and a »COIL compass«. All participating students were requested to complete two introductory tasks prior to the first virtual synchronous interaction. These activities were taken up again in the first joint virtual session and served as an icebreaker for a dialogue within the groups.

To assure diversity in the teams (following the argumentation of [3];[5];[14] both in terms of nationality and gender, students were pre-allocated and as a result teams consisted of two CU students and three to four HRW students respectively leading to a total of eight gender and nationality-mixed groups.

As mentioned above, the students were given two different tasks:

For the first task, students were asked to choose a company and a method to conduct a strategic analysis. To support all groups with their group project, we created a project proposal document, prompting groups to collaboratively draft their ideas, share and discuss their perspectives on how to address the group

project task. All group proposals had to go through an approval process before they could start working on their final confirmed group project. Later on, a peer-review was introduced to assure the quality and scientific standards of the final conference contributions.

For the second task we requested each group to apply for an organisational department (not pre-defined) and deliver a five-minute pitch on why we should give them the responsibility. As a result, eight organisational groups were created covering essential and yet challenging responsibilities: overall planning, detailed planning (conference day), moderation, IT, internal and external marketing, case film and legal. These organisational departments were suggested by the groups and approved by us in view of its currency, feasibility and importance.

The final interaction was the virtual conference held by the students. The president of the HRW, Prof. Dr. Susanne Staude, opened the conference and all teams presented their work to the COIL course and to the public via a livestream over HRW's official Youtube channel as an online presentation (pre-recorded). The best contribution was honoured with a »Best Paper Award«.

Conclusions

Embedding COIL in the curriculum offers opportunities to benefit from knowledge pluralization between each other and from international experience without the need to leave the country. Thus COIL can be seen as an instrument that makes it possible to create meaningful student experiences and nurture a »globalised working life« [8.]

The pandemic has brought about an almost revolutionary acceleration in the spread of digital tools for communication and collaboration. This has been beneficial to our - and other - COIL projects, and in particular has made the project much easier to implement. Especially in times of Covid-19, COIL thus offers a straightforward way to bring internationalization experiences into teaching and learning. On the negative side, the pandemic has thwarted mutual visits (which can and should be part of COIL projects) and getting to know each other more deeply on a personal level. When travel restrictions are lifted again, COIL projects can be further enriched by getting to know the collaborating country and the university site more closely, as well as by deeper personal contacts.

We knew from the start of our COIL that we are pushing the envelope but we were confident that our students would contribute with meaningful solutions to realise the virtual student conference if we could create a suitable learning environment. With that we provided students a space to work creatively and collaboratively irrespective of different time, geographical and linguacultural backgrounds.

Our experience with this COIL has given us confidence to design future COILs, and it has made us understand that with a greater awareness of pitfalls in teamwork, collaboration and communication, we can further increase the value for

our students. As part of an approved DAAD grant »HRW goes COIL« the project will be continued in the next semesters.

References

[29] Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future. The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 83, S. 39-43.

[30] Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining twenty-first century skills. In: Griffin, Patrick; McGaw, Barry; Care, Esther (Hrsg.): Assessment and teaching of 21st century skills, S. 17-66.

[31] Deardorff, D. (2006). Identification and Assessment of intellectual competence as a student outcome of internalization, Journal of Studies in International Education 10, S.214-266.

[32] De Wit, H. (2013). COIL – Virtual Mobility Without Commercialisation. University World News. URL: http://www.universityworldnews.com/article.php?story=20130528175741647. Accessed on: 18.02.21

[33] Guth, S., Rubin, J. (2015). How to Get Started with COIL. In Schultheis Moore, Alexandra; Simon, Sunka (Hrsg.), Globally Networked Teaching in the Humanities, S.40-47. New York: Routledge.

[34] Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. Improving schools 19, S. 267-277.

[35] Krajcik, J. S., Blumenfeld, P. C. (2006). Project-based learning, Na, S. 317-334.

[36] Kunjuthamby, S., Bennett, M. & Zhou, X. (2021). COIL (Collaborative Online International Learning) in UK Higher Education.British Educational Research Association. URL: https://www.bera.ac.uk/blog/collaborative-online-international-learning-coil-in-uk-higher-education-reloaded. Accessed on: 07.02.2021

[37] Lausberg, I.; Kunjuthamby, S.; Kähler, K.: Internationalization in a COVID-world: A Collaborative Online International Learning (COIL) Project between Coventry University and Hochschule Ruhr West, University of Applied Sciences. In: Angenent, H.; Petri, J.; Zimenkova, T. (Hrsg.): Things will never be the same again? Lehre und Hochschulentwicklung in Zeiten der Corona-Pandemie, Bielefeld: Transcript Verlag 2021 (in print).

[38] McKinnon, S., Smith, A. M., & Thomson, J. C. (2015). A Window to the World: Using Technology to Internationalise Entrepreneurship Education. Journal of Perspectives in Applied Academic Practice 3, S. 15–23.

[39] Patterson, L. M., Carrillo, P. B., & Salinas, R. S. (2012). Lessons from a global learning virtual classroom. Journal of Studies in International Education, 16 (2), 182–197.

[40] Rubin, J. (2017). Embedding collaborative online international learning (COIL) at higher education institutions: An evolutionary overview with exemplars. Internationalisation of Higher Education, 2, 27–44.

[41] Schnabel, D. (2017): Kompetenzen für die Arbeitswelt von heute und morgen: 21st Century Skills and beyond. https://hochschulforumdigitalisierung.de/de/blog/kompetenzen-21st-century-skills, 6.9.2017. Accessed on: 09.02.21.

[42] Villar-Onrubia, D., Rajpal, B. (2016). Online international learning. Perspectives: Policy and Practice in Higher Education 20, S. 75–82.

Ranking of the Sector of SMEs According to Different Types of Innovation

Isidora Milošević, Ana Rakić, Anđelka Stojanović, Sanela Arsić, Ana Milićević

[1,3,4,5] University of Belgrade, Technical Faculty in Bor,
[2] University of Belgrade, Faculty of Organizational Sciences

imilosevic@tfbor.bg.ac.rs, ana.rakic@fon.bg.ac.rs, anstojanovic@tfbor.bg.ac.rs, saarsic@tfbor.bg.ac.rs, anamilicevic94@gmail.com

Abstract: In current market conditions, to operate efficiently and achieve a competitive advantage, SMEs need to constantly adapt to the changes that occur, innovate, and improve their business. Innovation implies a complex process consisting of a series of different activities that begin with the emergence of the idea and follow its development and implementation on the market until the moment when some effect is achieved from its application in practice. This paper aims to rank the sectors of SMEs in the Republic of Serbia according to the degree of development of different types of innovations. Secondary data were used for the research, and the final ranking was achieved using the PROMETHEE-GAIA method using the Visual PROMETHEE software package.
Keywords: Innovation, Sector of activity, SMEs, PROMETHEE-GAIA

1 Introduction

Business changes are an inevitable companion of today's turbulent, dynamic, and very unpredictable business environment, in which digital transformation is not an area of activity, but a driving force for development (Anshina & Bobyleva, 2021). In such a market, challenges are constantly imposed that the company's management must operate efficiently and effectively. In response to management's challenges, innovations appear, which play a key role in solving new, non-routine, and unique problems through various improvements to the existing situation in the company, using new approaches, new ideas, and new solutions to these problems. Managers today are forced to create something new, change one value for another or improve existing values while constantly monitoring changes in the current market to ensure the company's successful business (Drucker, 1996).

Innovation is a complex process that differs according to the function of the sector as well as the type of organization (Arundel, O'Brien, & Torugsa, 2013). The main characteristic of all innovations is that they must contain something new. However, according to the different criteria that are considered, there are various types of innovations. The innovations that this paper deals with are innovations

that can be divided into technological and non-technological innovations. Technological innovations include product/service and process innovations (Zakić et al., 2009), while non-technological innovations include organizational (Bloch & Bugge, 2013) and marketing innovations (Gault, 2016).

This paper aims to analyze companies operating in specific sectors of activity to examine the degree of development of different types of innovations. Secondary data taken from available databases were used to analyze the results.

2 Literature Review

The theoretical framework for studying innovation and its application in business is vast and relevant. In different works (Kinkel et al., 2011; Gault, 2016; Janjic & Radjenovic, 2019; Trbovic et al., 2019; Yu, Shi, You, & Zhu, 2020), a very different approach to innovation can be noticed. Some companies comprehend the innovation only as a new technology introduced into the business and will produce a new product. In contrast, for other companies, it is a new business or technological approach in the industry. Also, some companies consider innovation as a social phenomenon that will achieve a competitive advantage and better market placement. In the literature, innovations are viewed as a way and introduce something new in business that will lead to more efficient and effective business (Gault, 2016). Analyzing the interactions between innovative activities in different sectors leads to a better understanding of innovation, presented in Table 1.

Table 1

Literature review of innovation activities

Year	Author(s)	Brief description
2011	Kinkel, S., Kirner, E., Armbruster, H., Jager, A.	This paper examines the empirical significance of services related to products and the application of service innovations in manufacturing companies. The connection between products and services provided to customers plays a significant role in the modern economy.
2016	Gault, F.	This paper proposes generalized definitions of innovation applicable in all economic sectors of the System of National Accounts (SNA) to support the international comparison of innovations in each sector and monitor and evaluate innovation policies implemented.
2019	Janjić, I., Rađenović, T.	This paper aims to point out the importance of innovation in the business of modern organizations and its role in fostering prosperity, creating and maintaining a competitive advantage.

2019	Trbović, A., Vučković, A., Drašković, B.	This article explores the premises of the Fourth Industrial Revolution and its role in fostering innovation and economic growth, pointing to the potential and the gap in the Serbian economy. The applied methodology includes a review of the literature, both in the context of the global development and innovation potential of Serbia, as well as an analysis of empirical sources that could serve as a basis for future research.
2021	Yu, A., Shi, Y., You, J., & Zhu, J.	This study examines the innovation performance of high-tech companies in China using the Dynamic Network Data Analysis (DEA) approach.

3 Methodology

In this paper, a multi-criteria analysis of companies operating in specific sectors of activity was performed to examine the development of innovation in these companies according to different types of innovation. Data analysis was performed based on secondary data taken from the database of the Republic Statistical Office (https://www.stat.gov.rs/) and the Eurostat database (www.ec.europa.eu). The obtained data were processed using the Visual PROMETHEE software package, which uses the PROMETHEE GAIA methodology to rank alternatives based on defined criteria adequately.

The research was conducted for the period 2016-2018. Nine sectors were selected for analysis in which the largest number of companies operates and were used as possible alternatives in multi-criteria decision-making. The sectors which ranked are Information and communication; Wholesale and retail trade; Construction; Agriculture, forestry and fishing; Traffic and storage; Professional, scientific, innovation and technical activities; Manufacturing industry; Electricity, steam, and gas supply; Administrative and support service activities. Business entities that have introduced innovations in products and processes, innovations in marketing and organization, innovations in products and processes, or have not submitted any innovation in their business were used as analysis criteria.

3.1 PROMETHEE - GAIA method

Brans developed the PROMETHEE method, and later it was further developed and improved by Marshall and Vinke (Brans et al., 1984). This method belongs to the group of "outranking" methods, which compares two or more alternatives according to given criteria to identify the preference or dominance of one alternative over another (Turcksin, 2011). The PROMETHEE method is complemented by GAIA, a visual representation of multi-criteria decision-making problem, which contributes to a better understanding of the problem and makes

the best decision (Mareschal & Brans, 1988). For the alternatives to be ranked based on the selected criteria, it is necessary to define the appropriate parameters. According to Brans and Vincke (1985), the parameters that need to be defined for the application of this method are 1. The direction of preference; 2. Weighting coefficients; 3. Preference threshold; 4. Indifference threshold; 5. Preference function.

The PROMETHEE method is implemented through several steps (Brans et al., 1984, Brans & Mareschal, 2005, Doan & De Smet, 2018; Sarrazin et al., 2018; Milošević et al., 2020; Rakić et al., 2021):

Step 1: Creating the decision table

Step 2: Assigning the preference function to each criterion.

Step 3: Calculating the preference index π (a, b), based on the weights of the criteria

Step 4: Calculating outranking flows for each alternative.

3.2 Data analysis and results in discussion

For conducting a multi-criteria analysis for the period 2016-2018, it is necessary to define specific parameters for each indicator in the Visual PROMETHEE software package. The defined parameters are shown in Table 2.

Table 2

Parameters for ranking the sectors according to different types of innovation

	Product and process innovation (IPP)	Innovation in Organization and Marketing (IOM)	Product and process innovation, and innovation in organization and marketing (IPPIOM)	Non-innovators (NI)
Max/min	Max	Max	Max	Min
Weights	1.00	1.00	1.00	1.00
Preference function	Usual	Usual	Usual	Usual
Limitation	Percentage	Percentage	Percentage	Percentage

Table 2 depicts the criteria related to the introduction of innovation in the company are maximized, while the criterion of non-innovators is minimized. All indicators were assigned the exact value of the weighting factor, while the preference function of type 1 - Usual function was chosen as the most suitable. The usual function had no thresholds. All values of the given indicators are presented in percentage amounts.

After defining the parameters of the multi-criteria analysis, ranking sectors according to the types of innovation in Serbia for the mentioned period was performed. The net flow of preferences (Phi), the positive flow of preferences (Phi +), and the negative flow of preferences (Phi-) are shown in Table 3 and Figure 1.

Table 3

Results of the ranking of the sectors according to the type of innovation in the period 2016-2018

Rank	Alternative	Phi+	Phi-	Phi
1	Information and communication	0.8125	0.1875	0.6250
2	Manufacturing industry	0.6250	0.3438	0.2813
3	Agriculture, forestry and fishing	0.6250	0.3750	0.2500
4	Professional, scientific, innovation and technical activities	0.6250	0.3750	0.2500
5	Administrative and support service activities	0.5625	0.4063	0.1563
6	Traffic and storage	0.3750	0.6250	-0.2500
7	Construction	0.3125	0.6875	-0.3750
8	Wholesale and retail trade	0.2813	0.7188	-0.4375
9	Electricity, steam, and gas supply	0.2500	0.7500	-.05000

The ranking of sectors according to the different types of innovations introduced in companies from 2016 to 2018 shows that the best-ranked sector is the Information and Communication Sector, with the most positive net preferences. The sector of Electricity, steam and gas supply stands out as the worst-ranked sector in this period. Figure 1 gives a visual representation of the obtained ranking results in the form of a GAIA plane.

Based on the positions of the criteria presented in the GAIA plane in the form of a rhombus, agreement or conflict between the criteria can be determined. According

to the criteria in Figure 1, it can be noticed that there were no significant conflicts between them because they are moving in the opposite direction. The criteria with the most similar assessments were introducing Product and process innovation and Innovation in organization and marketing. The positions of the alternatives, shown in a plane by square, determine the strength or weakness of the alternative concerning the criteria. According to the Product and process innovation and Innovation in organization and marketing criteria, the best sector was the Information and Communication Sector, so the decision stick is in the direction of the position of this alternative. On the other hand, the Sector for Electricity, Steam and Gas Supply stands out as the worst-ranked sector and the sector with the lowest degree of innovation submission in this period.

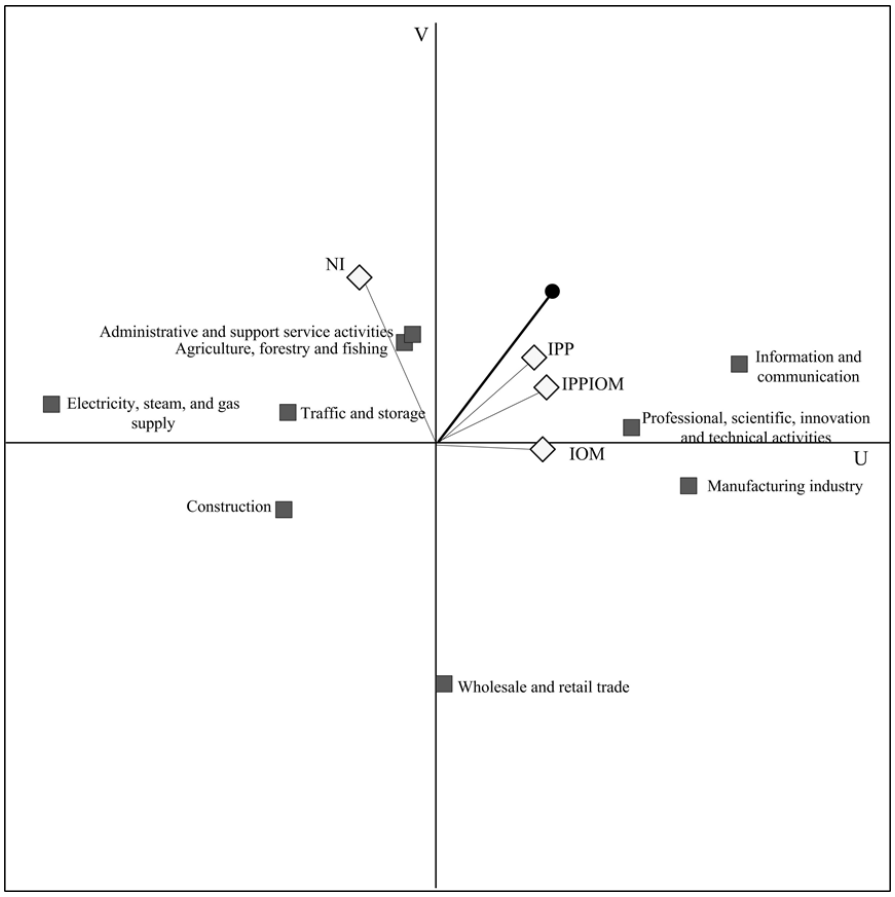


Figure 1
GAIA analysis

Conclusion

Given the circumstances of the current environment in which companies operate and the constantly happening changes, companies must continuously invest in innovation to respond to new challenges. Innovation is imperative in both technological and organizational terms. Constant innovation and improvement of products, production program, production process, technology, and knowledge of employees are the conditions for successful business both at the company level and at the sector and the economy level.

Based on the research, it was found that there is a larger share of those sectors that introduce innovations in their business in Serbia. But there are also those sectors that have not yet realized the importance and effects of innovation, so do not innovate. Sectors that introduce innovations need to be supported and certain subsidies and benefits to continue their growth and development. In contrast, sectors that have not realized the importance of innovations must first raise awareness of innovations and their effects on business and then provide support during implementation innovation.

Acknowledgement

The research presented in this paper was done with the support of the Ministry of Education, Science and Technological Development of the Republic of Serbia, within the funding of the scientific research work at the University of Belgrade, Technical Faculty in Bor, according to the contract with registration number 451-03-9/2021-14/ 200131.

References

[1] Anshin. V., & Bobyleva., A. (2021). The digital transformation program management in medium-sized businesses: a network approach, Serbian Journal of Management 16 (1) (2021) 147 - 159

[2] Arundel, A., O'Brien, K. Torugsa, A. & Gault. F. (2013). Handbook of innovation indicators and measurement, Edward Elgar Publishing, Inc., Northampton pp. 88-108.

[3] Brans, J.P., Mareschal, B., & Vincke, Ph, (1984). PROMETHEE: A new family of outranking methods in multi-criteria analysis, in Brans, J.P. (Ed.), Operational Research '84, North-Holland, Amsterdam, pp. 447–490.

[4] Brans, J.P. Mareschal, B., (2005). Promethee methods. Chapter 5 in: Multiple Criteria Decision Analysis: State of the Art Surveys, Springer Science and Business Media, Boston, p. 170.

[5] Bloch, C., Bugge, M., M.,(2013). Public sector innovation-From to measurement, Structural Change and Economic Dynamics, Elsevier, Vol. 2, page 8.

[6] Doan, N.A.V., & De Smet, Y., (2018). An alternative weight sensitivity analysis for PROMETHEE II rankings. Omega, Vol. 80, pp. 166-174.

[7] Drucker, P.F.(1996). The executive in action: Managing for results, innovation and entrepreneurship, The Effective Executive. HarperCollins Publishers.

[8] Eurostat (2020), https://ec.europa.eu/eurostat/data/database

[9] Gault, F. (2016). Defining and Measuring Innovation in all Sectors of the Economy: Policy Relevance. OECD Blue Sky Forum III, Ghent, Belgium, page 7.

[10] Janjić, I., & Rađenović, T. (2019). The importance of managing innovation in modern enterprises, Ekonomika, Niš, Vol. 65, DOI: 10.5937/ekonomika1903045J

[11] Kinkel, S., Kirner, E., Armbruster, H., Jager, A.(2011). Relevance and innovation of production-related services in manufacturing industry, DOI: 10.1504/IJTM.2011.041952

[12] Milošević, I., Rakić, A., Arsić, S., Stojanović, A., Nikolić, I., & Đorđević, P. (2020). Model for Considering the Propensity of Students to Accept M-learning, Management: Journal of Sustainable Business and Management Solutions in Emerging Economies, DOI: 10.7595/management.fon.2020.0021

[13] Rakić, A., Milošević, I., & Filipović, J. (2021). Standards and Standardization Practices: Does Organization Size Matter? Engineering Management Journal, https://doi.org/10.1080/10429247.2021.1894060

[14] Sarrazin, R., De Smet, Y., Rosenfeld, J., (2018). An extension of PROMETHEE to interval clustering. Omega, Vol. 80, pp. 12–21.

[15] Statistical Office of the Republic of Serbia, (2020). Usage of information and communication technologies in the Republic Of Serbia, 2020. Households/Individuals Enterprises, Belgrade.

[16] Trbović, A., Vučković, A., Drašković, B. (2019). Industry 4.0. as a review of Serbia's potential and research opportunities, Ekonomika preduzeća, doi:10.5937/ekopre2002105t

[17] Turcksina, L., Bernardinia , A., & Macharisa, C. (2011). A combined AHP-PROMETHEE approach for selecting the most appropriate policy scenario to stimulate a clean vehicle fleet, Procedia Social and Behavioral Sciences 20, 954–965.

[18] Zakić, N., Stamatović, M., Cvetanović, S. (2009). Typology of innovations in enterprises, Economic topics, Faculty of Economics in Nis, Vol. 2, 001.895: 65.012.32, p. 77.

[19] Yu, A., Shi, Y., You, J., & Zhu, J. (2021). Innovation performance evaluation for high-tech companies using a dynamic network data envelopment analysis approach, European Journal of Operational Research 292 (1), 199-212

[20] Strategy (2020). Development of education in Serbia until 2020, Available: http://www.mpn.gov.rs/wp-content/uploads/2015/08/STRATEGIJA-OBRAZOVANJA.pdf

[21] Wong, A. O., & Sixl-Daniell, K. (2017). The importance of e-learning as a teaching and learning approach in emerging markets. International Journal of Advanced Corporate Learning, 10(1), 45-54.

[22] Yang, J. F. (2008). Learning styles and perceived educational quality in e-learning. Asian Journal of Distance Education, 6(1), 63-75.

[23] Zhang, D., Zhao, J. L., Zhou, L., & Nunamaker Jr, J. F. (2004). Can e-learning replace classroom learning?. Communications of the ACM, 47(5), 75-79.

The Impact of Artificial Intelligence on Consumer Behavior in Banking Systems

Amira Marouani, Liahuka Chitandula, Oleg Ivarlac, Mohammad Tamimi, Andrea Tick

Óbuda University, Budapest,

amiramarweni@stud.uni-obuda.hu, liahuka@stud.uni-obuda.hu, oivarlak@stud.uni-obuda.hu, Tamimi95@stud.uni-obuda.hu, Tick.Andrea@uni-obuda.hu

Abstract: In the age of digitalization, applications of artificial intelligence have so far been introduced in a wide range of fields. With its promising benefits, this burgeoning trend has proven to be highly effective and efficient in several areas, especially in the banking sector, as it offers business solutions in both front-end and back-end tasks and processes making it possible to significantly save time, work smartly and more efficiently and improve the overall customer experience. The purpose of this paper is to outline the possibilities of implementing artificial intelligence applications in banks, point out their utility and usefulness, and shed the spot on their impact on customer behavior and how they could potentially improve their business as a whole. Customer opinions and feedback regarding the implementation of this rapidly emerging technology were considered in this research paper in order to arrive at the aforementioned premises and ultimately admit that if this wave of AI is missed, businesses and banks in particular may soon be overtaken by it.
Keywords: Banking system, Consumer behaviour, Costumer service, Financial services, IVR, Machine learning, NLP, NLU,

1 Introduction

Nowadays, artificial intelligence, the basis of all computer learning, has become an unbearable part of our modern life and has managed to enter all fields, including customer services [1]. It is now seen as the future of all complex decision making. Understanding how AI works is an important task for any business organization that aims to predict consumer behavior or, more importantly, to correctly understand their expectations.

Moreover, using AI for customer service actually has a huge impact on reducing the costs associated with the human resources needed in any organization. Financial services, for example, are now trying to rely on this technology because of the various benefits it offers [1].

For the banking industry, AI technology offers great opportunities to improve customer experience, democratize financial services, improve cybersecurity and consumer protection, and strengthen risk management. Moreover, because of the

speed with which this new technology is evolving, banks, in this case, have no other choice but to keep up with this upward trend, because otherwise they risk being overwhelmed by the numerous and enormous events in the years to come. There are many examples of banks already relying on this technology in the present [2].

In Europe, countries like Germany, France, and the UK are at the front of AI experimentation and implementation, and even the European Commission is currently funding AI-related projects from 2021 to 2027, due to the intense global competition of this trend, especially in the financial sector [2]. However, as we know, any promising new technology comes with a set of drawbacks that need to be highlighted and are crucial to manage and maintain. As the banking sector is a critical sector that requires a high level of security to ensure customer safety in all transactions, the implementation of such innovative technology requires a high level of maintenance as well as very specific and secure regulations and legacy.

1.1 Objectives

The main objective of this research is to highlight the importance of implementing Artificial Intelligence solutions in order to improve customer services mainly in the financial sector such as banking systems and facilitate the consumer experiences. The set of data that this research will be based on was collected through a survey distributed among people in several countries such as Angola, Tunisia, Moldova, Hungary and Jordan.

1.2 Research Questions

The research question of the present paper is to understand how (AI) actually works and whether it is accessible, understandable and usable by every consumer, regardless of age, gender or educational background. The main objective is to highlight the importance of its implementation in financial services in general and the various benefits it can bring. The paper highlights the use of AI in customer service for banks, and it will show how banks are now relying on AI when it comes to customer services. It will, on the other hand, also point out the different advantages and disadvantages that come with it.

The research formulated five hypotheses, namely

H1: The age determines which devices are used for banking services
H2: The age determines data security behaviour.
H3: The employment status determines data security behaviour.
H4: The preference of new technologies is significantly influenced by the complicatedness of customer services.
H5: The younger generation thinks differently on human or machine consciousness.

After the introduction section, the paper defined the research aims and objectives, then it gives the literature review and defines the relevant terms. Then it introduces the research methodology and, in a chapter, analyses the results and discusses the findings. Finally, conclusions are drawn about the consumer attitude toward AI in the banking sector.

2 Theoretical Background

2.1 Artificial Intelligence (AI)

During the peak of science, in a period known as the "Golden Age of Science Fiction," the world witnessed the birth of new disruptive technologies, one of which, just like many people suggested, would be able to match human abilities at performing different tasks. Although it seems like a very complicated term, artificial intelligence can be simply defined as "non-biological intelligence" [3].

When it comes to pointing out the precise moment at which AI started, it becomes difficult due to the wide number of possibilities that exist. However, one that stands up against the others is the one attributed to a brilliant student named Alan Turing, from King's College, in 1935, Cambridge, UK [4]. Seven decades ago, Turing [5] raised the question as to whether machines would be able to think, a question which himself later described as "meaningless". This question led to the creation of the 'Imitation Game' and the 'Turing Test' which was used to analyze whether intelligence could be the base to distinguish humans and machines [5, 6].

According to Wooldridge [4], understanding what Artificial Intelligence is really about can be a bit confusing, and safe to say, difficult. But, before becoming the much celebrated and enthusiastic area that it is nowadays, just two decades ago, Artificial Intelligence was seen as a niche area with some questionable academic reputation [4]. Nowadays, despite some failures that continue to occur, which is normal when we consider the variety of services that they operate, AI is well-known for having a high predictive success, and, for this reason, its techniques are now considered to be important in the literature [7].

Throughout the years, many theories were created to explain the goal of AI and how it will affect our future. The so-called AI's long-term goal, which can be traced in many science fiction movies, books, and so on, consists of building machines that, just like humans, would be able to perform intelligent action such as being conscious, autonomous, and self-aware [4]. Although these statements may sound amusing, so far there is no unanimity regarding the feasibility of such things nor desirability in the mainstream of AI research [4]. On the other hand, today's mainstream media is more focused on finding ways to create machines that can perform specific tasks that currently would require not only human brains but also, probably, human bodies, for which, as it stands, conventional computing techniques fail to provide [4]. Despite the

number of AI researchers that believe that the time has come to pursue general AI, it is important to note that, if this were really to be achieved, there are concerns that it would also lead to superintelligence [8]. Bostrom [9] states that any intellect that greatly exceeds the cognitive performance of humans in virtually all domains of interest can be defined as superintelligence.

According to Tegmark [3], based on the current development of AI, and if it continues progressing, in the future, we might reach a point where AI could potentially succeed human intelligence [3]. On the other hand, Bostrom [9] argues that there isn't a clear understanding of how machines can match or even surpass human intelligence levels. An extensive review of the literature shows that despite the countless dystopian scenarios created in an attempt to predict humanity's future in an era of AI, it is still uncertain what the future will look like, how machines and humans will compare in the future.

2.2 Implementation of AI for Consumer Service

During the last couple of years, more and more customer-focused artificial intelligence services have been implemented [10]. Companies have been implementing Artificial Intelligence at a pace never seen before. Mainly due to the fact that it helps them improve customer services in many different areas such as predicting future trends, providing proactive support, and rapid growth [11].

Artificial intelligence has been implemented in some of the most important sectors such as financial sector, healthcare, education, retail, transportation, and communication industries [10].

AI is rapidly transforming the healthcare system where the implementation of AI systems such as x-rays and ultrasound scans, has proven to be better than a person at identifying abnormalities [4]. Thanks to AI, companies nowadays can access customers data in a way that was not possible before [12]. For companies, this data collection has proven to be extremely valuable since it allows them to improve their decision-making process. A study conducted by [13] shows that customers, when dealing with low-complexity tasks, are more likely to use AI customer services instead of humans due to their great problem-solver ability in these circumstances.

Nowadays, due to the current changes in all sectors driven mainly by the advances in information technology and high competition from the Fintech companies, banks have been challenged to re-evaluate their competitive advantages [14]. However, it is safe to say that the banking industry has been taking great advantage of AI. For instance, banks nowadays have a better understanding of their customer's life thanks to the increase in the amount of data stored in servers [12]. For that reason, banks have a better knowledge about their customer preferences, their spending habits, and, therefore, are able to identify those willing to spend more than others. They are also able to improve customer experiences and promote products efficiently to the right customers. Nonetheless, this has

allowed banks to have many more business opportunities [12]. AI has facilitated distance banking through processes such as internet banking, payments, transactions, lending and so on, they have become more efficient with implementation and development of artificially intelligent computers that perform transaction banking tasks, consequently changing the role of distance banking [14].

Another important implementation of AI in banking for customer services are the Chatbots, which according to Eeuwen et al., [15] are software programs that can be used for commercial purpose and can communicate with users in a natural language via chat. Chatbots perform different functions in a similar way as humans [16].

3 Methodology

The current research is based on real data and real feedback of using customers service in banking system, where they have the opportunity to express their opinions and previous experiences with AI in banking facilities. Respondents in the research were accessed through convenient type sampling, they were asked to fill in an online questionnaire. The questionnaire consisted of four parts. Each part contained different questions regarding the aim on realizing the data for overviewing the vision. In total the questionnaire had 16 questions including open and closed type questions as well. It means that there were multiple choice questions and questions which gave the possibility to the respondents to share their own opinion. The research used primary data collected via the questionnaire. The research applied both qualitative and quantitative elements since the questionnaire had closed and open-ended questions. The survey aimed to learn more about the behaviour of consumer's attitude depending on their experience when dealing with AI solutions in customer service.

The survey targeted to reach at least 100 respondents and focused on gathering information about the respondents' experiences. The goal was to find out nowadays' impact of AI solutions in customer service in the banking sector, which AI solution eases on the life of consumers in getting their answer to the issue. The research aimed to explore the issue at present, so the time horizon seemed more cross-sectional for the moment. Non-probability sampling with snowball and availability methodology was applied. The reason behind our choice is that the survey was shared by private messages and by posting it on feed on social media.

The survey was totally anonymous. For participating in it there was no need for the participant to identify themselves. There was no timing for answering. The survey wished to access people over 18 who use banking services more actively. Research is designed to achieve an open view data. Through the dataset compiled, the authors aimed to extract and analyse the patterns that might exist between the different variables and determine whether characteristics such as age range or

professional status influence opinions and responses regarding the impact of AI in banking systems.

Result and Discussion

The survey was distributed in several countries in electronic form (Jordan, Tunisia, Moldova and Angola). Altogether 105 responses were collected and all of them were valid. Since the sample is not representative, and collects data from different countries, generalization for population cannot be done, but the common behavioral pattern and the attitude of the respondents can be analyzed. The demographic profile of respondents is shown on Table 1.

Table 1
Demographic Characteristics

	Percentage (Of Sample)
Gender: → Male	57.1%
→Female	40%
→others	2.9%
Age Group: →18-25	49.5%
→26-34	31.4%
→35-45	9.5%
→Older	9.5%
Frequency of using smart technologies: →Always	87.6%
→Often	10.5%
→Rarely	1.9%
→Never	0%

More than half of the respondents (57.1%) was male and 40% was female and only 2.9% of the respondents did not specify their gender, which is a relatively balanced gender distribution. Regarding the age groups, almost half of the respondents (49.5%) were between 18 and 25, while the second largest group was comprised of people between 26 and 34 (31.4%). Only 9.5% of the respondents were between 35 and 45 and the same percentage was older than 45. Most (51.4 %) respondents are students, 34.3% are currently working while 12.4 % are unemployed, and finally, a few (1.9 %) are retired. This means that most of the respondents belong to the young generation, who either work or study, and the responses rather reflect their attitude and behaviors.

Furthermore, respondents were also presented with a series of devices in which, as shown on Figure 1 smartphones are the most used devices by respondents.

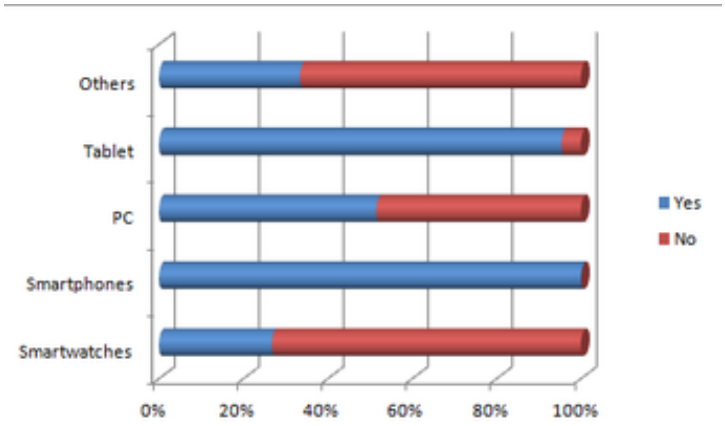


Figure 1
Devices frequently used (*Source: developed and edited by authors*)

Figure 1 also shows that after smartphones, tablets are the most used devices by them while smartwatches are the least used smart device they use. Most of them (87.6 %) always use smart technologies, none of them responded "never" to the use of smart technology, while only 1.9% said they rarely used it. All the participants use smartphones as seen on Figure 1 and almost all of them (100/105) use personal computers on regular basis, however, none of them use other platforms other than websites or applications.

When it comes to platforms that are mostly used for accessing financial services, respondents are more inclined towards mobile applications (53%) as presented on Figure 2 although a big part of them usually uses both services (42%).

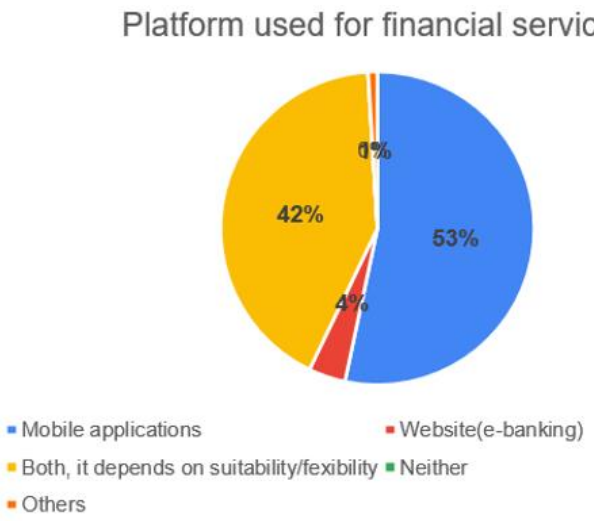


Figure 2
Platforms used for financial services (*Source: developed and edited by authors*)

However, 53 % uses only mobile applications, while only 4% uses only website possibilities for financial services. If the percentage of users who take advantage of online platforms of financial services, the 42 % of users of mobile apps and websites need to be added up, resulting in a 99% saturation. Consequently, almost everyone who uses online financial services happen to meet AI in banking services.

As AI is rapidly improving and digitalization is spreading at a drastic rate even in the financial and banking services, the question of human consciousness is frequently in the focus. Figure 3 presents respondents' opinion on consciousness being uniquely human. According to the results half of the respondents believe that consciousness is truly uniquely human (49%), while 18% disagree with the statement and are convinced that consciousness is not exclusively human and 38% of respondents either do not know and are dubious.

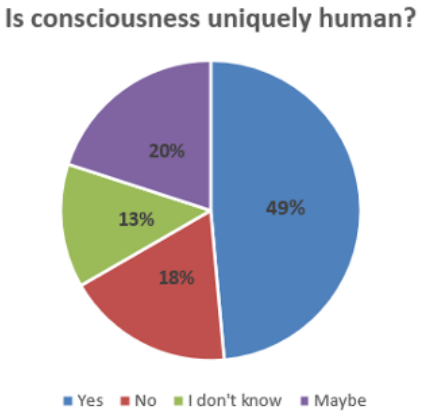


Figure 3
Respondents answer about consciousness being uniquely human (*Source: developed and edited by authors*)

Next to the question of consciousness belonging to humans, respondents were asked to give their opinion whether there is a possibility for computers to achieve consciousness. There was a close division of opinions with most respondents believing that it may be possible (39%) and a close percentage stating that it is not possible (31%) with the percentage representation shown on Figure 4. Even in this case 30% of respondents could not decide or have some doubts regarding the issue.

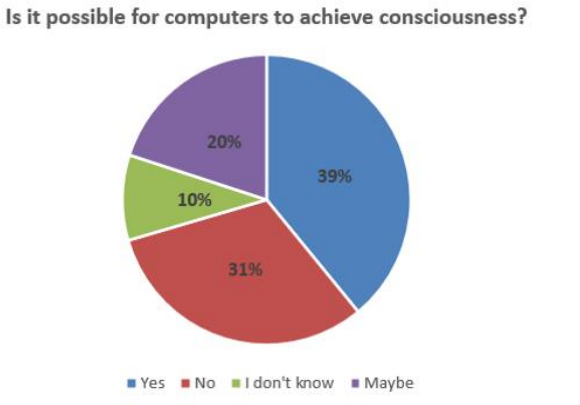


Figure 4
"Is it possible for computer to achieve consciousness?" (*Source: developed and edited by authors*)

Altogether 49.5 % of the sample believes that AI is a force for good, 8.6 % thinks that AI will be a force for evil, and 41.9 % thinks that this statement is

complicated. Some of them replied with "*AI may help a lot, in facilitating daily life, but it has been contributing to unemployment!*" and "*There's always two sides (good/evil) and consciousness will always play along with both, alternating from time to time/moment to moment... in addition, the intentions behind the developers of any AI project may be good and at the same way, may be evil. It's all behind human nature after all*".

Nonetheless, regarding the impact of new technologies in customer services, specially how they help customers in the financial sector, Figure 5 shows how customers see these technologies effectiveness in solving their problems. Respondents were asked to rate on a Likert scale how strongly they agree or disagree with the statement. 36 and 19 respondents agree and strongly agree that new technologies in customer service help facilitate the process of problem-solving, while 11 of the respondents were neutral about this statement. However, 35 respondents disagree or strongly disagree with the statement, they might be the customers who are satisfied with the already used online services and are not fully open to new solutions.

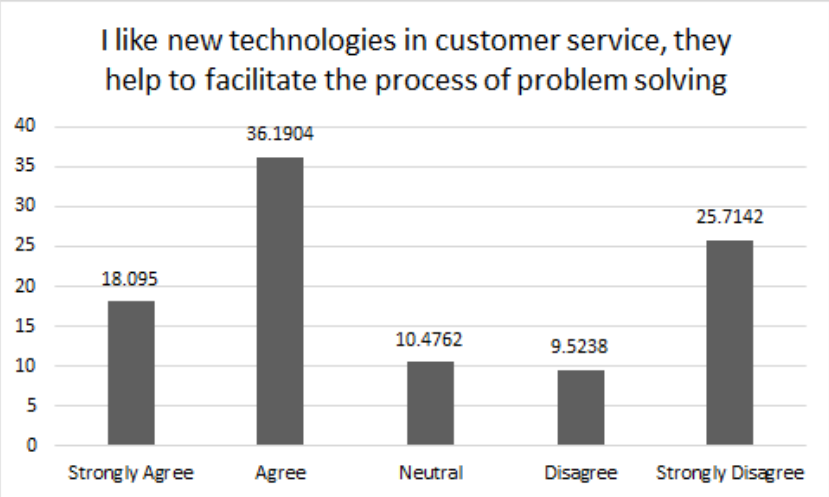


Figure 5

Statements vote (person) (*developed and edited by authors*)

As to whether the usage of very developed customer services makes it harder for customers to deal with, Likert scale was also used to rate how respondents experience the usage of new technologies. Figure 6 shows that 28 and 31 respondents strongly disagree and disagree with the fact that they do not prefer very developed customer service as it makes everything complicated. It implies that only 19 out of the 105 respondents (18%) are anxious or experience anxiety when technological innovations are introduced in banking services.

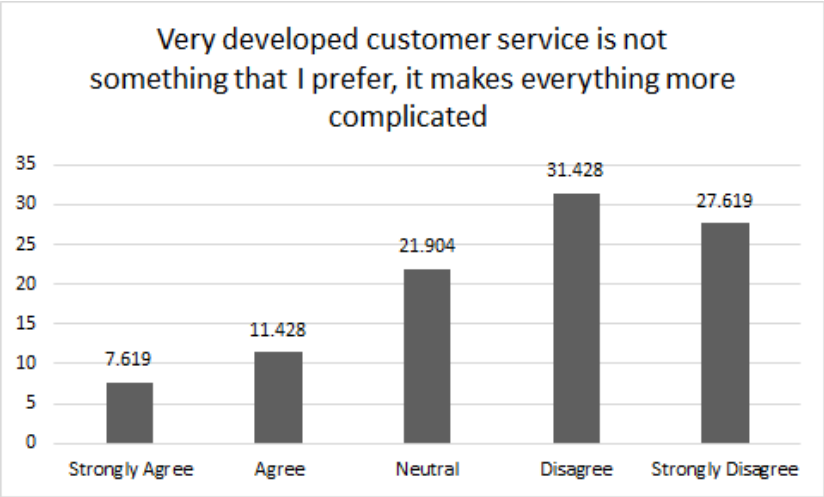


Figure 6

Customer's response about very developed customer service (*Source: developed and edited by authors*)

Moreover, as it is shown on Figure 7 respondents were asked about convenient customer services solutions for financial services (multiple responses were possible). While even now 56.2% of the respondents still call the customer service office when some help is needed 47.6% of the responses would choose chat-bot to find solutions to the arising problems. So, the use of the denominated AI – chat-bot – came second as the most frequently used convenient customer service in case of financial services. Website browsing came third with 44.8% and personal contacts - friends - are still good sources for finding help (21.9%).

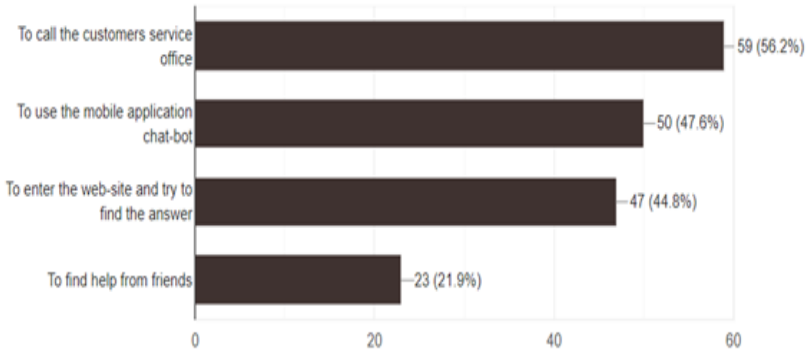


Figure 7

Convenient customer service solutions for financial services (*Source: developed and edited by authors*)

The results show that human-to-human (H2H) interactions are still preferred by customers, they seem to favor a more human to human conversation when it comes to convenient customer services solution for financial services. Over the form and platform of customer services – office, chat-bot, website or fried, the mode and medium of customer service delivery is of high importance.

Figure 8 presents the percentage of different AI solutions that respondents already experienced in case of financial services. Almost two thirds of the respondents (65.7%) experienced Natural Language Processing (NLP) and thus it seems to be the most common among customers.

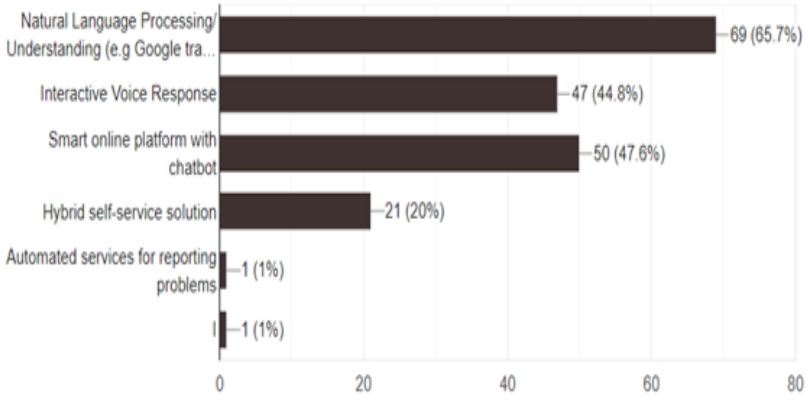


Figure 8
AI solutions previously experienced by customers (*Source: developed and edited by authors*)

The Natural language processing (NLP) which is used in customer service as chatbots for banks, as previously mentioned, had the most votes by our sample. The second and third most frequently experienced AI solutions were interactive voice responses with 44.8%, followed by hybrid self-service solution with 20%. Chat-bot results were the same as in the previous question.

Following the method and media of AI solutions, questions on AI data security were posed. As it is presented on Figure 9, respondents were asked about how much they trust AI data security. Respondents were expected to evaluate from 'no trust at all' to 'fully trust' on a Likert scale. Results show that the majority of respondents (50.5%) gave a 3 out of 5 for the data security trust. The responses call for further research in the future in cyber security since respondents either trust in banks and financial service providers regarding data security or do not care about data security in these cases.

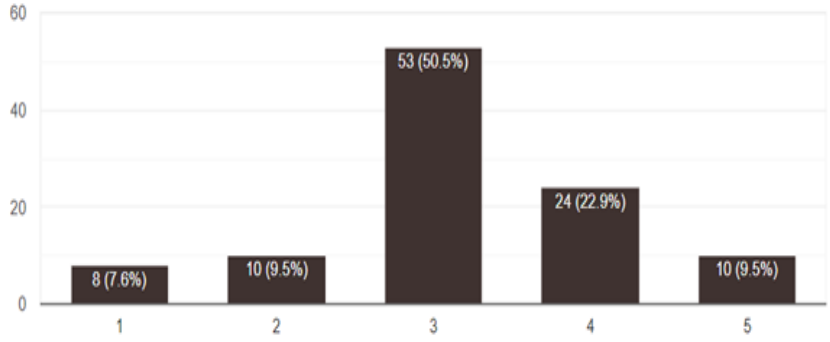


Figure 9

Customers trust on AI data security (*Source: developed and edited by authors*)

It also shows that only 9.5 % of respondents totally trusted data security while 22.9 % trust AI data security. A lower percentage of customers did not trust AI data security, 7.6% and 9.5% marked the negative options. Apart from customer experience, respondents were asked to rate how much impact AI might have on the banking systems. As shown in Figure 10, majority of customers (47.05%) disagrees with the idea that AI would have a negative impact on customers services. At the same time 26.47% could not decide – probably interested in good customer services and not the technological innovations -, while 26.48% believe that AI can have a negative impact on banking services and would result in more complicated services and processes.

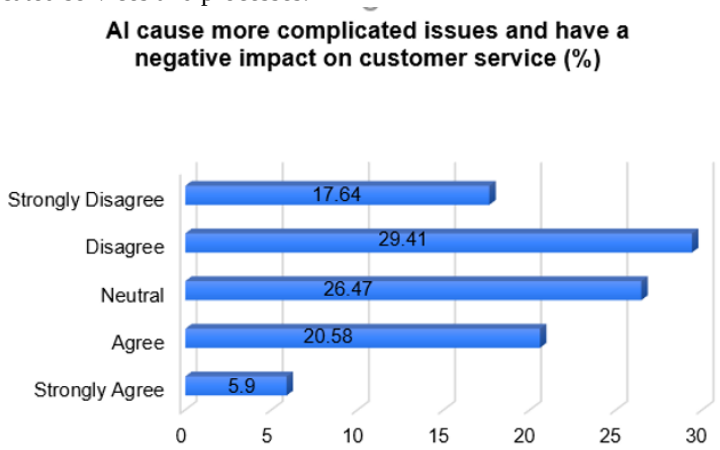


Figure 10

AI impact in banking system (*Source: developed and edited by authors*)

This corresponds to the previous question shown on Figure 6 when respondents were asked about very developed customer services. More or less the same percentage of people gave similar responses for negativity.

It was also found regarding AI implemented in banking systems that 37.14% of the respondents were neutral about whether it "creates more jobs than it destroys" while 26.67% disagreed and 18.1% strongly disagreed with this statement. 36.19% of the respondents agreed, and even 12.38% strongly agreed with the statement that AI will "help facilitate customer services" while 35.23 % of them were neutral.

36.19 % of them strongly disagreed with the statement that "over the next ten years AI that is implemented in the banking system will have no overall impact" while 26.67 % also disagreed adding up to 62.86% of the respondents. Two-thirds of the respondents believe that banking systems services will change due to AI technology. 36.19 % of them were neutral for AI being disruptive to employment rates, while 40% believe that IA will be disruptive to employment. 45.71% of the surveyed do not believe that AI will cause complicated issues and will have a negative impact on bank's customer service while 27.62% of the respondents think that a negative impact will come. Finally, 30.47% and 21.9% of the respondents agree and strongly agree respectively that AI will cause an increase in unemployment rates in the short term.

Chi-squared tests were run to find relationships between the age groups and the devices used by the respondents, but the results showed a p-value of 0.723, which means that these data are independent from each other and there is no relationship between them. We also found out that the P-value = 0.521 for the relation between age groups and data security which also means that these variables are independent. Thus, it can be stated that at present the age is not a determining factor in devices usages and data security questions. Consequently, H1 and H2 were rejected.

After running chi-squared test on the relationship between how much respondents trust AI security and employment status, the P-value turned out to be 0.8. In this case, there is no relationship between these two variables, which also mean that even the fact that the respondents are students or are employed, trust and security concerns are dealt with in each age group and by everyone suing banking services. This means that H2 is rejected.

We also found that the P-value for the relationship between these statements "I like new technologies in customer service, they help to facilitate the process of problem-solving" and "Very developed customer service is not something that I prefer, it makes everything more complicated" equals 0.737. This translates to that these statements are also independent, so H4 is rejected.

Upon testing whether different age groups think differently about human and machine consciousness, the Chi-squared test showed a result of P-value to be

0.0114. It means that there is a relationship between the age group and the statement "Humans—the human brain, the human mind, and human consciousness—are all completely mechanistic, and eventually will be replicated by machine". The results showed that younger age groups (18-25) agree more with this statement than the older groups, consequently H5 could not be rejected.

Conclusions

The purpose of this study was to explore and understand how the implementation of artificial intelligence applications in banks directly affect customers behavior as well as to highlight current interrelations between AI and humans.

We found that the majority of customers accept AI as a force of good and although most of them believe that artificial intelligence is helpful in daily life tasks, there is a fear that it has been contributing to unemployment. Furthermore, customers also believe that new technologies provided by AI have a great impact on customer service with an understanding that it is helping to ease the process of problem solving. One may argue that more developed technologies are better for use and easier to deal with, customers perceived this as being true.

Regarding financial services, we found that the majority of customers prefer to call the customer service, whereas the other part favors the use of mobile application i.e., chat box.

We propose that bank facilities should consider the implementation of Natural Language Processing in customer service as customers strongly favoring this service. There is also a great believe that implementing AI in banking systems creates more jobs than destroying it.

In the course of the research five hypotheses were formulated and only in one of the cases a significant relationship could be detected, namely hoe people from different age think about human and machine consciousness. Further research need to be conducted to reveal more relationships regarding the usage of AI in banking services and its impact on unemployment for example.

These findings possess a great implication for how banks should seek to provide services to their customers, and most importantly how they could take advantage of artificial intelligence to further improve customer relationship as well as customer satisfaction. Nonetheless, knowing that Artificial Intelligence is strongly dependent on new technology, developments put a limitation on our research, as we believe that future studies will have to be conducted in order to highlight the different promising technologies that should be implemented by financial companies. Also, further analysis and verification of the implications of this paper in the near future can be done.

References

[1] O. Kaya, “Artificial intelligence in banking,” Deutsche Bank Research, Frankfurt, 2019.

[2] H. Benoist, “EBF position paper on AI in the bankingindustry,” The European Banking Federation, 2019.

[3] M. Tegmark, Life 3.0:Being human in the age of artificial intelligence, New York: NY: Alfred A Knopf, 2017.

[4] M. Wooldridge, A Brief History of Artificial Intelligence: What It Is, Where We Are, and Where We Are Going, Flatiron Books, 2021.

[5] A. Turing, Computing machinery and intelligence, Cambridge: Mind, 1950.

[6] L. Grundner and N. Barbara, “"The bright and dark sides of artificial intelligence: A futures perspective on tourist destination experiences.",” *Journal of Destination Marketing & Management,* vol. 19, no. 1, 2021.

[7] E. Halil Ibrahim and E. Aykut., “A comparison of various artificial intelligence methods in the prediction of bank failures.,” *Computational Economics,* vol. 42, pp. 199-215, 2013.

[8] V. C. Müller and N. Bostrom, “Future progress in artificial intelligence: A survey of expert opinion,” in *Fundamental issues of artificial intelligence*, Berlin, Springer, 2016, pp. 555-572.

[9] N. Bostrom, Superintelligence: Paths, dangers, strategies, New York: Oxford University Press, 2014.

[10] A. L. Ostrom, F. Darima and M. J. Bitner, “Customer acceptance of AI in service encounters,” in *Handbook of Service Science Volume II*, Springer, 2019, pp. 77-103.

[11] R. Hoffmann, “9 Benefits of Artificial Intelligence on Customer Service,” 17 December 2019. [Online]. Available: https://www.business.com/articles/artificial-intelligence-customer-service/. [Accessed 25 March 2021].

[12] A. Vieira and S. Attul, “How banks can better serve their customers through artificial techniques,” in *Digital marketplaces unleashed*, Berlin, Springer, 2018, pp. 311-326.

[13] M.-H. Huang and T. R. Roland, “Artificial intelligence in service,” *Journal of Service Research,* vol. 21, no. 2, pp. 155-172, 2018.

[14] M. Jakšič and M. Matej, “Relationship banking and information technology: The role of artificial intelligence and FinTech,” *Risk Management 21,* vol. 1, pp. 1-18, 2019.

[15] M. V. Eeuwen and H. V. D. Kaap, “Mobile conversational commerce: messenger chatbots as the next interface between businesses and consumers,” University of Twente, Twente, 2017.

[16] V. Cabrera and Nicole, “Inteligencia Artificial aplicada al marketing: Impacto del uso de Chatbots Cognitivos en la satisfacción del cliente del sector bancario,” Universidad Peruana de Ciencias Aplicadas, Lima, 2020.

Value Added Tax (VAT) - implementation issues in Albania

Hysen Muceku

Lecturer, Faculty of Economy, Business and Development European University of Tirana

hysen.muceku@uet.edu.al

Abstract Value Added Tax (VAT) today is the main tax in most countries, including Albania, as it represents the largest share in budget revenues.
The tax system applied to VAT is similar to the regressive system, where with increasing income the tax burden decreases. So being a consumption tax low-income households spend a large portion of their income on consumption as opposed to high-income households, so they bear a greater burden compared to the income they benefit. An increase of the VAT rate inevitably affects the increase in: inflation, unemployment, interest rate, so people in general will become poorer.
The government should be careful in the fiscal policy that it implements so that the increase of budget revenues to can be achieved not through the increase of the tax burden, but through the expansion of the tax base and the implementation of VAT rates in an escalated manner, in order to facilitate tax burden for lower income families.
This study focuses on the problems encountered in the implementation of VAT in Albania and its impact on the economy. For the purposes of the study, the methodology used consists of the use of quantitative and qualitative methods, quantitative methods were used by analyzing primary data collected by the author, as well as qualitative methods by analyzing secondary data, collected from publications of well-known authors in this field and official institutions.
Keywords: Value Added Tax (VAT); Fiscal system, Tax rate; Fiscal policy.

1 Introduction

Value added tax/VAT, considered as the tax that collects the most government revenue in countries that have made it part of their fiscal package, has been studied on its interaction with multiple components. Different authors have reached different conclusions about the relationship between VAT and GDP, but most argue that there is a positive relationship between these two variables.

The dilemma of the tax system, whether VAT should be applied at a single rate in a given country, or should be applied at multiple rates has sparked numerous discussions by politicians, researchers and analysts giving their opinions on the best performance of this tax. In addition to discussing whether there should be a VAT rate or multiple rates, another discussion is whether there should be a zero VAT rate? Various authors (Jansen & Calitz, 2015: 6) argue that removing the

zero VAT rate would reduce distortions in the economy and could allow us to focus on those measures (such as social goals) where capital gains are higher. Despite the arguments given, different states have pursued and implemented different policies.

Also, an important issue of debate has been that governments often find it difficult to choose the optimal level of turnover threshold in relation to VAT, in which firms are required to register, a choice which is important for the administration of VAT. Some researchers argue that one advantage of raising the VAT threshold is that it reduces administrative costs, but attitudes towards VAT exemptions from the first application of VAT until today have become part of the fiscal package in many places. In some countries VAT regimes are characterized by a consumption tax base with several tax rates, multiple exemptions and the application of the refund method. Various researchers argue that the design of VAT should minimize as much as possible the number of exemptions for an efficient system.

There are various arguments for implementing VAT in a tax system. But most scholars and analysts argue that a broad and uniform value-added tax promotes economic neutrality and effectiveness, as opposed to other taxes such as personal income tax and corporate income tax. Broad-based VAT and a rate applied so far in Albania has made that there is not much interference or distortion of individuals' decisions to consume or save, to favor the purchase of a product more than a another or for businesses to produce a certain product or another. On the other hand, income tax tends to distort these decisions. Because personal income tax in recent years in Albania has been implemented at progressive rates, increasing with increasing income level - as a result it may discourage some individuals from working. Withholding tax can tax investment income, thus reducing the savings.

Countries that have implemented VAT in their tax systems are the countries with the highest income stability. The implementation of VAT, for a long period in the tax system of Albania, has influenced the increase of tax revenues and the orientation of Albania towards the model of taxation through VAT, keeping the inflation rate under control, formalization of the economy positively affects the tax revenue stability ratio.

The purpose of the study is to analyze VAT, its impact on tax revenues and problems related to VAT administration in Albania.

The main objectives of this study are:

- Identification and analysis of VAT and factors affecting the realization of tax revenues.
- Treatment of the legal and regulatory framework on the basis of which VAT is administered in Albania.
- Analysis of VAT issues in Albania.

Study methodology. To fulfill the purpose of the study and to reach accurate conclusions, the research methodology will include both data sources, primary data collected by the author through questionnaires and interviews, as well as secondary data collected from publications well-known authors in this field and official institutions.

The research question is: What are the factors that affect the level of VAT revenues in Albania?

2 Literature Overview

The authors Keen and Lockwood (2010) argued that: "VAT is more likely to increase tax revenues in countries with relatively high levels of GDP per capita and in countries with 'open economies' for two reasons: First, higher-income countries are more likely to cope with administrative and VAT compliance requirements; Second, VAT revenues account for a large share of total revenues in most developing countries."

While the authors Auriol and Warlters (2011) who conducted the study to estimate the costs of managing public funds for five tax instruments in 36 African countries, concluded that VAT was the tax instrument with the lowest cost.

The study by Ebeke and Ehrhart (2012) on 103 developing countries observed during the period 1980-2008 confirms that the average level of tax revenue volatility in countries without VAT is significantly higher than in countries with VAT.

Author Anna Moździerz (2017) in her paper points out that: "Taxes give fiscal authorities the means to influence prices. Reconstructing the tax system towards an equal distribution of taxes between direct and indirect taxes would help reduce inflationary pressures". The author links the function of the tax system to the impact of macroeconomic indicators, such as inflation.

While the author G, Carlotta (2015) in her paper states that: "Designing a tax system and modeling tax reforms are always the result of a compromise between the revenue objectives and distribution issues faced by policymakers. The balance between these two objectives determines the scope of tax intervention and requires adequate methods to assess the overall effectiveness of the preferred tax system in achieving its goals".

An important feature of the tax system in many countries is the dominance of consumption taxes or indirect taxes in general. To support this theory, the authors Gordon and Li (2009) point out that consumption taxes make up more than half of total government revenue in poor countries.

The authors Yalama & Gumus (2013), state that high tax rates and the tax burden increase tax evasion.

In their work Alberts Auziņš, Alexeys Nipers & Wolfs Kozlinskis (2008) have concluded that: “VAT has a very special impact on market equilibrium. The VAT mechanism that affects market equilibrium differs from the impact of direct and indirect taxes. This comes as a result of the impact of VAT on the market equilibrium, in the case of consumers, affecting the marginal income of the firm (seller) without affecting the demand itself.

Moreover, Radeke, Petersen & Giucci (2015) emphasize that: "An efficient tax administration is a prerequisite for the success of the introduction of VAT and the prevention of fraudulent activity".

In developing countries, tax administration and poor enforcement are often cited as major obstacles to VAT approval, given that the latter requires more information and specific skills to be effectively administered (Boadway & Sato, 2008).

Likewise, according to the author Macharia W. B., (2014), “The level of management commitment has been proven to influence the adoption of VAT. Given that the customs collects a significant part of VAT revenues, it is a priority to work effectively in these institutions to perform the relevant tasks. The author continues the argument that: “staff is the most critical component of human resources in the VAT department, which is entrusted with the responsibility of ensuring tax compliance. Therefore, according to the author, staff and other stakeholders need to be equipped with updated skills to increase VAT compliance through social media. The paper also concluded that the training of staff has an impact on VAT approval. Information technology is nowadays has become an important tool for the efficiency of tax administrations".

Shojaee, T. (2016) confirmed the hypothesis that “information technology affects the efficiency of the tax system with a level of 95% reliability. The author adds that the use of information technology helps auditors and tax experts in analysis and decision-making and creates more efficient management systems in organizations”.

The authors De la Feria & Krever (2012) in their study conclude that “historical factors that led to multiple levels and multiple exceptions to traditional European VAT were not present in most non-EU jurisdictions and adopters of a the modern VAT model were able to avoid these features of traditional VAT, for the most part by adopting single rates and substantially limiting the number of exemptions. The authors argue that more limited exemptions have imposed changes in economic and administrative costs, however, prompting some of the modern VAT jurisdictions to explore more modern alternatives, particularly in the area of financial services, but also in relation to supplies from small and medium corporates, as well as registration thresholds”.

For the author Sørensen, (2017) "many financial services are exempt from value added tax, although it may be required, there are technical difficulties in applying VAT for these services".

From the different approaches of the above authors it is concluded that the problems related to the implementation of VAT tax rates, the determination of the taxable base and exemptions, as well as the refund process are some of the main issues for which policy makers should be careful in following-up fiscal policies and the decision-making of this area.

3 Some problems of VAT implementation in Albania

In Albania, as in many other countries in the region, the indirect tax base still remains narrow, this requires a review of the model of adaptation to the economic and social environment in order to expand this base. The share of direct and indirect taxes in the tax burden has remained almost unchanged for many years, where indirect taxes have occupied the largest share in the structure of tax revenues, this still shows a tax burden borne by the Albanian consumer, and not by the real economy. On the other hand, this reflects the need to modify fiscal policy to shift the burden from consumption to capital, as it should be wealthy individuals and large businesses who should bear the brunt of the burden in this regard.

In the state budget revenues, VAT is the main tax that occupies about 35% of total revenues and with the new legislation adopted, in general the structure of this tax is harmonized with that of the member states of the European Union, so will not undergo fundamental changes due to Albania's integration into the EU.

For a better administration and increase the in efficiency of indirect taxes, especially VAT, which is the main source of tax revenue, some important issues that need to be discussed for Albania and should be in the attention of policymakers are:

Firstly, the VAT threshold. The changes made by the government in the fiscal packages of recent years by reducing the VAT registration limit of businesses that achieve a total annual turnover influenced the expansion of the base of this tax by increasing the number of businesses that declare and pay this tax, thus leading to a greater formalization of the economy. But, an unclear fiscal policy was pursued during 2020 with the aim of benefiting businesses by excluding from VAT businesses with annual turnover over ALL 10 million (considered small), these changes that were approved with the last fiscal package can be affect the opposite arm, but the impact of this reform undertaken will be measured in the following tax periods.

Although various researchers argue for the existence of a limit that has little impact on business if the goods and services were to be sold to registered tax-administered businesses, in practice setting a turnover limit distorts the decision-

making of many businesses. Therefore, the optimal value of the turnover limit can be called the limit where the tax is applied on all sales and not only on the turnover limit set by law.

Albania's practice shows that businesses try to stay either slightly below the turnover limit, or in parallel with it, hiding the declared income that they usually realize through the shortcomings of small business that does not use sales / purchase documentation and relevant VAT tax invoices, as well as by the inefficient administration of fiscal authorities.

This type of exemption and any other exemption that has been made in recent years has created opportunities for tax evasion and tax evasion, so the fiscal policy that the government should pursue should be very careful in cases where it makes decisions on exemptions, as they can encourage an unstable business environment with economic consequences.

Secondly, the establishment of escalated VAT rates. In these times, it is found that only Bosnia-Herzegovina and Albania generally apply a standard average VAT rate, while other Western Balkan countries apply reduced VAT rates.

One problem with VAT is its disproportionate impact on limited and low-income people, as long as the tax is the same for both high-income and low-income people, then it affects the low-income individual. The application in Albania of the standard VAT rate on basic consumption products affects the reduction of the real income of individuals with limited and low incomes. So, VAT will have a negative impact by discouraging consumption, at a time when Albania's economy is tending to increase consumption, any decline in spending will reduce consumption, will increase the level of unemployment, hurting the country's economic growth.

In this period when most of the fiscal burden in Albania is still borne by individuals with limited and low incomes, a reform of the tax system is needed to rebalance the tax burden with the aim of shifting the fiscal burden to capital taxes.

Therefore, even for Albania, the establishment of escalated VAT rates accompanied by an increase in administrative capacity would be an action that would lead to increased effectiveness of this tax.

Third, the determination of cases of VAT exemptions. Excluded supplies deduct VAT on the value added of the respective supply. In general, fiscal policies, simple tax administration, tax justice and economic tax neutrality are arguments that support the minimal use of exemptions. Various economic, political, social and tax administration situations in Albania and other countries have influenced the determination of VAT exemptions. The case of exemption of entities with low turnover was treated above, which is a kind of general exemption of all supplies of goods and services from entities that have a turnover lower than the limit set for VAT registration. In many cases it is assumed that "exemptions" result in a reduction of the VAT tax burden on supplies. To avoid distortions caused by the

failure to deduct VAT on paid purchases, a good policy could be pursued not to exclude the types of supplies made for genuine business activities.

In order to administer VAT efficiently, it is necessary not only to estimate the VAT gap, but also to fill the tax gap by expanding the base of this tax.

Finally, since VAT is the only tax used by the government, not only to collect a significant portion of the money in the budget, but also to pay a large portion of it back in the form of a refund, where each VAT invoice constitutes a possible claim from public funds. Falsification of such claims is probably the most common form of VAT fraud in Albania, this makes important from the point of view of the administration of this tax, more detailed knowledge on future claims for reimbursement.

Fiscal treatment of refunds is defined in the law on VAT and tax procedures to the extent of legal conditions for refund, but refund procedures and entities that have priority for refund are treated in the instruction, as well as the refund of exporters and financial agreements are treated in guidance, therefore it is necessary to design a risk management strategy.

Some other problems in the application of VAT in Albania are: shortcomings in legislation, registration and deregistration of taxpayers, construction and minimum fiscal cost, tax assessment and control, etc.

Conclusions and Recommendations

The government in the fiscal policy to be pursued should be careful in setting an optimal VAT threshold that helps in the good administration of this tax, leads to the formalization of the economy, strengthens fiscal education by increasing billing and maintaining fiscal documentation, as well as correctly addresses the appropriate segments of taxpayers.

The application of scaled VAT will improve its regressive effect on the services and goods provided and will increase the effectiveness of this tax.

If VAT is not fully administered and with the inclusion of any value added of the economy, it will continue to undermine neutrality by weighing on the price of goods and services taxed with this tax.

Exceptions of economic sectors and activities specified in the activities defined in the VAT law, exemptions with special laws and international investment agreements, reduction of the tax rate below the standard VAT rate, have an important influence in the creation of tax gap.

Reimbursement is a simple and widespread mechanism that affects the functioning of the VAT scheme, so it is necessary to design and implement a risk management strategy for reimbursements to be made in future periods.

Efforts to increase fiscal administration capacity in order to expand the tax base is essential in creating a sustainable business environment and economic growth of the country.

References

[1] Keen, M. and Lockwood, B.: The Causes and Consequences of the VAT Revolution - An Empirical Investigation, Journal of Development Economics, 2010, vol.92, pp.138-151.

[2] Auriol, E. and Warlters M.: The marginal cost of public funds and tax reform in Africa, Journal of Development Economics, 2012, vol. 97(1), pp. 58-72.

[3] Ebeke, C. and Ehrhart, H.: Does VAT reduce the instability of tax revenues?, CERDI, 2012, pg. 1-18.

[4] Gordon, R. and Li, W.: Tax Structures in Developing Countries: Many Puzzles and Possible Explanation, 2009 UCSD and University of Virginia.

[5] Yalama, O. G., Gumus, E.: Determinants of tax Evasion Behavior, Emperical Evidence from Survey Data, International Business and Management, 2013, Vol.6, No.2, pp. 15-23.

[6] Moździerz, A.:The Impact of Changes in Indirect Tax Rates on Inflation in Selected EU Countries, 2017.

[7] Greci, C.: Efficiency or redistribution? An empirical study of the implications of VAT design, Doctoral Thesis: The University of Roma Tre, 2015.

[8] Boadway, R. & Sato, M.: Optimal Tax Design and Enforcement with an Informal Sector, Working Paper No. 1168: Queen's University, 2008, pp. 27-31.

[9] Macharia, W. B.: Factors influencing adoption of value added tax (vat) in social commerce in Kenya: A case of Kenya Revenue Authority, Research project, United States International University, 2014, pp. 73-87.

[10] Shojaee, T.: Factors affecting the efficiency of the tax system from the perspective of tax experts of Tehran City Tax Affairs, International Journal of Humanities And Cultural Studies, 2016, pp. 1884-1892.

[11] De la Feria R. & Krever R.: Ending VAT Exemptions: Towards A PostModern VAT, Working Paper 12/28, Oxford University Business Tax Center, 2012, pp. 23- 27.

[12] Sørensen, C.: Taxing value added in the financial sector, An input-output approach and effects of the Norwegian FAT, Master Thesis, The University of Oslo of Norway, 2017.

[13] Fiscal reports and statistics of the Ministry of Finance of the Republic of Albania for the years 2018-2020.

The impact of COVID 19 on digitalization of organizations

Zlatko Nedelko, Vojko Potocan

zlatko.nedelko@um.si, vojko.potocan@um.si

Abstract: The COVID 19 epidemics has influenced the pace of digitalization in the society and organizations. This paper discusses the impact of COVID 19 circumstances on digitalization of organizations. Certainly, it can be argued, that the COVID 19 epidemics speeded up the process of digitalization of organizations through increased remote working in organizations. Despite increasing the amount of remote working, this is only a part of the entire spectrum of possible digitalization of organizations, which is commonly expressed under Industry 4.0. This paper treats COVID 19 as an accelerator and at the same time as an inhibitor of the digitalization of organizations. The paper lists several recommendations, how to further increase the level of organizational digitalization, going beyond remote working.
Keywords: Industry 4.0, COVID 19, organizations, digitalization.

1 Introduction

Digitalization of organizations, commonly emphasized through the concept of Industry 4.0, has been widely discussed in recent years among academics and practitioners. After the emergence of term Industry 4.0 in Germany in 2011 [1, 2], the main aim of the studies was to address the implementation of Industry 4.0 from various standing points. Although, the main focus was on implementation of Industry 4.0 in manufacturing sector and with focus on technological aspects of implementation [3].

Industry 4.0 is especially aimed for manufacturing organizations, where the most studies were done and most benefits are expected and extensively studied. Several years after the introduction of Industry 4.0 phenomena, organizations were started to intensively implement Industry 4.0 in their strategies and in turn in their processes and operations [3-6].

Emergence of COVID 19 epidemics and related restrictions, force organizations to enable their employees remote working – i.e. from their homes, in order to enable organizations working also in times of COVID 19.

COVID 19 circumstances may cause a bit paradoxical situation, as among practitioners we may recently often hear how digitalized are they now and what a giant leap they made toward digitalization of their organizations. This is far from accurate assessment, as the core idea of Industry 4.0 is to "enable collaboration and integration of all systems, objects, and subjects in organizations". Thus, with

the implementation and conducting the work at distance, we cannot just simply claim that the level of organizational digitalization increased substantially and we increased the level of Industry 4.0 practices substantially.

Looking at the abundant literature dealing with the technologies and tools under Industry 4.0 [7], it becomes evident, that the remote working can be considered in the context of digitalization, but not among the core Industry 4.0 technologies [8]. It becomes clearly evident, that Industry 4.0 is much more than just "going distance", by conducting the work remotely from organizational premises.

This paper discussed the issues of digitalization in times of COVID 19, where we outlined how COVID 19 pandemics conditions influence on digitalization process of organizations, while we also emphasize, that "going distance" is not the key concern of Industry 4.0.

The paper has following structure. First, we outline basic cognitions to understand Industry 4.0 technologies, with the aim to prepare fertile ground for discussion.

2 Theoretical background

Industry 4.0 can be very generally defined as a set of permanent connections between all objects (e.g. machines, equipment) and subjects (i.e. people) in organization and beyond the organization (i.e. customers and suppliers) [2, 9, 10].

Next, we will outline technologies under Industry 4.0, to present the abundance of technologies under Industry 4.0.

Various definitions of Industry 4.0, indicate that main focus of Industry 4.0 principles implementation was on manufacturing organizations and the implementation of technologies, especially in production processes – considered as key aim, while also beyond production processes in manufacturing organizations [8, 11-14]. The implementation of Industry 4.0 principles in service organizations is gaining more attention only recently [15, 16].

Looking on Industry 4.0 implementation through the lenses of technologies under Industry 4.0, we can find several approaches to define those technologies. In following paragraphs, we emphasize some of them.

Technologies of Industry 4.0 can be based on their main objective, considered as [8]: (1) front end technologies – in the center is smart manufacturing, that enables "smarter manufacturing", followed by smart working, that enable smarter and more efficient working. Another two front end technologies are enabling smarter supply chain management, where processes of supply and selling are supported with digital technologies; (2) base technologies comprise technologies, that enable support in terms of connectivity and intelligence for front-end technologies, which are integrated in comprehensive manufacturing system. Front end and base technologies are outlined in Figure 1.

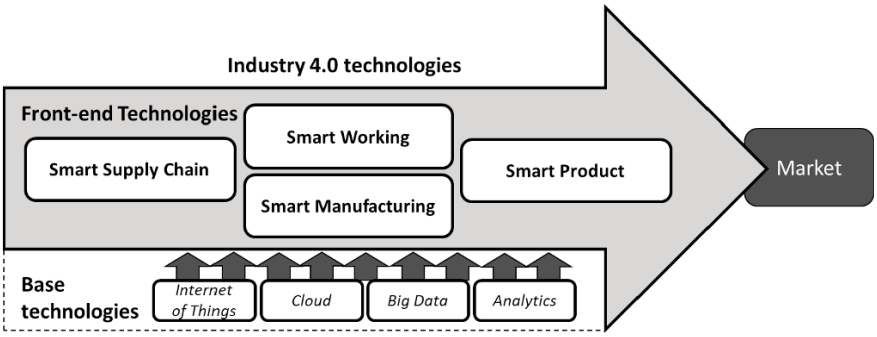


Figure 1

Industry 4.0 technologies

Source [8]

Most logically, remote working should be included in the smart working pillar. Looking more detailed at this pillar, the key technologies within this pillar are [8]: (1) remote monitoring of production; (2) remote operation of production; (3) augmented reality for maintenance; (4) virtual reality for workers training; (5) augmented and virtual reality for product development; and (6) collaborative robots.

Another stream of studies, offers nine pillars of technologies within Industry 4.0 environment, with the aim to support manufacturing processes. These pillars are [17, 18]: (1) Industrial internet of things; (2) Big data; (3) Horizontal and vertical integration of systems; (4) Simulations; (5) Clouds; (6) Augmented reality; (7) Autonomous robots; (8) 3-D printing; and (9) Cyber security.

A promising research stream in context of Industry 4.0, emphasize commonly used management tools in organizations, which are associated with Industry 4.0 implementation in organizations. Those management tools are [3]: (1) digital transformation, (2) balanced scorecard, (3) rapid prototyping, (4) radio-frequency identification, (5) six sigma, (6) mission and vision statement, (7) customer segmentation, and (8) total quality management.

3 Discussion

If we focus on smart working in frame of technologies of Industry 4.0 [8], it is seen that remote working – i.e. working outside of the premises of organization – is not provided, as well as it is not mentioned among nine pillars of technologies [18] and management tools associated with Industry 4.0 [3]. There are also not emphasized management tools, that will enable remote working.

A brief overview of the literature about Industry 4.0 technologies reveal that remote working is not emphasized as one of the key technologies under Industry

4.0. Most closely remote working can be to the smart working, which is one of the key pillars of Industry 4.0 pillars [8], but also here the main aim is to enable virtual access to the various information – like lead times, production times, etc, not remote working.

We may argue, that the remote working was not explicitly considered as one of the front-end or base technologies under Industry 4.0 phenomena. In the context of most actual situation related to the COVID 19 circumstances, we may argue, that COVID 19 pandemics certainly speeds up the implementation and usage of ICT for collaboration and in turn remote work. Thus, claiming that the level of Industry 4.0 implemented substantially increased, is not accurate, as among the core ideas of Industry 4.0 remote working was not emphasized as one of core technologies.

COVID 19 may also be considered, either as either as facilitator or impediment [19, 20] for Industry 4.0 implementation. Industry 4.0 therefore may be seen as a way to help organization to cope with negative consequences of COVID 19, for instance by establishing remote working, as well as other options of remote working – like remote monitoring of production. Although, more realistic is that COVID 19 will acts as a barrier towards Industry 4.0 implementation. When considering COVID 19 as barrier, we may argue that organizations in crisis circumstances put more focus on organizational survival, not so much on "developing new projects" [21, 22], among which is also Industry 4.0 implementation.

To sum up, we may argue, that the increased use of telecommuting and remote working during the pandemics of COVID 19, should not mislead us in assessing the actual progress in the implementation of Industry 4.0 principles in organizations.

Conclusions

Managers in organizations should be aware about the misleading perception regarding substantial advancement toward Industry 4.0 principles in times of COVID 19 crisis. This implies, that managers must make further efforts to implement Industry 4.0 principles. In that context, beneficial will be workshops in organizations to make all employees in organization aware, that increased usage of remote working is not the key aim of digitalization under implementation of Industry 4.0. With that, employees will also be able to accept new technologies, which Industry 4.0 will bring to the organizations and are much more than just remote working.

Based on the discussion in this paper, the actual level of digitalization in organizations should be assessed via field survey of employees in organizations. In that context, a detailed approach is needed, which will list different technologies and solutions representing core of Industry 4.0 key principles, like lean production, six, sigma, radio frequency identification, open innovation, etc.

[3], as well as other tools that are part of broader digitalization, like collaborative innovation, software for group working, shared service centers, and especially tools for remote working. This will give us sharper picture regarding the actual level of digitalization and implementation level of Industry 4.0 principles.

References

[1] R. Drath and A. Horch, "Industrie 4.0: Hit or Hype? [Industry Forum]," *IEEE Industrial Electronics Magazine,* vol. 8, no. 2, pp. 56-58, 2014.

[2] F. Zezulka, P. Marcon, I. Vesely, and O. Sajdl, "Industry 4.0 – An Introduction in the phenomenon," *IFAC-PapersOnLine,* vol. 49, no. 25, pp. 8-12, 2016/01/01/ 2016.

[3] R. Črešnar, V. Potočan, and Z. Nedelko, "Speeding up the implementation of industry 4.0 with management tools: Empirical investigations in manufacturing organizations," *Sensors (Switzerland),* Article vol. 20, no. 12, pp. 1-25, 2020, Art. no. 3469.

[4] M. Rossini, F. Costa, G. L. Tortorella, and A. J. T. I. J. o. A. M. T. Portioli-Staudacher, "The interrelation between Industry 4.0 and lean production: an empirical study on European manufacturers," journal article vol. 102, no. 9, pp. 3963-3976, June 01 2019.

[5] M. Ghobakhloo, "The future of manufacturing industry: a strategic roadmap toward Industry 4.0," *Journal of Manufacturing Technology Management,* vol. 29, no. 6, pp. 910-936, 2018.

[6] K. Santos, E. Loures, F. Piechnicki, and O. Canciglieri, "Opportunities Assessment of Product Development Process in Industry 4.0," *Procedia Manufacturing,* vol. 11, no. Supplement C, pp. 1358-1365, 2017/01/01/ 2017.

[7] L. S. Dalenogare, G. B. Benitez, N. F. Ayala, and A. G. Frank, "The expected contribution of Industry 4.0 technologies for industrial performance," *International Journal of Production Economics,* vol. 204, pp. 383-394, 2018/10/01/ 2018.

[8] A. G. Frank, L. S. Dalenogare, and N. F. Ayala, "Industry 4.0 technologies: Implementation patterns in manufacturing companies," *International Journal of Production Economics,* vol. 210, pp. 15-26, 2019/04/01/ 2019.

[9] T. Wagner, C. Herrmann, and S. Thiede, "Industry 4.0 Impacts on Lean Production Systems," *Procedia CIRP,* vol. 63, no. Supplement C, pp. 125-131, 2017/01/01/ 2017.

[10] U. Dombrowski, T. Richter, and P. Krenkel, "Interdependencies of Industrie 4.0 & Lean Production Systems: A Use Cases Analysis," *Procedia Manufacturing,* vol. 11, pp. 1061-1068, 2017/01/01/ 2017.

[11] J. Butt, "A Strategic Roadmap for the Manufacturing Industry to Implement Industry 4.0," *Designs* vol. 4, no. 2, p. 11, 2020.

[12] M. Sony, "Industry 4.0 and lean management: a proposed integration model and research propositions," *Production and Manufacturing Research,* Article vol. 6, no. 1, pp. 416-432, 2018.

[13] B. Mrugalska and M. K. Wyrwicka, "Towards Lean Production in Industry 4.0," *Procedia Engineering,* vol. 182, no. Supplement C, pp. 466-473, 2017/01/01/ 2017.

[14] P. Anthony, "Lean Manufacturing and Industry 4.0," (in English), *Manufacturing Engineering,* Editorial Material vol. 159, no. 4, pp. 104-104, Oct 2017.

[15] J. Qin, Y. Liu, and R. Grosvenor, "A Categorical Framework of Manufacturing for Industry 4.0 and Beyond," *Procedia CIRP,* vol. 52, no. Supplement C, pp. 173-178, 2016/01/01/ 2016.

[16] R. Neugebauer, S. Hippmann, M. Leis, and M. Landherr, "Industrie 4.0 - From the Perspective of Applied Research," *Procedia CIRP,* vol. 57, no. Supplement C, pp. 2-7, 2016/01/01/ 2016.

[17] G. Di Bona, V. Cesarotti, G. Arcese, and T. Gallo, "Implementation of Industry 4.0 technology: New opportunities and challenges for maintenance strategy," *Procedia Computer Science,* vol. 180, pp. 424-429, 2021/01/01/ 2021.

[18] A. Forcina and D. Falcone, "The role of Industry 4.0 enabling technologies for safety management: A systematic literature review," *Procedia Computer Science,* vol. 180, pp. 436-445, 2021/01/01/ 2021.

[19] C. Acioli, A. Scavarda, and A. Reis, "Applying Industry 4.0 technologies in the COVID–19 sustainable chains," *International Journal of Productivity and Performance Management,* vol. ahead-of-print, no. ahead-of-print, 2021.

[20] G. Czifra and Z. Molnár, "Covid-19 and Industry 4.0 " (in English), *Research Papers Faculty of Materials Science and Technology Slovak University of Technology,* vol. 28, no. 46, pp. 36-45, 01 Jun. 2020 2020.

[21] L. M. Lauesen, "CSR in the aftermath of the financial crisis," *Social Responsibility Journal,* Article vol. 9, no. 4, pp. 641-663, 2013, Art. no. 0140.

[22] A. Soulsby, G. Hollinshead, and T. Steger, "Crisis and change in industrial relations in Central and Eastern Europe," *European Journal of Industrial Relations,* vol. 23, no. 1, pp. 5-15, 2017.

Workplace Bullying Awareness and Prevention

Paulina Sihdewi Purnandari, Juan Kurniawan Widyanto, Doan Minh Phuong, Bernardo Pena Chokeke, Andrea Tick

Óbuda University

paulina.purnandari@stud.uni-obuda.hu, juankurniawanwidyanto@stud.uni-obuda.hu, minhphuong0697@stud.uni-obuda.hu, Bernardo@stud.uni-obuda.hu, Tick.Andrea@uni-obuda.hu

Abstract: Workplace bullying is a tremendously researched topic that happens within the female, non-white employees and specific groups, including the diverseness of corporate culture, escalate awareness, and bullying prevention in the workplace. Workplace bullying can have significant impacts as a source of family conflict, less productivity, trauma, powerless of the employee. This research aims to raise employee awareness and awakening every individual in the organization to prevent workplace bullying. This study used a literature review method by assembling the literature to review, arranging the literature that was assembled, and assessing the arranged literature. The way to raise bullying awareness includes workplace bullying training, recruiting, selection, performance management, establish regulations by conducting systematic risk assessment, establishing the policy on bullying, and apply compensation for the victim.
Keywords: awareness, bullying, corporate, culture, employee, prevention, workplace.

1 Introduction

Workplace bullying is an experience that no one wants to go through. However, this phenomenon is very likely to occur, and this action will not stop if every element in the organization keeps quiet. The investigation into workplace bullying has now crossed more than 25 years [1]. There is a plentiful amount of research about bullying in the workplace. However, limited literature is directed to the other aspects of the bullying phenomenon, especially its process, theoretical underpinnings, mediators, and workplace bullying moderators [1].

Workplace bullying broadly refers to the prevalence, causes, consequences, and the difference in gender and race status on workplace bullying [2]. Experiences of bullying at work happen across all gender, and racial disparities, even when an organization has a social support buffer from coworkers, women and non-white individuals benefit non-equally from this buffering effect [2]. The Institutes of Medicine recognizes that the workplace environment is an essential factor in nurses' ability to provide safe and effective care [3]. Dysfunctional work environments in which bullying occurs can significantly impact the ability of registered nurses to safely and effectively care for patients [3]. In Germany, more than a third of the trainee teachers have experienced bullying (37.4% have

experienced at least one harmful act weekly), with prevalence rates higher among men (35.5%) than women (16.8%) [4]. The types of bullying included work-related, personal bullying, and physically intimidating bullying [4]. This bullying correlated positively to leave, burnout, and cognitive stress symptoms and decreased job satisfaction, general health state, and satisfaction with life [4]. Workplace bullying brings consequences for both victims and witnesses, including mental health and cardiovascular disease [5]. A profound negative consequence of workplace bullying victimization, as they transpire for victims and organizations as wholes [6]. A workplace bullying research in 2007 indicated that 45% of bullying targets experienced emotional and physical residuum due to their bullying experiences [6]. Moreover, findings of workplace bullying surveys in 2014 indicated that for 61% of targets, losing their jobs was the only way to stop bullying. The assaults of workplace bullies tend to be hollow, inaccurate, baseless, and trivial and however, as ineloquently as they may appear, they convey persuasive, subtle, and often nonverbal messages about the power and privilege of a given bully assailant relative to the intended target [6].

Through previous research, workplace bullying occurs in many different jobs, in many countries, in vulnerable people, such as women and black people. In modern life, where social media is booming, cyberbullying and bullying become controversial and painful issues that affect many workers' mentality and physicality for many years. Consequently, this research aims to raise employee awareness and awakening every individual in the organization to prevent workplace bullying.

2 Literature Review

2.1 Disruptive behavior of bullying

Disruptive behaviors include manipulation and workplace bullying. Manipulation is an action that impedes another's ability to succeed in the workplace, whereas harassment and discrimination continue with the intent to make another feel powerless [7]. European researchers described workplace bullying as an escalating process of harassing, offending someone until the person ends up in an inferior position [1]. Workplace bullying is understood to comprise a set of negative and repeated interpersonal behaviors that incorporate verbal and nonverbal communications to establish the social dominance and power of the bully perpetrator relative to an intended target [6]. Workplace bullying is also described as both a cause and an effect of physical and emotional fatigue that affects the overall health and safety of the entire workplace [8]. A workplace bully exhibits an ongoing mistreatment pattern that can be demoralizing or disrespectful and goes beyond a demanding boss with lofty standards [7]. Workplace bullying between a supervisor and a subordinate is often referred to as vertical bullying, for example, pointing out mistakes in public and giving somebody insufficient information for a task so that they are humiliated [7]. Distinguishing features of

bullying included persistency, power disparities, hostility, and harmful acts systematically and intentionally [1].

2.2 Workplace Bullying Perceptions

Differences in perceptions and cultural values should be considered when examining the nature, precursors, and outcomes of bullying.

2.2.1 Fit perceptions as antecedents of workplace bullying

Person-Environment fit theory states that the fit between the person and environment attributes leads to behavioral outcomes [9]. As most of the bullying acts are work or job-driven, an employee's incompatibility with his/ her job may give rise to workplace bullying perceptions [9].

2.2.2 Person-job fit and workplace bullying relationship

Perception of person-job fit is primarily influenced by individuals' expectations from the work environment, which eventually transcend into their appraisals of the work situation. When the organization does not fulfill individuals' expectations about their jobs, it may result in negative workplace experiences like workplace bullying [9]. Interpersonal conflicts are some of the main precursors of workplace bullying [9].

2.2.3 Person-supervisor fit and workplace bullying relationship

Person-supervisor fit refers to the match between supervisor and subordinate characteristics and is based on supervisor-subordinate value congruence, personality similarity, lifestyle, and workstyle resemblance [9]. Such an employee may be more effective in portraying his/her work as per the supervisor's expectations and at a lower chance of being bullied [9].

2.2.4 Workplace bullying-perceptions of organizational politics relationship

Perceptions of organizational politics refer to an individual's view that illegitimate, self-serving activities are instigated by other corporate members motivated by protecting or enhancing their self-interests at others' expense in the organization that produces a host of adverse outcomes such as contextual performance, stress, creativity, and proactive behavior [5]. Workplace bullying may constitute a crucial causal attribution that leads to increased corporate politics perceptions [5]. Other harmful acts, such as lack of intergroup cooperation, role ambiguity, fairness of rewards, and lack of trust, all increase an individual's perception that others' behavior is politically motivated [5]. Workplace bullying is a satirical act that reduces perceptions of connectedness and competence in a team context leading to a way of focusing on whether a person's behavior [5]. Also, corporate culture and

ineffective management can sometimes lead to bullying behavior in the workplace [7].

2.3 Workplace Bullying Implication

2.3.1 Workplace bullying as an origin of work-family conflict

Work-family conflict usually comes from continuous stress, and it will get a critical result such as depression and exhaustion [5]. The victims do not have control of themselves on task or responsibility in the workplace and that might resul in a lack of family functions as well [5].

2.3.2 Deteriorated innovation as an outcome of individual and team dysfunction

Cognitive Dissonance theory shows that for persons who have experienced bullying cognitive dissonance could be recognised because of increasing work-family conflict and due to some changes in their behavior [5].

2.3.3 Effect on Project Management

Abusive behavior or bullying either face-to-face and virtual, practiced by project managers, only gets less or little attention in project management literature [5]. People who tend to have rough or violent characters should be evaluated before engaging in project management [5]. As more project managers get licensed and enter the field, their technical skills are and will be addressed, however, many of the project managers have difficulties dealing with interpersonal relations [5].

3 Methodology

The literature review aims to evaluate various related research topics to answer the study's objectives by following these stages [10]:

1) Assembling the literature to review [11]
    a) Searching for literature on the database with relevance based on the suitability of keywords [10]: 29 articles on workplace bullying in total were collected
    b) Making the literature map [12]: The literature map consists of workplace bullying topics and publishers' maps.

Figure 1 reflects Workplace Bullying Topic Map that categorized into three sections:

a) *Input*: workplace bullying phenomenon and types
b) *Process*: process to prevent, manage, and examine bullying incidents
c) *Output*: effects of bullying

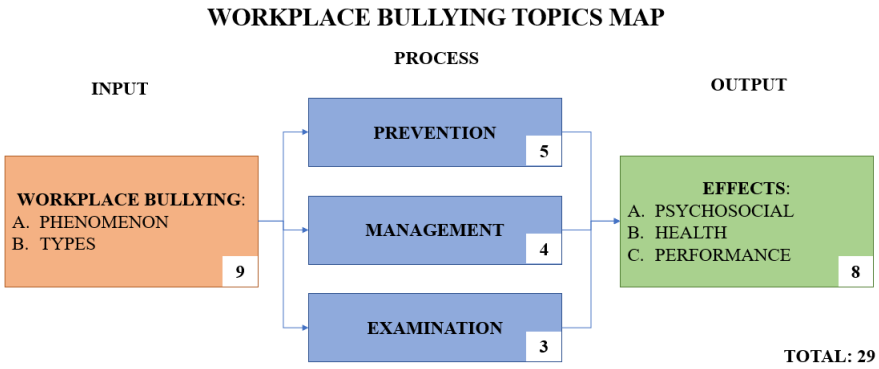


Figure 1
Categorization of the workplace bullying topics
Source: Developed by authors

Figure 2 ahows that there is a limitation in the categorization based on publishers, since the majority of papers were published through Sciencedirect (83%), followed by:

1) Researchgate (7%):

   a) Duru, P., Ocaktan, M. E., Çelen, Ü., & Örsal, Ö. (2018). The Effect of Workplace Bullying Perception on Psychological Symptoms: A Structural Equation Approach. *Safety and Health at Work, 9*, 210-215. doi:http://dx.doi.org/10.1016/j.shaw.2017.06.010

   b) Rai, A., & Agarwal, U. A. (2016). Workplace Bullying: A Review and Future Research Directions. *South Asian Journal of Management, 23*(3), 28-56.

2) Wiley (3%):

   a) Ritzman, M. E. (2016). A phenomenon we can't ignore: Performance improvement interventions to address workplace bullying. *Performance Improvement, 55*(1), 14-22. doi:https://doi.org/10.1002/pfi.21545

3) Springer (3%):

   a) Peregrin, T. (2019). Managing Adult Bullying Behavior in the Professional Domain. *Journal of The Academy of Nutrition and Dietetics*, 1383-1387.

4) Academia (3%):

   a) Lippel, K., & Cox, R. (2018). Regulation as intervention: how regulatory design can affect practices and behaviours in the workplace. In P. D'Cruz, C. Caponecchia, J. Escartín, D. Salin, & M. R. Tuckey, *Dignity*

and Inclusion at Work, Handbooks of Workplace Bullying, Emotional Abuse and Harassment (Vol. 3, pp. 1-17). Singapore: Springer. doi:https://doi.org/10.1007/978-981-10-5338-2_8-1

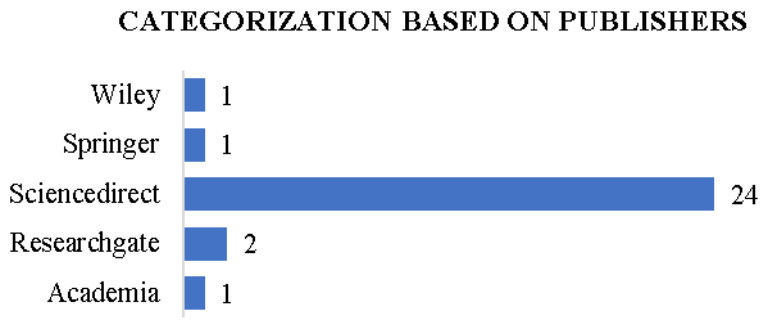


Figure 2
Categorization based on publisher
Source: Developed by authors

1) Arranging the literature that was assembled [11]: Deciding whose abstract is relevant and picking the most recent issues [10]. As a result, 22 articles on workplace bullying seemed relevant.

   a) Assessing the literature that was arranged [11]: Evaluating the literature by reading it comprehensively and summarizing every piece of literature [10].

   b) Performing literature elimination and selecting literature that passes the evaluation phase based on the study objective [10]. Twelve (12) articles of workplace bullying were kept in the research.

   c) Assembling the literature [10].

   d) At the end of the selection and filtering process, the final literature collection gave twelve (12) relevant research papers from the 29 literature previously collected and selected from the scientific literature databases.

The authors acknowledge that they have no commercial interests or personal relationships to influence the work reported in this paper.

4 Result and Discussion

4.1 Raising Bullying Awareness

Awareness and knowledge of bullying at all levels within an organization help reduce recognition time and prevent bullying situations from escalating [1]. As

line-level employees are likely to be the ones who witness workplace bullying, this group of employees must have an understanding of the phenomenon [1]. Further, organizations need to ensure that all organizational members understand what they should do if they experience or witness bullying [1]. Training interventions can be a valuable tool to educate HR professionals, managers, and employees alike [1].

4.1.1 Workplace Bullying Training

Educating employees through training is a significant performance improvement intervention to address workplace bullying, and it becomes a more pressing priority for HR professionals to pursue organizational efforts to eliminate that harmful behavior [13]. Workplace bullying is becoming a learned pattern of interpersonal interaction and behavior [14]. Training provides a means to deliver knowledge and facilitate learning among employees to reduce the prevalence of workplace bullying [13]. Meaningful learning about workplace bullying can produce a new conceptualization of the phenomenon, making different choices to reduce negative workplace interactions [13]. Training should present clear guidelines to employees, clarifying unacceptable behavior and communication in the workplace [13].

Also, intrapersonal and interpersonal emotional competence plays in the relationship between cyber-bullying victimization and mental health among Japanese adolescents by weakening the association and the latter by exacerbating it [14]. The skills to handle one's own emotions can be improved through interventions and even by daily behaviors such as helping others regulate their feelings [14].

4.1.2 Recruiting and Selection

Recruiting and selection are HR functions that can proactively address workplace bullying by preventing the introduction of individuals predisposed to perpetrate bullying in the organization [13]. It is suggested to screening potential employees for positive characteristics such as empathy, kindness, humility, and the ability to work in teams [13]. The recruitment and selection processes should focus on workplace bullying as a critical organizational issue to be addressed and prevented [13]. When employees are interviewed, HR professionals should take advantage of the opportunity to communicate expectations regarding personal behavior in the workplace, include sharing the expectations of consideration and respect with prospective employees [13]. These tools establish that the organizational culture will not support workplace bullying [13].

4.1.3 Performance Management

Institutional bullying occurs when bullying becomes accepted as a part of the organizational culture, and it usually happens after the organization tolerates,

ignores, or encourages workplace bullying behavior [13]. One of the most exceptive factors in mitigating bullying in the workplace is promoting the perception that the organization will not abide by bullying behavior. To encourage this result [13], HR professionals should ensure that employee behavior is aligned with ethical practices, suppose bullying behavior yields a positive reward for individuals or others who have observed this behavior [13]. In that case, these individuals learn to engage in bullying to advance in the organization [13]. Organizations can inadvertently offer positive responses to bullying behaviors through promotion and positive recognition, and it prevents managers from subjectively evaluating employee productivity and performance as a bullying tactic [13].

4.2 Workplace Bullying Prevention by regulation

General rules relating to civil and criminal liability, labor law, human rights, constitutional protections, occupational health and safety (OHS), and workers' compensation can all potentially provide tools for targets and workplaces to empower workplace actors to stop the behavior and ensure economic and psychological support for the targets [15]. Figure 3 shows the hierarchy of legal interventions, with the legislature's total silence regarding workplace bullying and psychosocial harassment (WBPH) at the bottom of the pyramid [15].

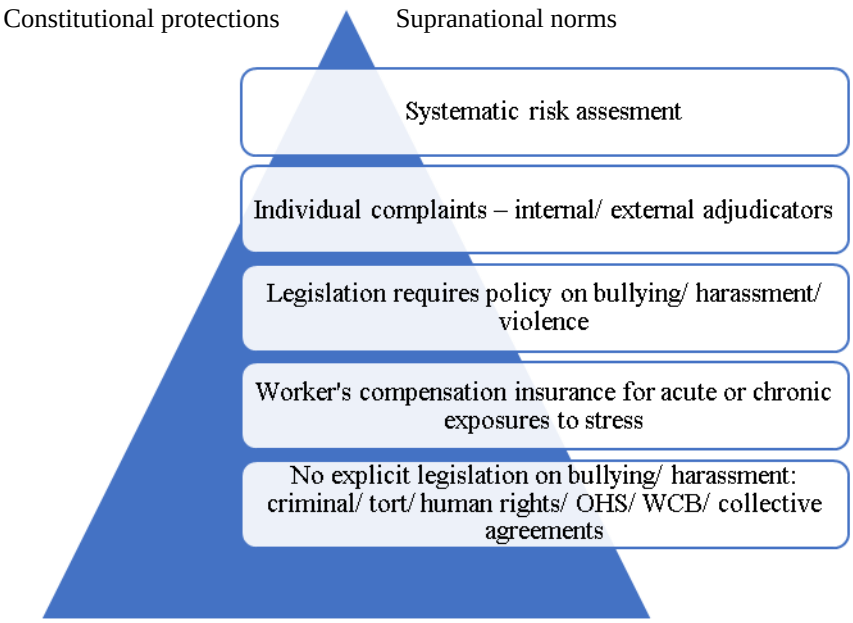


Figure 3
Typology of Workplace Bullying/ Harassment Regulatory Intervention [15]

It is essential to understand the significant differences between voluntary initiatives and binding legal regulations regarding legitimacy, enforceability, and durability [15]. Having provided an overview of various kinds of regulatory measures that affect workplace practices, examining detailed provisions in one authority will allow us to understand better the mechanisms by which legislative choices drive the actors' behavior [15].

When evaluating the pros and cons of embracing legislation on WBPH [15], the specific content of the proposed bill must scrutinize the content of the proposed legislation, considering all the contextual factors for employees forced to litigate when their rights are not respected [15]. Another issue likely to be raised in debates regarding the advisability of adoption of specific legislation on WBPH is the likelihood that more general legal regulation already in place will put a stop to WBPH in the workplace without naming it as such [15]. Until the root causes of WBPH at work are addressed, legal regulation aimed at changing workplace practices concerning WBPH on a micro-level will inevitably operate with a headwind created by these macro-level factors [15].

Legislation aimed at protecting employees from a broad range of psychosocial risk factors, including organizational factors, appears to be a fundamental but not sufficient measure to create meaningful protection from WBPH [15]. Psychosocial risks, including WBPH in the workplace, are wicked problems associated with inherent uncertainties created by the unclear cause-effect relationships, ambiguities, and conflicting interests [15]. Certain types of explicit legislation on WBPH are a prominent feature of a practical regulatory framework to prevent WBPH. A regulatory regime that only addresses WBPH and not psychosocial risk factors more broadly will be less applicable [15].

It creates no incentive for workplace parties and inspectorates to address the upstream determinants of WBPH [15]. A significant body of legal literature documents some of the effects of legislation on WBPH, in that analysis of cases made visible by the existence of legal remedies allows us to see both the nature of disputed behaviors in workplaces and the effectiveness or lack of efficacy of the standard rules and definitions in force [15].

4.3 Workplace Bullying Framework of Awareness and Prevention

A possible framework for managing workplace bullying awareness and prevention was developed in Figure 4. In the course of handling workplace bullying awareness and prevention must be considered and included simultaneously. Awareness raising should be included in the course of workplace bullying training, recruiting and selection as well as performance management. On the other hand, prevention should be considered when working out collective agreements, dealing with compensation insurance, internal-external adjustments

while company policy on bullying, harassment and violence needs to be prepared and the company needs to systematically assess the risk related to the issue.

The organization's success in eliminating workplace bullying will depend on every implementation of both factors. Further research should develop the relationship between these variables and make the weight between them. The development of the framework will be beneficial to organizations in operating their business process smoothly and managing their human resources fairly and with responsibility.

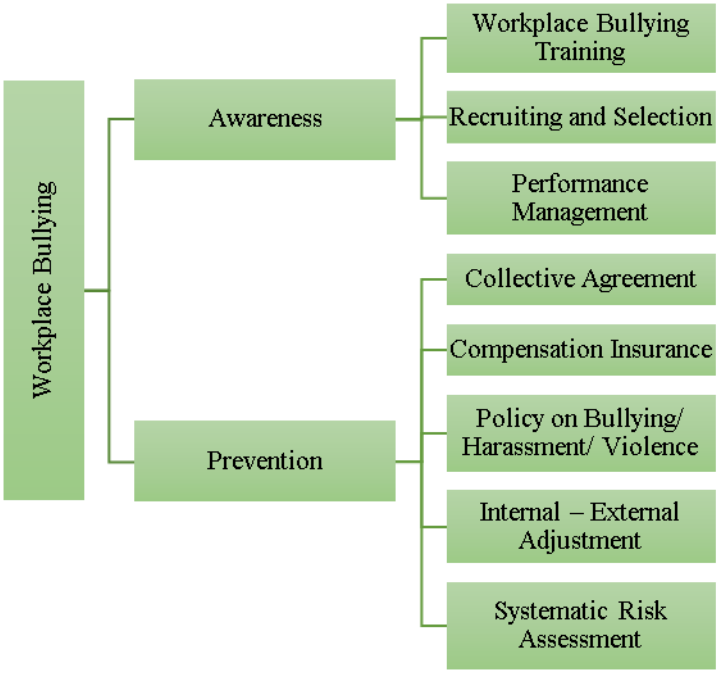


Figure 4
Conceptual Framework of Workplace Bullying Awareness and Prevention
Source: Developed by authors

Conclusion

Workplace bullying has been studied for more than 25 years and happens across all gender and racial diverseness. An intense negative consequence of workplace bullying, or victimization occurs as they become apparent for victims and organizations. The bullying targets experienced emotional and physical consequences. Some even resign in order to avoid the pain. The assaults of workplace bullies tend to be meaningless, inaccurate, unverified, and trivial; they convey persuasive, subtle, and often nonverbal messages about the power and privilege of a given bully assailant relative to the intended target.

Disruptive behaviors include manipulation and workplace bullying, whereas harassment and discrimination continue with the intent to make another feel powerless, with sets of malicious and repeated interpersonal behaviors that incorporate verbal and nonverbal communications to establish social dominance. When examining the nature, precursors, and outcomes of bullying, the following differences in perceptions should be considered: fit perceptions as antecedents of workplace bullying, person-job fit, person-supervisor fit, and organizational politics. Also, corporate culture and ineffective management can sometimes lead to bullying behavior in the workplace.

Workplace bullying can have significant impacts as a source of family conflict, contribute to the decrease of innovation, and contribute to the emergence of team dysfunction. Also, individuals who have a propensity for harmful workplace acts or abusive personalities should be intensely evaluated before assigning them project management roles or allowing them to engage in project management training.

This research used literature review methodology with the following steps: assembling the literature to review, arranging the literature that was assembled, and assessing the arranged literature. As shown in the findings, raising bullying awareness includes workplace bullying training, recruiting, selection, and performance management. Also, the way to prevent bullying by regulation includes: systematic risk assessment, internal/ external adjudicators, establish the policy on bullying, and apply compensation for the victim. Furthermore, it is necessary to examine the limits of bullying within specific cultures due to differences in values and ways of dealing with conflicts. In addition, it is necessary to research the effectiveness of the agency that will be responsible for bullying in the workplace. If the agency is associated with the Human Resource Department or other related agencies, regulations need to be set following the company culture.

References

[1] A. Rai and U. A. Agarwal, "Workplace Bullying: A Review and Future Research Directions," *South Asian Journal of Management,* vol. 23, no. 3, pp. 28-56, 2016.

[2] B. K. Attell, K. K. Brown and L. A. Treiber, "Workplace bullying, perceived job stressors, and psychological distress: Gender and race differences in the stress process," *Social Science Research,* vol. 65, pp. 210-221, 2017.

[3] L. A. Wolf, C. Perhats, P. R. Clark and M. D. Moon, "Workplace bullying in emergency nursing: Development of a grounded theory using situational analysis," *International Emergency Nursing,* vol. 39, pp. 33-39, 2018.

[4] M. Drüge, K. Schleider and A.-S. Rosati, "Bullying and Harassment of Trainee Teachers," in *Procedia - Social and Behavioral Sciences*, València, Spain, 2016.

[5] T. Creasy and A. Carnes, “The effects of workplace bullying on team learning, innovation and project success as mediated through virtual and traditional team dynamics,” *International Journal of Project Management,* vol. 35, p. 964–977, 2017.

[6] L. C. Dzurec, M. Kennison and P. Gillen, “The incongruity of workplace bullying victimization and inclusive excellence,” *Nursing Outlook,* vol. 65, no. 5, pp. 588-596, 2017.

[7] T. Peregrin, “Managing Adult Bullying Behavior in the Professional Domain,” *Journal of The Academy of Nutrition and Dietetics,* pp. 1383-1387, 2019.

[8] P. Duru, M. E. Ocaktan, Ü. Çelen and Ö. Örsal, “The Effect of Workplace Bullying Perception on Psychological Symptoms: A Structural Equation Approach,” *Safety and Health at Work,* vol. 9, pp. 210-215, 2018.

[9] A. Rai and U. A. Agarwal, “Examining fit perceptions and workplace bullying relationship: The moderating role of power distance orientation,” *IIMB Management Review,* pp. 1-11, 2021.

[10] P. S. Purnandari and J. K. Widyanto, “Collective Creativity in Organization,” in *FIKUSZ 2020 XV. International Conference*, Budapest, 2020.

[11] K. V. Fernandez, “Critically reviewing literature: A tutorial for new researchers,” *Australasian Marketing Journal (AMJ),* vol. 27, no. 3, pp. 187-196, 2019.

[12] J. Malek and T. N. Desai, “A systematic literature review to map literature focus of sustainable manufacturing,” *Journal of Cleaner Production,* vol. 256, pp. 1-20, 2020.

[13] M. E. Ritzman, “A phenomenon we can't ignore: Performance improvement interventions to address workplace bullying,” *Performance Improvement,* vol. 55, no. 1, pp. 14-22, 2016.

[14] Y. Urano, R. Takizawa, M. Ohka and H. Yamasaki, “Cyberbullying victimization and adolescent mental health: the differential moderating effects of intrapersonal and interpersonal emotional competence,” *Journal of adolescence,* vol. 80, pp. 182-191, 2020.

[15] K. Lippel and R. Cox, “Regulation as intervention: how regulatory design can affect practices and behaviours in the workplace,” in *Dignity and Inclusion at Work, Handbooks of Workplace Bullying, Emotional Abuse and Harassment,* vol. 3, Singapore, Springer, 2018, pp. 1-17.

The importance of SMEs in economic development of developing countries

Giorgi Sabanidze, Aleksei Kivenko, Peter Benics, Gokce Kalkan, Andrea Tick

Óbuda University,

gsabanidze@stud.uni-obuda.hu, aleksei.kivenko@stud.uni-obuda.hu, benics.peter@stud.uni-obuda.hu, gokcekalkan@stud.uni-obuda.hu, tick.andrea@uni-obuda.hu

Abstract: Small- and medium-sized enterprises (SMEs) have a crucial role in economic development, especially in the development of developing countries. They represent about 90% of businesses and more than 50% of employment worldwide. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies. This study will discuss how SMEs help building economic stability, their role in creating labor market, and fighting the monopoly. The aim of this research is to identify key issues relating to the role of SMEs in country development. The paper uses different research methods, and it strives to help people with entrepreneurial mindset to obtain deep understanding of the SME market. The results showed the complexity of this issue, different angles and perspectives can be seen on the analysis of different countries. However, from the results it is clear how beneficial the development of SME market is in the developing countries.
Keywords: Developing countries, Emerging economies, GDP, Innovation, Monopoly, SME, Sustainability, Workplace,

1 Introduction

SMEs are considered to be the engine of an economic development, they provide new workplaces, solve unemployment issues, furthermore, SMEs contribute a lot also in the sustainability growth. The reasons behind SMESs being the driving force in a country's development are different. Private ownership is a starting point, where individuals can make their own decisions. The idea of entrepreneurship is connected with risks and flexibility, which lead to innovations. Statistics from developed countries can help emerging economies to understand the role of SMEs in their economic development.

Throughout the paper different questions will be raised aiming to give answers to these questions related especially to the ones connected to the role of SMEs in various countries' economic development. The research raises the questions how SMEs help economic development, what different roles SMEs have in developed and developing countries. Furthermore, the paper aims to answer how SMEs deal with unemployment and contribute to the creation of new workplaces, what the

role of SMEs is in creating innovative businesses. Finally, the research argues what governments should and could do to encourage the SME market.

The paper has the following chapters. Following the introduction, the paper outlines the research aims and objectives and research methods, then analyses the background of the research, namely the importance and role of SMEs in various economies by giving examples for illustration. In the literature review, the importance of SMEs is also evaluated by reviewing research papers and available secondary data. Later it analyses the selected countries' economic development from the aspect of the SME sector importance, it discusses the factors, incentives and public administration tools that contribute to the success of the SME sector in the selected countries. Then in the Results section some barriers to SME development and then SMEs' contribution to added-value is under scrutiny, which is followed by the conclusion and recommendations what and how governments can help to boost the numbers and the operation of SMEs in developing countries.

1.1 The research aims and objectives

The research strives to help individuals, groups and enterprises gain deep knowledge and understanding of the importance of SMEs in economic development and stability. It will cover different topics around the SME market. The paper's central objectives are to identify the role of SMEs in economic development, to understand the benefits of small and medium enterprises in achieving economic sustainability of developing countries and to show how SMEs can help in creating workplaces and labor market. The research focuses on the developing countries from Africa and Central Asia and gives examples of the importance of SMEs in these countries' development while compares these SME sectors and its role to the SME market in the EU and Japan. The research has its limitations since it presents scarce cases, example countries from some developing countries from Africa, the Balkan area or Central Asia – e.g. Georgia, Hungary, Serbia, Ghana, Nigeria and South Africa. Consequently, the research has a future potential to include other countries' data on SME market in the research and to present how SMEs contribute to the economic development in those countries.

1.2 Research Method and Data

Various research methods were used in this paper, such as observation, data and statistics analysis, documentation analysis method, method of studying and summarizing experience. It is necessary to identify the main trends and issues, opportunities, and problems for the observation of the countries. Both, statistics from developed and developing countries will be taken into consideration, based on this data, the main differences will be shown and analyzed. The practical significance of the study will reveal what small and medium-sized businesses mean for the economic development of developing countries.

The above main study areas and questions will be answered using different research methods based on secondary data analysis. The methodological choice for this research is a mixed research design which consists of mixed simple and complex methods. The characteristics are realistic philosophy and inductive methodology. The strategy is focused on economic data from different countries and SME statistics which actually occurred and have a real background. It is crucial to explain the interaction between a case study and its context, its influence and consequences. An internet- or intranet-mediated approach is decided to be used, collecting data from worldwide acknowledged data think tanks and from open access datasets and statistical and economic analysis of world leading economic and financial institutions such as World bank. Due to the nature of secondary literature review and secondary research methods bias and information distortion can influence the research objectivity, however the authors strived to focus on information and data as relevant as possible. Methods to study the role of SMEs in economic development are empirical research methods, documentation analysis method, method of studying and summarizing experience, and comparative methods can also be traced in the research project. In the case of sampling methods this study uses secondary data to answer research questions.

2 Literature Review

SMEs perform a crucial position within the financial improvement of a country. They represent about 90% of businesses and more than 50% of employment worldwide [1]. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies [1]. Their position in phases of manufacturing, employment generation, contribution to exports and facilitating equitable distribution of earnings may be very critical.

Small and medium enterprises are considered to be the key factor of *solving unemployment problems* and to be the accelerator of economic development, especially in developing countries. SMEs contribute to *the growth of GDP*, they are considered as the *cradle of innovation*, which could also generate *added value* in the economies and SMEs have a special role when clean market operations are expected, i.e. *fighting with monopoly*. Different studies and research have been made to explain the importance of SMES, to analyze advantages and disadvantages. These roles of SMEs will be discussed in the following subchapters.

2.1 SME standardized categories

Definitions of SME are different based on the regions. According to EU recommendations [2], the most commonly used definitions are:

1. The category of small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual

turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million [2].

2. Within the SME category, a small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million [2].

3. Within the SME category, a microenterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million [2].

Table 2 shows the categories of SMEs by number of employees, turnover and balance sheet.

Table 2

SME categories defined by size, turnover and balance sheet volume

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

2.2 SME contribution to GDP

Recent empirical studies show that SMEs contribute to over 55% of GDP and over 65% of total employment in high-income countries [3]**.** SMEs and informal enterprises, account for over 60% of GDP and over 70% of total employment in low-income countries, while they contribute over 95% of total employment and about 70% of GDP in middle-income countries. In the European Union countries, for example, there are some 25 million small businesses, constituting 99% of all businesses (Table 3). They employ almost 95 million people, providing 55% of total jobs in the private sector. Important contribution is also on exports and on productivity growth [4].

Table 3.

SMEs in developed countries

	SME Companies (%)	Employees in SME (%)	Value added (%)
Japan	99	66	55
USA	99	53	51
Germany	99	68	45

SMEs are combining different business fields; the most popular ones are conventional cottage and family industries including village industries and handicrafts. The conventional village and cottage industries are prominent forms

in present days. SMEs are usually unorganized and placed in rural regions and semi city regions. These SMEs commonly do not use strength-operated machines/appliances because of the low budget, but they offer component time employment to a totally massive wide variety of poorer sections of the society. They additionally deliver crucial merchandise for mass consumption and exports.

Government is extending diverse steps in the direction of SMEs. SMEs have been supported and recommended through diverse authority's regulations for infrastructure support, generation up-gradation, to have easy access for bank loans and credit, and preferential coverage support, etc. Improving SMEs' access to credit and finding creative solutions to unlock sources of capital is a crucial area of the World Bank Group's activity. Diagnostics, implementation help, worldwide lobbying, and knowledge sharing of best practices are all part of the Advisory and Policy Support for SME Finance. Some examples are (1) Assessments of the financial sector to identify areas where regulatory and policy aspects should be improved to enable more responsible SME access to capital [1]; (2) Support for activities such as the creation of an enabling environment and the design and implementation of credit guarantee systems [1]; (3) Improving credit infrastructure (credit reporting systems, secured transactions and collateral registries, and insolvency regimes) can help SMEs get more funding [1]; (4) Using e-lending platforms, alternative data for credit decisioning, e-invoicing, e-factoring, and supply chain financing to introduce innovation in SME finance [1].

The contribution of small-scale region to the producing region and GDP as an entire is full-size in phrases of its percentage in general cost added. SMEs can play a position in mitigating the hassle of imbalance withinside the stability of charge debts through their export promotion.

SMEs are very important to fight against monopoly as well. Having a lot of different companies in business sector gives flexibility and choice to the customers, which helps companies to be always on the edge and to concentrate on progress and growth.

2.3 Government aid to SMEs

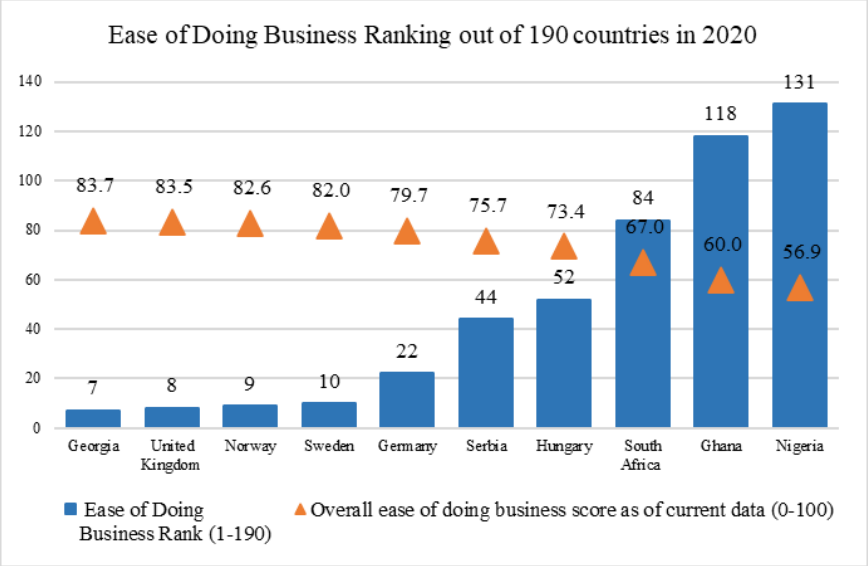
Governments should make a lot of reforms in order to achieve growth in economy and to create safe operational environment for SMEs. Through the *liberalization of the economy, deregulation* and *decentralization* it can be accomplished. Reconstruction of the system will bring a lot more foreign direct investments (FDI) to the country, which will help private sector to start operating. *Tax system* needs to be customized upon the needs of start-ups. All these steps will push people to start their own businesses and based on this, the number of SMEs will rise in the country. For example, Georgia implemented lot of changes in their tax system after the year 2005. Most of the changes were beneficial for the private sector and the aim was to create safe and free environment for businesses including SMEs and start-ups. Based on these changes, Georgia has ranked 7th

among 190 countries in the World Bank Doing Business 2020 ranking, preceding the states like the UK, Norway and Sweden [5]. At the same time the government of Hungary eased on corporate tax rates striving to help SMEs and private businesses to run and operate. At present the corporate tax rate is 9% in Hungary [6]. Figure 11 displays some selected countries according to the ranking and the overall score of Ease of Doing Business in 2020 [5]. The graph lists the countries mentioned, evaluated and analyzed in the research paper.

The best performing country in 2020 was New Zealand being the first in the list and having earned 86.8 out of 100. The worst performing country was Somalia in Africa, which had 20 scores out of 100. The countries selected for the study performed well in 2020, Ghana and Nigeria gained scores a bit beneath the average 63.6, while South Africa, finished near the average with 67 and while Hungary and Serbia created business friendly environment in a similar way there were 8 other countries between them in the rank. Apart from Belgium, which is a developed country and Armenia, which is a developing country located in Central Asia, all the other countries between Hungary and Serbia are from the Central-Eastern European region (the Slovak Republic, Moldova, Belarus, Montenegro and Croatia. It implies that the post-Soviet countries follow similar strategy in creating SME friendly business environment and do it at a similar pace. Georgia with its 7th place earned 83.7 points, well above the average.

Figure 11

Ease of Doing Business ranking and overall score out of 190 countries in 2020 [5]



2.4 SME as catalyst and source of innovation

Peter Drucker claims that small enterprises are the main catalyst of economic development [7]. Small and medium-sized enterprises are "the heart of the global economy" [8]. The probable main reasons are innovation and productivity, which make SMEs so unique. Involving corporate strategy and organizational structure in companies lead to innovations, this can be done through offering training for SMEs, so that firms can become informed about possible organizational and corporate structures, trends and strategies [9]. Narrowing the scope to less developed and developing countries the following can be stated.

Wellalagea [10], in his paper about *innovation* and SME finance, claims that "evidence from developing countries describes the relationships between firm-level innovation and external finance for small and medium enterprises (SMEs)". His research also outlined the importance of innovations as a critical factor of economic development. The highest innovation level is achieved by Serbia, above 35% of Serbian SMEs introduced new products, while 28% introduced new processes [10].

Having formal finance is positively associated with firm-level product innovation (4–8%) and process innovation (3–6%). This effect is higher for young firms' product innovation (7–10%) and process innovation (3–4%) compared to mature firms' product innovation (3–5%) and process innovation (2–3%). Wellalagea also claims that less innovative firms are more likely to get external funding [10].

Among SMEs the main external financing source was bank financing (28%). The second major source of external financing for the sampled SMEs was trade credit (26%). Furthermore, from the statistics we can see that non-bank loans and informal credit were, on average, 9% and 12%, respectively. That is, over 40% of financing for the sampled SMEs comes from nonbank sources [10].

Considering developing countries, in Ghana and South Africa for instance, SMEs represent a big portion of businesses. They make about 92% of Ghanaian businesses and contribute about 70% to Ghana's GDP and over 80% to employment. SMEs also account for about 91% of the formal business entities in South Africa, contributing between 52% and 57% of GDP and providing about 61% of employment [11]. However, the number of SMEs does not necessarily affect the country's GDP. In Nigeria, for instance, over 90% of businesses are SMEs, 95% of formal manufacturing activities and 70% of industrial businesses. In spite of this dominance of the Nigerian economy by the operating SMEs, their contribution to the GDP is below 5% [12], which fact is mainly connected with *business procedures*, *corruption* and *bureaucracy*.

UNCTAD confirmed, however, that countries with a high rate of small industrial enterprises have succeeded in making the income distribution more equitable [13].

3 Results

3.1 Barriers to SME development

Results of our research showed the differences of SMEs' impact and importance on the countries' economic sustainability mainly in the developing countries, based on their geographical location and economic situation. Developed and developing countries show different results while speaking about SMEs. Even the countries in the same geographical area have different results, for example SMEs contribute 70% to Ghana's economy and 52-57% to the South African economy, while in Nigeria it contributes with only 5% [11]. This kind of difference can be connected to different factors, such as *corruption, bureaucracy, high tax rate*. All of them have influence on economic environment of the country.

Concerning corruption, Nigeria, for example, ranked 144th out of 180 countries listed in Transparency International's Corruption Index in 2018 [14]. In 2020 Nigeria fell two positions and was ranked 149. In 2020, Ghana was ranked 75 and South Africa achieved the 69th place. In the meantime, Serbia, where SMEs contribute by their innovativeness ranked 94th.

As of bureaucracy, several indicators are calculated. Figure 12 displays the size of the public sector and the wage as percentage of the public budget in the selected countries for the survey. According to the Wordwide Bureaucracy Indicators, Nigeria has 84% formal employment rate in public sector, which is almost 3 times higher compared to Ghana, Hungary, Serbia and South Africa, which phenomenon definitely leads to high bureaucracy [15]. In Serbia and South Africa this level is 22%, in Hungary it equals 29%, while in Ghana it is higher and reaches 31%. No data was revealed for Georgia for the indicator. Considering wage bills as percentage of Public Expenditure, no data was displayed for Nigeria, Georgia with its 14% figure has the lowest percentage among the countries observed, Hungary and Serbia with 22% and 23%, respectively, are following Georgia, while in Ghana and South Africa these percentages are relatively high, equaling 30% and 35% respectively.

Figure 12

The size of the public sector in the selected countries in concern [15]

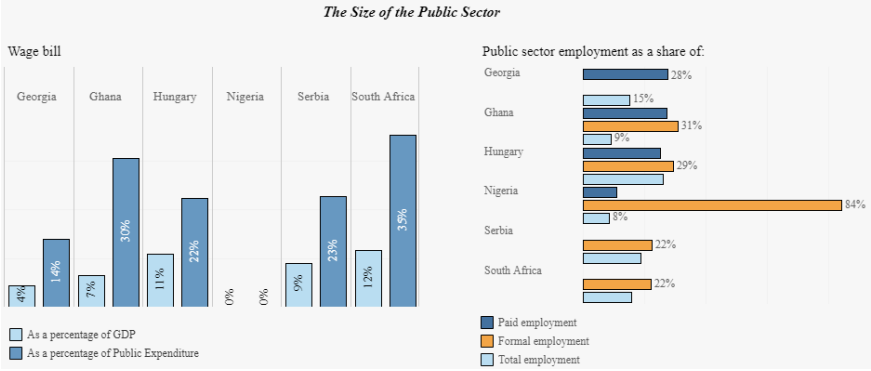
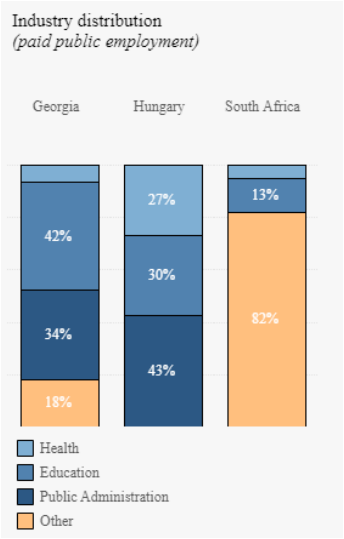


Figure 13 displays the distribution of public employment in the selected countries. Data for Ghana and Nigeria were not accessible, according to the data provided by the World Bank [15] the size of the public administration is the largest in Hungary (43%) among the selected countries, while in Georgia this size is 34%. In South Africa the "other" public employment takes 82% of all paid public employment.

Figure 13

Distribution of Public Employment

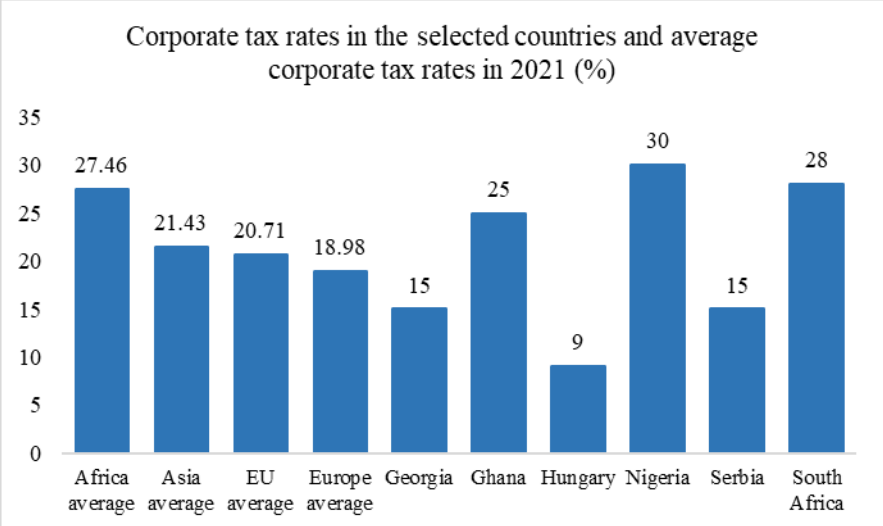


Apart from corruption and high bureaucracy rate taxation system also hinder SME developments. High corporate tax rates set back SMEs' profitability and curtail

them of expanding, investing in developments and innovation since high corporate taxes lower profits. According to [16, 6] as presented on Figure 14 amongst the countries observed the lowest corporate tax is used in Hungary (9%), the second lowest is imposed in Serbia (15%) and Georgia (15%) while corporate tax rates are high compared to these three countries in Ghana (25%), South Africa (28%) and in Nigeria [16, 6]. In the developing countries where SMEs could contribute the most to GDP growth, employment, added value and innovation the corporate tax rates imposed on SMEs are very high. Even South Africa, which is a country of two extremes showing the features of developed and developing countries, uses high corporate tax rate. In these countries Hungary lowered its corporate tax rate from 19% to 9% in 2017 and South Africa lowered it from 34.55% to 28% on 2013. On average, European OECD countries currently levy a corporate income tax rate of 21.7 percent [16], while the European average was 18.98% and the EU average 20.71% in 2020. The African average equaled 27.46% and the Asian average reached 21.43%. Surprisingly, while Hungary and Serbia use low corporate tax rates, the European and the EU average is around 20% implying that in the more developed countries the government levy higher corporate taxes. Comparing the averages, the African average (27.46%) is the highest with lots of developing countries, Asia follows with 21.34% where some emerging countries, the small tigers and some developed countries can be found. Then comes the EU average with a relatively high number of developed countries (20.17%) and the European average is the lowest in the list with 18.98% where most of the post-communist countries can be found and where SMEs contribute significantly to the GDP.

Figure 14

Corporate tax rates in 2021 (%)



Small and medium enterprises tend to be innovative, 35% from Serbian SMEs introduce new products on the market and 28% introduced new business processes [10]. Governments of developing countries must support to achieve stable economic environment and help SME market growth in emerging economies, with guidance and assistance of the World Bank and developed countries. Especially, they need financial and consulting services which will help them to overcome difficulties during the start-up phase or to carry out their normal business activities.

3.2 SME contribution to added value globally

Number of SMEs and large enterprises in the EU-28 NFBS (non-financial business sector) in 2018 and their value added, and employment is shown in Table 4 [2]. The table presents the number of SMEs, their added value to the number of employments.

In 2018, there were slightly more than 25 million SMEs in the EU-28, of which 93% were micro-SMEs [2]. SMEs accounted for 99.8% of all enterprises in the EU-28 non-financial business sector (NFBS), generating 56.4 % of value added and 66.6% of employment in NFBS [2]. According to the Annual Report on European SMEs 2018/2019 by the European Commission [2], SMEs account for most of the increase in added value (60%). Micro SMEs generated 28.5% of this increase, while small and medium-sized SMEs accounted for 16.9% and 14.1%, respectively [2]. SMEs have made a much stronger contribution to the growth in value added in recent years (i.e. from 2016 to 2018) compared to the longer period of 2013 to 2018. The increase in the SME contribution is almost entirely due to successful operation of micro-SMEs [2]. Almost 50% of EU SMEs undertook some innovation activity over the period 2014-16, the last years for which such data are available. Some of these SMEs developed disruptive innovation or breakthrough innovation, while others have focused on more incremental innovation [2]**.**

Table 4

EU-28 SME Contribution

	Micro SMEs	Small SMEs	Medium-sized SMEs	All SMEs	Large enterprises	TOTAL - All enterprises
Enterprises						
Number	23,323,938	1,472,402	235,668	25,032,008	47,299	25,079,312
%	93.0%	5.9%	0.9%	99.8%	0.2%	100%
Value added						
Value in € (million)	1,610,134	1,358,496	1,388,416	4,357,046	3,367,321	7,723,625
%	20.8%	17.6%	18.0%	56.4%	43.6%	100.0%
Employment						
Number	43,527,668	29,541,260	24,670,024	97,738,952	49,045,644	146,784,592
%	29.7%	20.1%	16.8%	66.6%	33.4%	100.0%

Note: Large enterprises are enterprises with 250 or more employees.

Source: Eurostat, National Statistical Offices, DIW Econ

SMEs have more elasticity in terms of *production*, *marketing*, and *operation* than large corporations because they pay close attention to the consumer, understand customer needs better, and have close relationships with their employees. Since this elasticity allows SMEs to adapt to changes in the environment over time and on-site, they are able to avoid many problems and cause less harm. SMEs, despite their flaws, are less affected by economic crises due to their versatility and ability to adapt to changing circumstances [17]. They also absorb the consequences of economic crises and function as a "compressor." Small and medium-sized enterprises are critical in this regard, especially for developing countries. Innovative SMEs are critical players in the ecoindustry and clean-tech industries in many OECD countries. Openness to trade and investment, intellectual property security, infrastructure, and institutional efficiency all play a role in SMEs' commitment to global markets [17]. To sum up, from the data given by the World Bank [1] and from the economic data of different developing countries [1], it confirms the important role of SMEs in countries' development. There is yearly growth rate in created workplaces, percentage to GDP contribution and total added value benefits of SMEs. Governments should try to implement a lot of changes into their tax system and economic environment to ease start of the new business. Liberalization of the economic environment is a starting point to make important changes in the system, which will lead to higher growth rate of SME. In summary it can be argued that governments should fight against corruption and strive to clean economy, need to reduce bureaucracy to ease doing businesses in developing countries and they need to implement changes in tax system to boost SME operations and leave funds at the SMEs to support investments, developments and innovation.

Conclusion

This paper discussed the role of SME in economic development of developing countries by bringing examples and comparing to the European practices and developed countries. With the help of secondary data and given statistics it has become clear that SMEs are one of the key players in the countries' economic growth and stability. In most cases they produce more than 60% of total workplaces, which is connected directly with fighting poverty in the country.

Small and medium -sized enterprises are the main contributors to the GDP of such developing countries. Developed countries such as Germany, USA, Japan, have already proved the important role of SMEs and with the help of the World Bank these countries continuously introduce and implement changes in countries with emerging economies. On analyzing different data and research papers and official publications and documents, the strategic importance of SMEs became more understandable.

Small and medium -sized enterprises are contributing to employment growth at a higher rate than larger firms, both in developed and developing countries. *Fighting with the monopoly* is one of the core functions of SMEs, it brings variety inside the business sector and fair competition. Innovation should be also mentioned, a high number of SMEs are startups or based on entrepreneurship, and in most of the cases in order to gain competitive advantage they need to be innovative and have to have a well-organized operational structure.

References

[1] World Bank, "Small and Medium Enterprises (SMES) Finance, Improving SME's access to finance and finding innovative solutions to unlock sources of capital.," 2021. [Online]. Available: https://www.worldbank.org/en/topic/smefinance. [Accessed 25 April 2021].

[2] E. Comission, "Annual Report on European SMEs 2018/2019," European Commision, Brussels, 2019.

[3] H. Keskín, C. Sentürk, O. Sungur and H. M. Kíris, "The Importance of SMEs in Developing Economies," *2nd International Symposium on Sustainable Development,*, pp. 183-191, 2010.

[4] OECD, OECD Principles of Corporate Governance, Paris: OECD publications, 2004.

[5] World Bank, "Doing Business 2020," Washington D.C., 2020.

[6] PricewaterhouseCoopers International Limited, "Corporate - Taxes on corporate income," pwc, 30 June 2021. [Online]. Available: https://taxsummaries.pwc.com/hungary/corporate/taxes-on-corporate-

income. [Accessed 30 June 2021].

[7] P. Drucker, The Five Most Important Questions You Will Ever Ask About Your Organization, San Francisco: Jossey-Bass, 2008.

[8] OECD, Education at a Glance 2013: OECD Indicators, OECD Publishing., 2013.

[9] L. Bozic and S. Radas, "The antecedents of SME innovativeness in an emerging transition economy," *Technovation,* vol. 29, no. 6-7, pp. 438-450, 2009.

[10] V. Fernandez and N. H. Wellalagea, "Innovation and SME finance: Evidence from developing countries," *International Review of Financial Analysis,* vol. 66, 2019.

[11] V. Gimede, "Export Propensities and Intensities of Small and Medium Manufacturing Enterprises in South Africa," *Small Business Economics,* vol. 22, p. 379–389, 2004.

[12] A. A. Eniola, "The role of SME firm performance in Nigeria," *Arabian Journal of Business and Management Review,* vol. 3, no. 12, pp. 33-47, 2014.

[13] UNCTAD Secretariat, "UNCTAD Annual Report 2001," United Nations, New York and Geneva, 2002.

[14] "Corruption Perception Index 2020," Transparency International, 2020. [Online]. Available: https://www.transparency.org/en/cpi/2020/index/nzl. [Accessed 20 June 2021].

[15] World Bank, "Worldwide Bureaucracy Indicators," 2021.

[16] KPMG, "Corporate tax rates for 2011 - 2021," 2021.

[17] S. Weaven, S. Quach, P. Thaichon, L. Frazer, K. Billot and D. Grace, "Surviving an economic downturn: Dynamic capabilities of SMEs," *Journal of Business Research,* vol. 128, pp. 109-123, 2021.

[18] M. A. Taiwo, A. M. Ayodeji and B. A. Yusuf, "Impact of Small and Medium Enterprises on Economic Growth and Development," *American Journal of Business and Management,* vol. 1, no. 1, pp. 18-22, 2012.

The Impact of Coronavirus (COVID-19) Pandemic on E-commerce

Fathia Suryaning Rindita, Emad George Issa Majlaton, Akanksha Singh, Ibrahim Namazov, Andrea Tick

Óbuda University

ayarindita@stud.uni-obuda.hu, emadmajlaton@stud.uni-obuda.hu, , akanksha@stud.uni-obuda.hu, ibrahimnamaz@stud.uni-obuda.hu, tick.andrea@uni-obuda.hu

Abstract: COVID-19 has affected everyone's daily lives. People in this world have been asked to stay at home to slow down the pandemic. The key purpose of this research is to explore the impact of coronavirus (COVID-19) pandemic on online business or e-commerce. Coronavirus, one of the known deadly viruses, has already taken the lives of many in almost half of the countries. Due to restrictions and lockdowns the countries' economic growth has slowed down. However, some business types could take advantage of the situation and the pandemic created new business opportunities and strengthen digital forms of business transactions. The pandemic has almost shaken up all types of businesses including the e-commerce business on a massive scale. This research aims to understand and determine the impact of coronavirus (COVID-19) pandemic on online business activity (B2C). Secondary data analysis as conducted. The research showed that some categories like supermarket and medical e-commerce exploded as shoppers went online while other categories like jewelry and luxury, fashion and apparel, auto or tools, and travel categories were going down and lost business to a great extent.
Keywords: business, coronavirus, e-commerce, online shopping, pandemic

1 Introduction

The coronavirus (COVID-19) has a big effect on the economy in this world. It has changed the purchasing habits for the world within a month. Most countries were on lockdown and people had to stay at home and it has pushed consumers to head to online shopping. This affects the demand and uncertain supply chain issues for the e-commerce industry. The World Trade Organization (WTO) [1] has indicated that it is the right time for e-commerce to save the world economy and that it is to intervene with vigor and vitality, and to prove e-commerce of its importance and effectiveness in the field of trade and online shopping. The COVID-19 pandemic has made it clear that e-commerce can be an important tool/solution for consumers in times of crisis, and that it is also an economic driver, including the potential for small businesses as well. However, the pandemic has highlighted not only the importance of digital technologies in general, but also several vulnerabilities across the world.

E-commerce in various regions has been affected by the new COVID-19 pandemic. Countries in which the highest number of cases were recorded included Italy, Spain, Germany, France in Europe and China in Asia during the first wave of the pandemic. The Chinese company Alibaba, a giant provider of e-commerce services, has struggled to maintain growth rates during the economic slowdown in its domestic market and faced the uncertainty of coronavirus outbreaks. Major companies affected in the market include Alibaba Group Holding Ltd., Amazon.com, Inc., Qoo10 Pte. Ltd., JD.com, Walmart Inc., Shopify, Rakuten Group, eBay Inc., and others [2]. For instance, Amazon made some huge investment in one-day shipping that has not yet been compensated. In 2019 its net income decreased by 26% and freight costs increased by 46% [2].

This research is conducted in order to find out how big the impact of coronavirus COVID-19 on companies offering online shopping possibilities has been. Furthermore, the researchers analyzed how big the impact from the pandemic situation to some of the biggest e-commerce companies in the world is by comparing revenue figures of such companies before and after the first wave of the COVID-19. The research also strives to look into whether the pandemic situation really impact consumer's buying habit by comparing data before and after the first wave of the pandemic. Moreover, it aims to reveal which e-commerce sectors were greatly impacted. The research applied secondary research methods by using and analyzing quantitative secondary data shared and published by large think tanks and well-known data providers.

This global pandemic is very different to those of the past, such as Spanish Flu after the First World War for example. Now, as the global economy begins to contract after the effects of the unprecedented global lockdown, people, businesses and economies adapt to the "new normal". For better or for worse, the COVID-19 pandemic has brought information and communications technologies to the forefront of human life. It has also amplified well-known problems, such as the "digital divide", problematic internet use, and market failures [3].

The paper is organized as follows; it introduces some earlier research in the literature review, then in chapter 3 gives some details on data collection process and research methods, then in chapter 4 analyses the data and finally in chapter 5 draws conclusions about the results. The results revealed that despite the continuous growth in e-commerce, the sector still has noticeable potentials and supposedly the rate of e-commerce and online shopping will increase and will gain a larger market share in the future.

2 Literature Review

Electronic commerce or mostly known as e-commerce is the buying and selling of goods and services on the internet. Other than buying and selling, many people use internet as a source of information to compare prices or look at the latest products on offer before making a purchase online or at a traditional store. E-

business is sometimes used as another term for the same process. More often, though, it is used to define a broader process of how the internet is changing the way companies do business, of the way they relate to their customers and suppliers, and of the way they think about such functions as marketing and logistics. For the purpose of this study e-commerce is taken to mean doing business electronically [4].

Internet and e-commerce are closely wrapped towards developed countries. But they can achieve tremendous benefits to developing countries if it is applicable as an ideal business purpose. Ecommerce is a revolution in business practices. The term commerce is viewed as transactions conducted between business partners. Electronic commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information via computer networks including internet [5].

Previous studies find that the dominant two motivations for shopping in physical stores instead of shopping online are immediate possessions and social interactions, while online shopping tends to be substantially more convenient and economical [6]. Online shopping offers greater flexibility in terms of time, location, and product variety [7]. One potential barrier that makes many consumers hesitant to adopt online shopping might be the learning cost. Consumers might have preferred to shop in physical stores not only due to the desire for immediate possessions but also because they have been averse to investing time into learning how to shop online. In this aspect, the pandemic can be a trigger that induces the late majority, who have been averse to the new way of shopping, to finally shop online [8].

According to the investigation that has been done by Jiangxin and Chenyang (2020) [9] about the impact of COVID-19 on China's e-commerce industry, the significance of e-commerce for the prevention and control of the pandemic situation in China during the pandemic period is extraordinary. The development of mankind is accompanied by various dangers and struggles. The impact of the new coronavirus epidemic situation is not only on people's lives and e-commerce, but the end of the epidemic situation does not mean the end of the crisis. In the future, human development will still face various crises. Only by relying on people's wisdom and adopting scientific measures can we resolve the crisis and promote the continuous development of society [9].

New customers rather adapted to the new life situation including the adoption of e-commerce systems by developing new shopping habits and behaviors. It is expected to have a direct and permanent change in the market. According to a survey that took place in the United Kingdom in 2021 by Hillier [10], forty percent of the interviewed customers agreed that they would continue with online shopping in the future even when COVID-19 comes to an end. This will have a direct effect on the development of the widely used online platforms to satisfy customers' needs.

According to the survey by Ecommerce Europe [11] in January 2021, the majority of respondents believe that retail stores' online sales increased during the lockdown, with the majority claiming that retail stores with an online presence ('brick-and-click') were influenced in the same way as pure online players, and some claiming that the positive effects for retail stores' online sales were even stronger than those for pure players. E-commerce has been successful in assisting traditional retailers in adapting to new regulations and staying in business.

E-commerce retail sales show that COVID-19 significantly boosts e-commerce. Sales in e-commerce are expected to reach $6.5 trillion by 2023 [12]. Both in the developed and developing countries such as Malaysia, Singapore, Thailand, and Pakistan, the number of customers and buyers participating in e-commerce has increased. In Pakistan for example e-commerce launched its services and shopping opportunities in the early 2000 but seriously underperformed, only 3% of the whole population used online buying possibilities. However, during the pandemic a gradual increase of 10% in daily record in e-commerce in Pakistan has been reported, while in parallel the number of internet users is also growing by 15% on a daily basis. What really gives an impetus to e-commerce is that 30-40% surge the demands of products [13]. According to Meyer [14], e-commerce sales are up by 25%, shoppers get orders with less contact (up by 62%) and retails must pivot products, sell what their customers are really buying. Moreover, Common Thread Collective [15] detected a 28.48% growth in e-commerce sales after the outbreak of the pandemic.

3 Material & Methods

The research focused on secondary research methods and analyzed secondary data from multiple sources. Secondary data were collected from published books, journals, research papers, magazines, daily newspaper, internet and official statistical documents. Analysis of secondary data can include any data that are examined to answer a research question [16]; it can be used in several ways in the context and conduct of a research project. In this research, the research problem has been identified first, then a strategy was developed to arrive at the solutions for the research problem and to find answers for certain research questions, to identify the potential problems, and to obtain the required background information while improving the credibility of the study [17].

The research applied quantitative method and applied time series analysis; analyses were conducted on data from existing data sources. It involves collecting facts and figures and often results in numerical, structured data. Quantitative data are used when a researcher is trying to quantify a problem or address the "what" or "how many" aspects of a research question. It is data that can either be counted or compared on a numeric scale [18]. Data used for this study purpose were collected from the World Bank [19], UNCTAD (United Nations Conference on Trade and Development) [20], netcomm suisse e-commerce association [21], and many other authorized websites.

4 Results and findings

4.1 Growth of e-commerce

People have adopted social distancing as a means of slowing the pandemic's progress, which has naturally resulted in a decline in brick-and-mortar shopping. That implies that online shopping would likely increase as people turn to online platforms, web shops and e-commerce to purchase products they would usually buy in person. Although e-commerce sales are not boosting all over the world, different economies, different countries and different people responded differently to the pandemic situation, restrictions and regulations. Some sectors deep dived while some industries are experiencing substantial increases with the extension to online platforms and could take high advantage of the situation. This is particularly true for online sellers of groceries and household goods. Traditional brick-and-mortar groceries moved to online platforms, opened web shops and offered household deliveries. Moreover, new, exclusively online groceries and food stores started their operations. Furthermore, delivery services also opened up, offering home deliveries based on submitted shopping lists given by customers (e.g. kifli.hu). As an example, for household goods, sales of traditional household staples have quadrupled on JD.com, China's largest online retailer, compared to the same time last year [22]. According to a survey conducted by Engine [23], people are spending 10-30% more time online on average despite the fact that a large proportion of them believe in a recession for the following year [23]. The following subchapters present how coronavirus affected the various shopping categories during the first and second wave of the pandemic, focusing on groceries, subscription and convenience services and other e-commerce categories like cleaning, baby products, jewelry and luxury or toys and games.

4.1.1 Grocery E-commerce

In the second week of March 2020, supermarket e-commerce exploded as shoppers were locked out from physical stores, or restrictions were imposed on them regarding schedule and maximum number of shoppers in the retail outlet, so they went online to find items that weren't available in their local grocery stores. Figure 1 below [22], based on Rakuten Intelligence data, shows an almost two and a half times increase in grocery-related e-commerce during the second week of March 2020 compared to the same period of the previous year.

Figure 15
Grocery-related e-commerce growth [22]

Till then the year-over-year (YoY) change in daily e-commerce spending for grocery product shows a balanced performance, similarly to all e-commerce transactions. The trend for all e-commerce as well as for grocery-related e-commerce shows a slight upward movement experiencing no peculiar peaks or valleys.

4.1.2 Subscription Services

Though e-commerce revenues do not appear to be soaring as quickly as one would expect, there are a few exceptions. One of these is subscription and convenience services, which have already seen substantial sales and conversion rate increases in recent years. A performance branding firm (WITHIN) [24] has monitoring and evaluating data from selected companies YoY to see how COVID-19 affects e-commerce in a variety of industries. The performance percentage changes are shown in Figure 16 [22] showing that both revenues and conversion rates experienced a drastic growth at the outburst of COVID-19 worldwide. The conversion rate is a highly significant indicator in e-commerce since it shows the percentage of visitors to the websites that complete the desired goal, namely a conversion out of the total number of visitors. It shows how many transactions were finalized and completed. High conversion rate is a good indicative of successful web design and well-structured web shops since it means that people find what they want, and they can easily complete the deal.

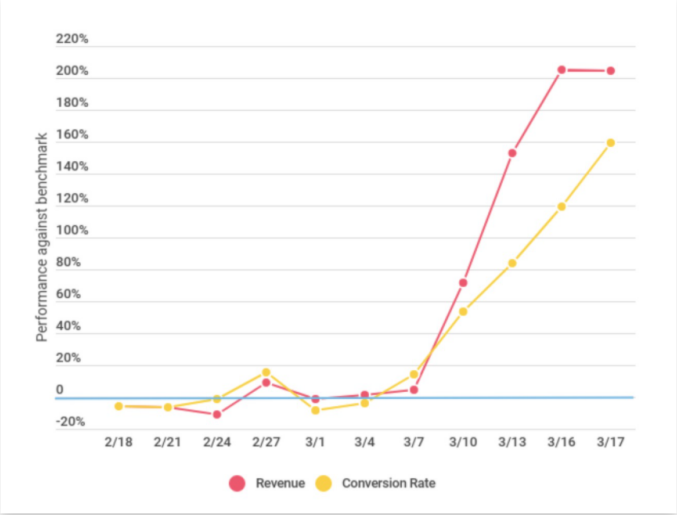


Figure 16

Changes in Subscription Service Performance in February and March 2019 [22]

Right after the outburst of COVID-19 in Europe and the lockdown in several countries in March 2020, the revenues and conversions rates skyrocketed compared to the same period of the previous year. The YoY change shows a 200% change in case of revenues by 16 and 17 March 2020, and the YoY change for conversion rates jumped to 160% by the middle of March 2020. Although the gap between the revenue and the conversion rate percentages changes compared to benchmark opened in the observed period, the beneficial effect of COVID-19 on subscription and convenience services could be detected.

4.1.3 Other e-commerce category

In addition to groceries, subscription and convenience services, e-commerce encompasses a wide range of other products and services from a variety of categories. The COVID data on e-commerce shopping activity have been updated frequently by Common Thread Collective [15], selected sectors are examined as seen in Figure 17.

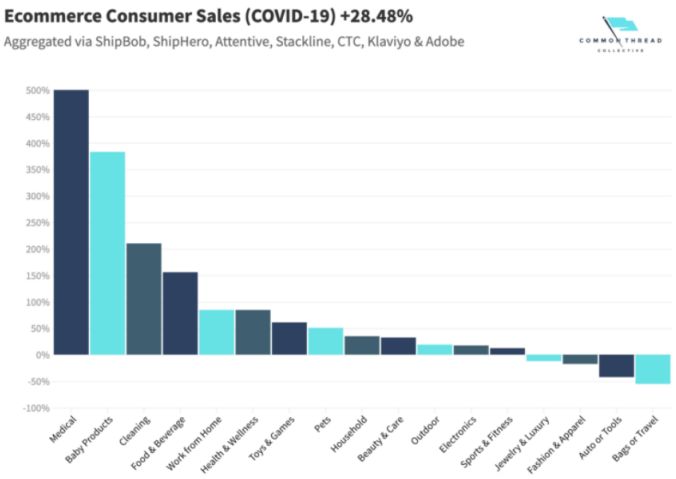


Figure 17

Changes in e-commerce consumer sales [22]

According to Figure 17 the medical product sector seems to be the real gainer of the pandemic, consumer sales soared by 500% compared to the same period of the previous year. Although e-commerce output is not necessarily improving or declining, segmenting the data by vertical reveals more details. Baby product sales also jumped by over 350% compared to the same period of the previous year while food and beverages (more than doubled) follows cleaning services, which increased by around 150% compared to the same period of the previous year. On the other hand, business segments that lost on the pandemic situation were the Jewelry and Luxury sector, the Fashion and Apparel sector, the Auto and Tools and the Bags and Travel sectors. People went buying online exclusively such products that were necessary for their everyday life and they seem to have avoided buying luxury products or products that support travelling.

On the other hand, according to Meyer [14] sales of gifts and specialty grew by 18.9%, home and garden sales by 8.4% and apparel and accessories by 14.3% but people did not buy swimwear (down by 62% YoY), luggage (down by 77% YoY) or cameras and equipment (down by 64% YoY).

The following subchapters deal with selected type of businesses in the retail sector.

4.2 The Impact of COVID-19 Pandemic on Big Electronic Commerce Company

Since 1 December 2019, coronavirus has been impacting the entire e-commerce market worldwide until this day, and consequently it has changed the nature of business. Since the COVID-19 virus outbreak, online shopping demand has increased exponentially. The main reasons are shutdowns and voluntary or mandatory quarantine decisions that occur with the disease becoming a global pandemic. With the increasing number of cases, there has been an increase in these closures and quarantines. People who have and do prefer online shopping and are used to do their shopping online might decide to return to stores and do their shopping in physical stores when numbers of infected people decrease at specific periods, measures relax, and closures reduce. However, the comfort of online shopping, the home deliveries, the increasing number of pic-pack point combined with the expectedly strengthening home office practices imply that e-commerce could stabilize at the achieved performance and will not deep dive in the future after the pandemic period.

According to the research done by Bhatti *et. al.* [13], 52% of consumers avoid going to brick-and-mortar shops and crowded areas. Furthermore, 36% of them avoid brick-and-mortar shopping until they get coronavirus vaccine. Coronavirus has a different size impact on different products meaning a high or even a low impact on the sales performance of commodities [25]. Overall sales of e-commerce increase because of this virus, people avoid going out, they keep social distance and tend to buy from home, work from home such. As an example, Walmart grocery – a major market player in the USA – managed to increase its e-commerce sales by 74%. Moreover, the media usage also increased in this time, e.g. Facebook and Google have updated their features to connect more people in single time. Facebook introduced messenger for 44 people that is competing to Zoom in 2020. Similarly, Google also launched updated version of Google Meet [26].

Table 5 [20] shows the revenue of top retail e-commerce companies worldwide (“webwide”). The biggest revenue is 4,059 million USD for Amazon, followed by Ebay with its 1,227 million USD, and the third biggest one is from Rakuten Japan with 804 million USD.

Table 5

Top retail e-commerce websites in COVID-19 pandemic [20]

No.	Retail Website	Millions	Millions
1	Amazon.com	4059	
2	Ebay.com	1227	
3	Rakuten.co.jp	804	
4	Samsung.com	648	
5	Walmart.com	614	
6	Apple.com	562	
7	AliExpress.com	532	
8	Etsy.com	395	
9	Homedepot.com	292	
10	Allegro.pl	272	

Upon analyzing the top e-commerce retailer, Amazon, which generated almost three times higher revenues than the second largest Ebay.com (Table 5) during the pandemic in 2020 (Table 5), the following was found about its retail performance. Figure 18 shows that from 2004 to 2020 Amazon revenues increased annually, following an exponential pattern (Eq. 1).

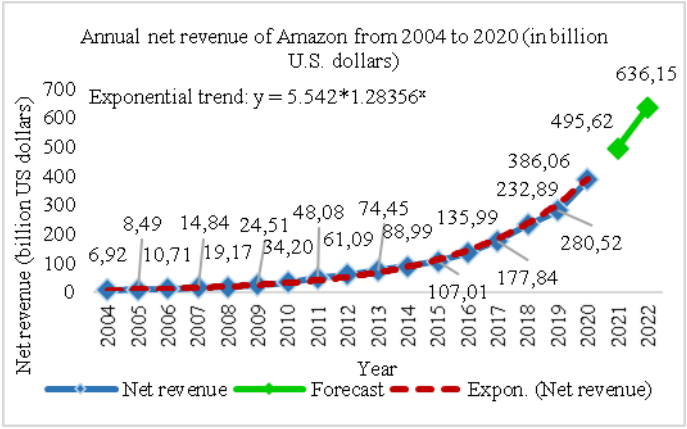


Figure 18

Annual net revenue of Amazon from 2004 to 2020 (developed by authors based on data at Statista.com [27])

$$\text{Exponential trend: } y = 5.542*1.2836^{x} \quad (1)$$

The most significant and a drastic change can be traced from 2019 to 2020 when COVID-19 outbreak resulted in country lockdowns and sales rapidly shifted from

personal to online sales. According to the exponential trend Amazon succeeded in increasing its revenue by an annual 28.356% between 2004 and 2020. Provided that further COVID waves follow and restrictions will be further implemented Amazon can expect a revenue of 495.62 and 636.15 billion USD in 2021 and 2022, respectively, according to the exponential trend.

Figure 19 below shows the net sales generated by Amazon from 2017 to 2020 in more detail. The observed data shows a 3.014 billion USD (4.85%) quarterly increase in the observed period. According to the linear trend applied, the net sales at Amazon would increase by a quarterly 4.189 billion USD and despite the fact that only quarter 4 shows extreme high profits, the company's net sales volume grows steeply and rapidly. Thanks to the pandemic situation both the company's annual net revenue and net sales grew significantly, annual net revenue followed an exponential trend while net sales followed a linear trend. The multiplicative and the additive trend analyses gave similar results for the company's net sales behavior and forecast, which allows the authors to present the additive model in the paper. The results show that for the coming four quarters (2021. Q3. – 2022. Q2.) Amazon can expect net sales over 100 billion USD in each quarter 107.11, 128.29, 113.35 and 118.96 billion USD, respectively.

Figure 19 displays the actual net sales figures in the observed period, the linear trend, the seasonally adjusted time series, the forecast figures and the trend-cycle series.

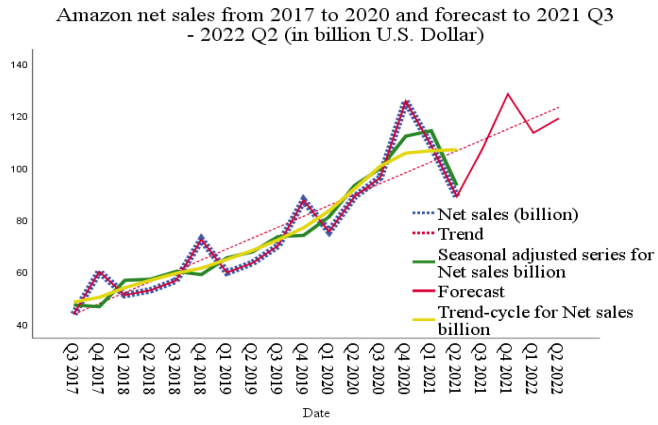


Figure 19
Amazon net profit from 2017 Q3 to 2021 Q2 and forecast for 2021 Q3 – 2022 Q2

Developed based Amazon figures [28] [29]

Net sales follow seasonality having the largest net sales figures in the fourth quarters, furthermore, it shows a continuous upward trend. However, the seasonally adjusted series detects that net sales jumped high from the second quarter of 2020 and a reasonable decline can be seen between the first quarter and the second quarter of 2021. The random effect can also be seen in the time series (seasonally adjusted time series). The smoothed trend-cycle time series displaying only the trend and the cycle factors while leaving out the random effect, is even more smoothed. It also implies an upward trend, which is the consequence of not only the pandemic but the cycle factor as well.

Table 6 includes the observed data, the moving average, the seasonal differences (billion USD), the error component and the seasonally adjusted as well as the trend-cycle series. The observed net sales data remain under the trend for three quarters, seasonal differences being -3.54, -5.67 and -4.25 billion USD on average - while quarter four figures are above the trend (s_{IV}=13.46 billion USD). Net sales figures skyrocketed in the fourth quarter of 2020, then dropped drastically in the following two quarters. The 2020 figure can be linked to not only the seasonal sales but to the second and the third waves of COVID-19.

Table 6

Amazon net sales time series decomposition using additive modelling (Source: developed by authors)

Seasonal Decomposition

Series Name: Profit (billion)

DATE_	Original Series	Moving Average Series	Difference of Original Series from Moving Average Series	Seasonal Factor	Seasonally Adjusted Series	Smoothed Trend-Cycle Series	Irregular (Error) Component
Q3 2017	43.70	.	.	-3.54	47.24	48.33	-1.09
Q4 2017	60.05	.	.	13.46	. 46.59	50.18	-3.59
Q1 2018	51.04	53.53	-2.49	-5.67	56.71	53.88	2.83
Q2 2018	52.89	56.68	-3.79	-4.25	57.14	56.73	.41
Q3 2018	56.58	59.31	-2.73	-3.54	60.12	59.40	.72
Q4 2018	72.38	61.70	10.68	13.46	58.92	61.39	-2.47
Q1 2019	59.70	64.69	-4.99	-5.67	65.37	64.77	.61
Q2 2019	63.40	68.25	-4.85	-4.25	67.65	68.18	-.53
Q3 2019	69.98	72.10	-2.12	-3.54	73.52	72.26	1.26
Q4 2019	87.44	77.26	10.18	13.46	73.98	76.89	-2.91
Q1 2020	75.45	83.72	-8.27	-5.67	81.12	83.43	-2.31
Q2 2020	88.91	91.75	-2.84	-4.25	93.16	91.91	1.25
Q3 2020	96.15	100.65	-4.50	-3.54	99.69	100.54	-.86
Q4 2020	125.56	104.79	20.77	13.46	112.10	105.60	6.50
Q1 2021	108.52	.	.	-5.67	114.19	106.48	7.71
Q2 2021	88.91	.	.	-4.25	93.16	106.93	-13.77

Figure 6 displays the cycle and the random effects in Amazon net sales figures in the observed period. The cycle effect shows that till the end of 2019 there was a

downward trend and the positive upward cycle phase boosted Amazon net sales figures even more till the end of 2020. At the moment downward trend can be detected.

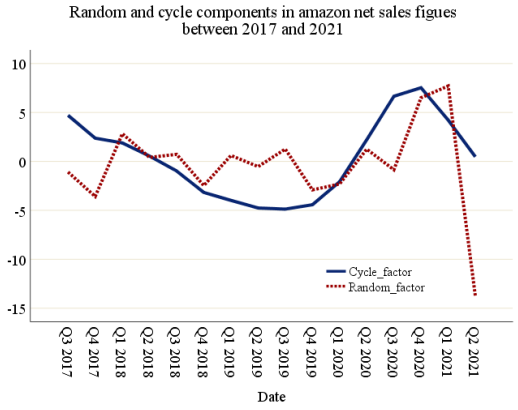


Figure 20

Cycle and random effect in amazon net sales figures between 2017 and 2020 (additive model)

The quarterly irregular components in the additive model spread around 0 randomly, the last quarter of 2020 and the first quarter of 2021 show a relatively high random effect. The linear trend based on the net sales data is given in Eq. 2, meaning that the net sales revenues grow by 4.189 billion USD quarterly on average according to the linear trend.

Linear trend $y = 4.1894*x + 39.431$ (2)

The multiplicative model gave very similar trend and forecast results. Figure 21 displays the calculated adjusted seasonal indices showing that the first three quarter figures are gradually growing from 93 % of the trend through 94% to 96% and quarter 4 figures are 1.178 times higher than the linear trend. The multiplicative model forecasts even higher net sales for the fourth quarter of 2021 than the additive model.

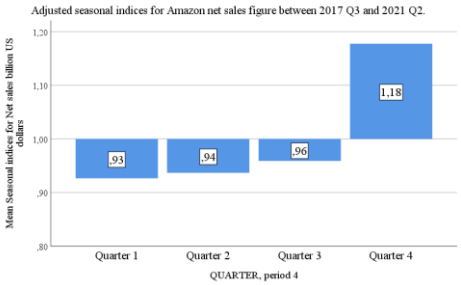


Figure 21

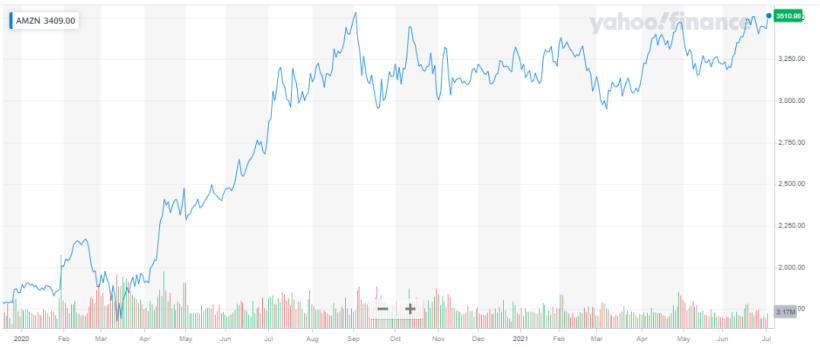
Seasonal indices for Amazon net sales 2017-2021

Although there was a decrease in the fourth quarter of 2019 and the third quarter of 2020, significant increases were observed in other periods, according to the e-commerce net sales data in Amazon's Quarterly report. There is a nearly two-fold increase in the transition from the first to the second quarters of 2020.

Should the price of Amazon stocks be examined through Yahoo Finance [30], it can be said that with the pandemic, it was decreasing at the beginning of 2020, and it has an increasing trend from 16 March to 2 September 2020. Then, its value experienced fluctuations at a higher price.

Figure 22

Amazon historical stock prices from January 2020 to July 2021 [30]



4.3 Customer behavioural change

The possibility of permanent changes in consumers' shopping behavior as a result of the pandemic, which is one of the points that was addressed in this study, was also mentioned in a UNCTAD report based on a survey of approximately 3,700 consumers in nine developing and developed economies conducted in 2020 [20]. According to the report by UNCTAD [20] and netcomm suisse e-commerce association [21], the COVID-19 outbreak has permanently altered online shopping

behavior. Consumers in developing countries will be more likely to shop online after COVID-19 than consumers in developed economies. Changes in shopping habits may also be a factor. During the coronavirus, the level of online shopping culture increased in developing countries. Meanwhile, in developed countries this habit has already existed. Therefore, according to the report, the change in shopping habits in developing countries after COVID-19 is one of the factors contributing to the emergence of lasting habits [20].

4.4 The Impact of COVID-19 and Accelerated Growth of E-commerce

Based on U.S. Commerce Department data released in December 2020, consumer spending through nonstore channels grew 31.3% over November 2019 based on year-over-year (YoY) figures [31]. Figure 23 displays the YoY percentage changes of US nonstore sales by month. The highest growth percentage was reached in June with 31.5% while the lowest growth percentage was in January 8.3%. By June the monthly growth rate almost quadrupled while it fell from June for the summer periods. The fall in e-commerce growth rate might be thanked to summer holidays and the ease on restrictions and opening hours of retail shops and retail outlets. People could return to their personal shopping habits for the summer period. The second highest growth rate for nonstore channels was captured in November, which can be justified by the second wave of COVID-19.

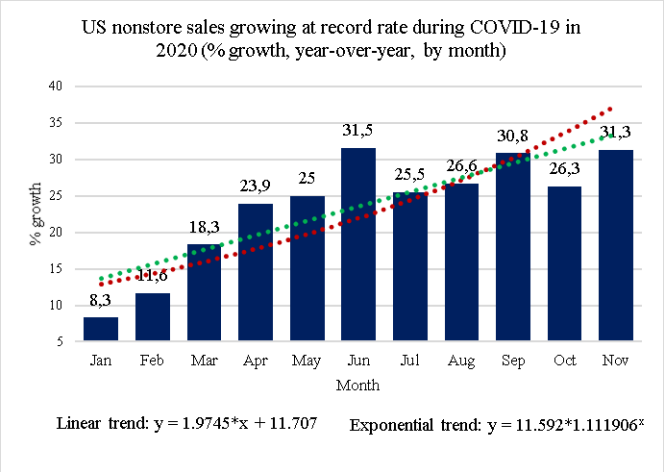


Figure 23

U.S. nonstore sales growing rate in 2020, Source: Digital Commerce 360

Fitting either linear or exponential trend on the percentage growth change the expansion of nonstore sales shows similar growth rate in percentage changes. The average monthly YoY percentage growth rate equaled 21.952% and the trend shows further growth in the future. If nonstore channels can strengthen their position in the market and people realize the benefit of buying online, nonstore channel sales are not expected to drop even after COVID-19. However, it must be noted that for the summer period in 2020 people returned to more traditional channels, while still then the growth rate compared to January was tripled. The use of digital possibilities and the comfortable mode of sales also inspire people to buy online.

According to the linear (Eq. 3) and the exponential (Eq. 4) trend the growth rate for the following period is expected to be 11.707% and 11.19% points, respectively.

Linear trend: $y = 1.9745x + 11.707$ (3)

Exponential trend: $y = 11.592*1.111906^{x}$ (4)

The US Department of Commerce issues its quarterly report regularly [32]. E-commerce sales reached 762.675 billion USD by the end of 2020 representing a 40.3% growth from 2019 [32]. E-commerce estimate increased 39.1% from the first quarter of 2020 to first quarter 2021. Online sales accounted for 21.0% of total retail sales in 2020, up from 15.8% in 2019 and 14.3% in 2018 [32]. This number represents the highest annual U.S. e-commerce growth in at least two decades. Additionally, growth in e-commerce accelerated by two years, thus if it were not for the pandemic, the nearly 800 billion USD in online retail sales in 2020 would not have been reached until 2022. Accordingly, U.S. retailers had a COVID-19-related 152 billion USD boost in e-commerce sales in 2020.

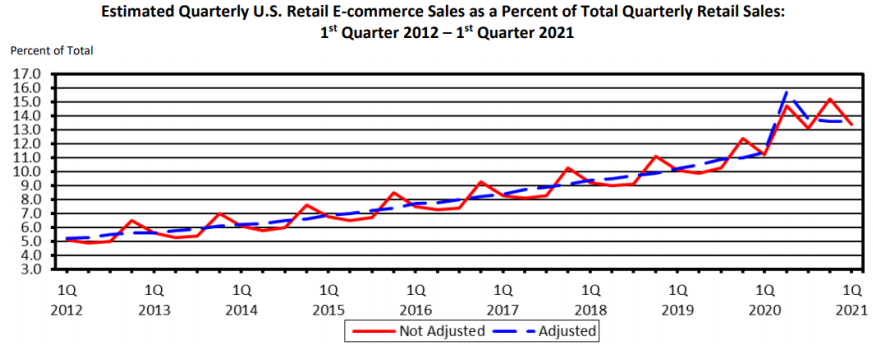


Figure 24
U.S. retail e-commerce sales: 1st Quarter 2012 – 1st Quarter 2021

Source: U.S. Department of Commerce [32]

According to the data published by the U.S. Commerce Department [32], during Q3 of 2020 from July to September, consumers spent 201.382 billion USD online with U.S. retailers, up 36.1% from 147.96 billion USD for the same quarter the prior year. In other words, nearly 1USD in every 5USD spent by consumers in Q3 came from online orders. E-commerce sales in the Q3 of 2020 accounted for 13.6% of total sales. It should be noted that while growth in the retail industry through Q4 has begun to slow, e-commerce had its second highest increase after June, rising in November 2020, 32% YoY due in part to the holiday shopping.

Conclusion

The newest coronavirus that is familiarly known as COVID-19 has changed humans's live. People in this world have been asked to stay at home to stop the spreading of the coronavirus and to slow down the pandemic. Moving around is now limited. It has also affected human's behavior in shopping, people had no choice and had to change their behavior from the traditional way of shopping to online shopping in order to fulfill their needs. This research shows that the pandemic had the biggest impact on online businesses or e-commerce, which impact is without doubts beneficial. The biggest winners are the groceries, the subscriptions and convenience service providers as well as home delivery services but all different business segments could develop, digitalize and introduce online shopping facilities. The research presents that some categories like supermarket, medical, baby products, cleaning products, food and beverage, health and wellness, and toys and games e-commerce "exploded" in a positive sense ad became the winners of the game. However, some business sectors suffered losses and lost markets, categories like jewelry and luxury, fashion and apparel, auto or tools, and bag or travel were going down.

Although e-commerce is continuously expanding year by year, comparing the figures in the year 2020 with previous years, revenues from e-commerce retail companies have significantly increased. As for examples, Amazon, the largest retail e-commerce company has significantly increased its revenues and net sales. Amazon figures show exponential trend considering various figures.

As a conclusion, COVID-19 pandemic brought to opportunity to develop in e-commerce, the results prove that when digitalization is mature enough to offer buying services online and people are forced to use online platforms due to the circumstances, the combination brings its success and on one hand gives an impetus to the business sector to develop and on the other hand results in changing human behavior.

The research focused mainly on developed economies and mentioned some examples from developing countries, leaving the potential for future research on ecommerce development traced in developing countries and economies.

References

[1] World Trade Organization, "E-commerce, Trade and The COVID-19 Pandemic," 4 May 2020. [Online]. Available: https://www.wto.org/english/tratop_e/covid19_e/covid_reports_e.htm.

[2] M. Abdelrhim and A. Elsayed, "The Effect of COVID-19 Spread on the e-commerce market: The case of the 5 largest e-commerce companies in the world," 8 June 2020. [Online]. Available: https://ssrn.com/abstract=3621166. [Accessed 25 May 2021].

[3] S. Barnes, "Information management research and practice in the post-COVID-19 world," *International Journal of Information Management,* vol. 55, 2020.

[4] A. G. Khan, "Electronic Commerce: A Study on Benefits and Challenges in an Emerging Economy," *Global Journal of Management and Business Research: Economics and Commerce,* vol. 16, no. 1, 2016.

[5] Ohidujjaman, M. Hasan and M. N. Huda, "E-commerce Challenges, Solutions and Effectiveness Perspective Bangladesh," *International Journal of Computer Applications,* vol. 70, no. 9, pp. 9-17, 2013.

[6] V. Mahajan, E. Muller and Y. Wind, New Product Diffusion Models, New York: Springer, 2000.

[7] A. J. Rohm and V. Swaminathan, "A Typology of Online Shoppers Based on Shopping Motivations," *Journal of Business Research,* vol. 57, no. 7, pp. 748-757, 2004.

[8] R. Peres, E. Muller and V. Mahajan, "Innovation Diffusion and New Product Growth Models: A Critical Review and Research Directions," *International Journal of Research in Marketing,* 27, 2, pp. 91-106, 2010.

[9] J. He and C. Liu, "An Investigation on the Impact of COVID19 on China's E-Commerce Industry," *Design Engineering,* vol. 2020, no. 11, pp. 443-456, 2020.

[10] L. Hillier, "Stats roundup: the impact of covid-19 on E-commerce," 5 March 2021. [Online]. Available: https://econsultancy.com/stats-roundup-the-impact-of-covid-19-on-ecommerce/. [Accessed 5 March 2021].

[11] Ecommerce Europe, "Impact of the Coronavirus on e-commerce," Ecommerce Europe, Rue d'Arlon, 2021.

[12] K. Jones, "COVID-19The Pandemic Economy: What are Shoppers Buying Online During COVID-19?," 8 April 2020. [Online]. Available:

https://www.visualcapitalist.com/shoppers-buying-online-ecommerce-covid-19/. [Accessed 10 March 2021].

[13] A. Bhatti, H. Akram, H. M. Basit, A. U. Khan, S. Mahwish, R. Naqvi and M. Bilal, "E-commerce trends during COVID-19 Pandemic," *International Journal of Future Generation Communication and Networking*, vol. 13, no. 2, pp. 1449-1452, 2020.

[14] S. Meyer, "COVID-19 Infographic: How Ecommerce Is Being Impacted," 2021. [Online]. Available: https://www.bigcommerce.com/blog/covid-19-infographic/#covid-19-infographic-impacting-ecommerce. [Accessed 15 April 2021].

[15] A. Orendorff, "10 Ecommerce Trends for 2021: Growth Strategies, Data & 17 Experts on the Future of Direct-to-Consumer (DTC) Retail," Common Thread Collective , 13 March 2021. [Online]. Available: https://commonthreadco.com/blogs/coachs-corner/ecommerce-trends-future?_ga=2.184961068.48005898.1625505273-1034135002.1624914080#ecommerce-trends-6. [Accessed 20.03. 2021].

[16] T. P. Vartanian, Secondary data analysis, New York: Oxford, 2011.

[17] N. K. Malhotra, D. F. Birks and P. Wills, Marketing research: An applied approach, London: Pearson Education, 2012.

[18] DeWitt Wallace Library, "Qualitative vs. Quantitative Data," 9 March 2021. [Online]. Available: https://libguides.macalester.edu/c.php?g=527786&p=3608639. [Accessed 3 March 2021].

[19] World Bank Group, "World Bank Open Data," The World Bank, 2021. [Online]. Available: https://data.worldbank.org/. [Accessed 15 April 2020].

[20] United Nations Conference on Trade and Development, "COVID-19 has changed online shopping forever, survey shows," UNCTAD, Geneva, 2020.

[21] "netcomm suisse ecommerce association," netcomm suisse ecommerce association, 2021. [Online]. Available: http://www.netcommsuisse.ch/. [Accessed 20 March 2021].

[22] S. Meyer, "Understanding the COVID-19 Effect on Online Shopping Behavior," Big Commerce, 2021. [Online]. Available: https://www.bigcommerce.com/blog/covid-19-ecommerce/#product-categories-shifting-during-covid-19. [Accessed 8 April 2021].

[23] G. Sterling, "COVID-Consumers: Pessimistic, but spending more online,"

25 March 2020. [Online]. Available: https://searchengineland.com/covid-consumers-pessimistic-but-spending-more-online-331519?_ga=2.5150769.32165542.1624914080-1034135002.1624914080. [Accessed 28 March 2021].

[24] "Marketing Pulse Dashboard," WITHIN, 2021. [Online]. Available: https://within.co/marketing-pulse/. [Accessed 10 April 2021].

[25] O. Andrienko, "Ecommerce & Consumer Trends During Coronavirus," SEMRUSH, 14 April 2020. [Online]. Available: https://www.semrush.com/blog/ecommerce-covid-19/. [Accessed 9 April 2021].

[26] S. Davis and L. Toney, "How Coronavirus Is Impacting Ecommerce," 12 March 2020. [Online]. Available: https://www.roirevolution.com/blog/2021/06/coronavirus-and-ecommerce/. [Accessed 22 June 2021].

[27] "Annual net sales of Amazon 2004-2020," Statista.com, February 2021. [Online]. Available: https://www.statista.com/statistics/266282/annual-net-revenue-of-amazoncom/. [Accessed 2 May 2021].

[28] "Quarterly results," Amazon Inc., 2021. [Online]. Available: https://ir.aboutamazon.com/quarterly-results/default.aspx. [Accessed 15 June 2021].

[29] "Amazon revenue grows 38% to $60.5 billion in Q4 2017, AWS sales up 45%," Reuters, 1 February 2018. [Online]. Available: https://venturebeat.com/2018/02/01/amazon-revenue-grows-38-to-60-5-billion-in-q4-2017-aws-sales-up-45/. [Accessed 15 May 2021].

[30] "Amazon.com, Inc," Yahoo Finance, 2021. [Online]. Available: https://finance.yahoo.com/quote/AMZN/chart?p=AMZN#eyJpbnRlcnZhbCI6ImRheSIsInBlcmlvZGljaXR5IjoxLCJ0aW1lVW5pdCI6bnVsbCwiY2FuZGxlV2lkdGgiOjIuODgyMzUyOTQxMTc2NDcwNiwiZmxpcHBlZCI6ZmFsc2UsInZvbHVtZVVuZGVybGF5Ijp0cnVlLCJhZGoiOnRydWUsImNyb3NzaGFpciI6dHJ1ZSwiY2hhc. [Accessed 5 July 2021].

[31] Digital Commerce 360, "US nonstore retail sales surge 31% in record-breaking November," Vertical Web Media LLC, 2021. [Online]. Available: https://www.digitalcommerce360.com/2020/12/16/us-nonstore-retail-sales-surge-31-in-record-breaking-november/. [Accessed 12 May 2021].

[32] U.S. Department of Commerce, "Estimated Quarterly U.S. Retail E-commerce Sales," U.S. Department of Commerce, Washington, D.C., 2021.

Gaming habits and the development of the E-sports industry in Hungary

Dániel Simon, Patrik Viktor, Albert Molnár, Ágnes Csiszárik-Kocsír

simon.daniel277@gmail.com, viktor.patrik@hotmail.com,
treblaranlom@gmail.com, kocsir.agnes@kgk.uni-obuda.hu

Abstract: We are living in a world of Digitalization and evolving technological development. On the line with traditional sports, eSports have risen a lot in popularity over a short period of time. This motivated our team to investigate the Hungarian gaming markets' habits, composition, consumer behavior and purchasing decisions. Having analyzed the videogame market both in Hungary and globally, we determined the most popular online games. Since the Hungarian eSport market is in its infancy, it is quite far behind in building the infrastructure and having the community's size to push for better events. In order to make accurate conclusions about the state of the Hungarian gaming market, we surveyed 724 respondents aged 13-55, both male and female to find answers to a set of carefully composed questions. We were successful in explaining the market's purchasing habits, betting activities and reviewed possibilities of development of the video game market.
Keywords: eSports, gaming habits, videogames, Hungary, gambling,

1 Introduction

Defined as an activity done for pleasure, requiring physical effort or skill, usually done in a specific area adhering to specific rules, traditional sports are now more than ever, resemble the definition of eSports. Having scrupulously analyzed the video game market as a whole and the most popular games that are played at professional levels ranging from first-person shooters and multiplayer online battle arenas, to battle royals and real-time strategy games, our team has set the goal to examine the Hungarian eSports market. The rapidly evolving gaming industry serves as an attractive business entry point for entrepreneurs – and as a result an opportunity to increase competition in the market. People are often inclined to believe that gaming is solely for teenagers and young people. Our study questioned this stigma and with the help of a multilateral questionnaire it identified key sociological behaviors that can be scrutinized when a new product is introduced to the gaming market. The thorough analysis of eSports in an emerging market such as Hungary is important because significant breakthroughs can be made in the discovery of specific peculiarities of Hungarian gamers. This would later manifest in the increase of competitive advantage of businesses focused on gaming and eSports. Comparatively, very few studies have been conducted in the sphere of gaming and eSports in Hungary not only because it is a

relatively new field of study, but also, the state of the market is still in its infancy, therefore it must be explored.

Even though not everybody online or part of the gaming community is interested in eSports currently, as it will become more and more mainstream, the general viewership will increase with it, although it is already growing at a tremendous rate. To demonstrate the statement, look at last year's most viewed championship – League of Legends (LoL), where the peak viewership was 3.98 million people, this was a 94% increase from the previous year world championships viewership (escharts 2020) while concurrent viewers were 1.01 million people (eschazrts 2020), and these numbers are keeping a steady increase from the past years, as the infrastructure and the general acceptance of eSports increases these numbers are bound to go even higher and higher, and eSports watch hours are just part of the actual hours' people spent on watching these games being played. In January 2020 LoL had 114 million hours watched (Newzoo 2020) and this is just one of the games that are popular currently. This also creates a problem for these streamers and competitors, with new games coming out and the volatility of the market games coming and going within months, organizations are left with teams that have nowhere to compete or streamers who are left unemployed due to the game they enjoy falling out of popularity.

Hungary is quite far behind in building the infrastructure and having the community's size and power to help and push for better events and teams. There are not many if any players on the professional level. This is mostly because it is a lot less accepted than in the world. There could be many social reasons as to why Hungarian people think this way, but it is bound to change with the movement (E-sportmilla) that started in 2013 as a movement and became a proper association and allowed for the V-4 event to be pursued by Hungary and the V-4 nations. Since then, the Hungarian league has formed for multiple eSports games such as LoL, CS: GO, PUBG, and Rainbow Six: Siege (R6) which is another First Person Shooter game. The Hungarian eSports, in general, started moving in the right direction but still has a lot of room to grow to produce players capable of challenging the bigger and better leagues, mostly since the Hungarian team doesn't have the necessary budget to pay for the bigger names in games and still keep profitability.

2 The eSports market and its social elements

2.1 Forecasted growth of the market

In the previous year, there were 443 million people who watched eSports either regularly or occasionally with a split pretty close to each other around a 45% to 55% split between the regular viewers and the occasional ones it is visible that eSports has a decent retaining factor around it. This shows from the fact that from 2018 to 2019 there were 20 million viewers worth of growth in the eSports enthusiasts which is similar to the growth of the occasional viewers. With a

forecasted revenue of 1556.7 million dollars in 2023, increasing the potential of this growth even further via new games is becoming more and more mainstream especially because of certain games such as Fortnite. For example, one might even call this the moneymaker of eSports, as it might not be relevant by the time the big changes come around, it was the first of its kind to bring so much attention to games and eSports in such a small amount of time after its release. This phenomenon has been well- documented, the title has reached more than 125 million players on all platforms. (Goldman Sachs 2018)

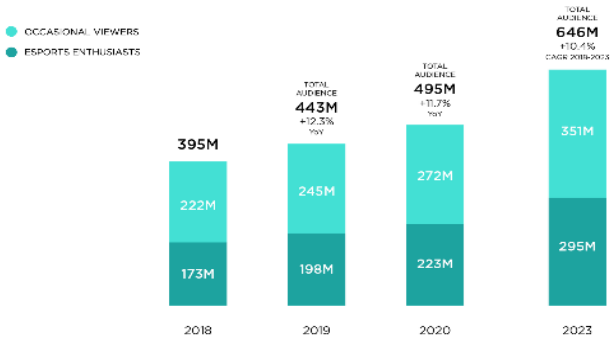


Figure 25 Newzoo's eSports audience growth forecast

This is important because with viewer numbers growing at this rate and not seeming to stop soon traditional sports leagues with already set fan bases might be challenged by this new and upcoming form of entertainment. Even in 2017 fans of eSports asked about what they think it will grow into, most people (71% of the asked) said that it will most likely become a mainstream activity that a lot more people will follow. Growth in the industry will create more and more jobs and more and more of the traditional sports teams will start to invest in this side of entertainment and athleticism. This rise will create stagnation in the development of video games though as the ones on top will do anything to keep themselves on top and push the new games that are less relevant out of the loop and not allow them to reach top eSports levels of viewership and player base. Similar to how the top football clubs tend to be the same due to the money they acquired from having the best players winning consistently and not allowing smaller teams to gain an advantage by buying up available talent from them at prices they cannot afford. This will create a similar environment where a small number of organizations will own the majority of big eSports titles and the leagues behind them.

2.2 Fan bases

Similar to regular celebrities and sports athletes, eSports professionals have fan bases as well – streamers. As one would have guessed, the numbers are smaller but, on the rise, as more and more find a way to give back to the community they built. These players or the organization that they work with gives them equipment

and other monetary values that are useful for the game or to someone using a specific system for example to giveaway to these communities. This gains them net views and both on the channels of their twitch.tv and on their social media platforms allowing them to get better sponsorships to benefit themselves and to be able to give back to their community even more. Some streamers and players hold regular community gatherings where the fans can meet these people in the flash and hang out, of course, there are streamers who are afraid of this, especially female streamers, having massive male audiences which can be dangerous.

2.3 Female representation

eSports is a male-dominated field currently as in the player base. This poses several questions because unlike in traditional sports, eSports does not have physical requirements that would make a female version of eSports to come along, on the other hand, males have an inherent advantage due to the fact that most people playing are male, this usually means that males start playing videogames at a younger age and are generally welcome in any community that they try to join. On the other hand, females start later and are a lot less likely to be accepted easily into any male-dominated community.

3 Primary research findings about eSports in Hungary

In Hungary, about 3.7 million people play video games (eNet 2016) these players play on a wide array of equipment ranging from smartphones to consoles while the males prefer to play on bigger and stronger equipment females tend to play more on their smartphones. Video games generate about 27 billion forints in a year. Most of the players are still young males who spend more time playing and are generally regulated by their parents on how much they are allowed, due to this there is a rising demand for viewing experiences that allow these young boys to watch their favorite games. In 2017 at the Xbox One PlayIT Show, which was at the time, the biggest show regarding electronics and gaming in Hungary aimed at the general public was visited by thousands of people (eNet 2016). This year the European LoL leagues final would have been held in Budapest if not for the COVID-19 pandemic. There are still a lot of questions though regarding eSports and the way it is handled as well as the communities and the responsibilities that they take for what is happening around and in their communities, this is both the communities' and the organizations' job.

From the data that our team has managed to gather from the group it was focused on showed that the eSports audience is generally young and mostly in-between the ages of 19-29 as most of the people who filled out the questionnaire was in this age group, this is the generation that has grown up on playing videogames and talking about it with friends and family they are the most active ones on social media as well as streaming websites.

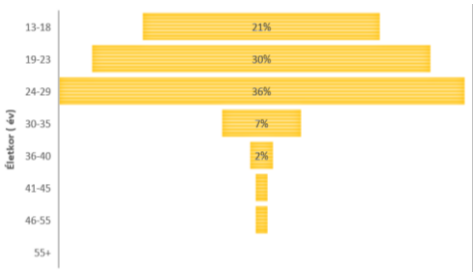


Figure 26 Age groups. Source: Own research, 2021, N=714

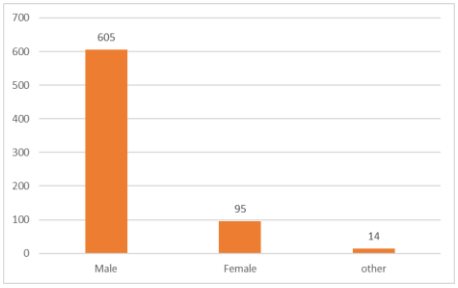


Figure 27 Gender of Respondents. Source: Own research, 2021, N=714

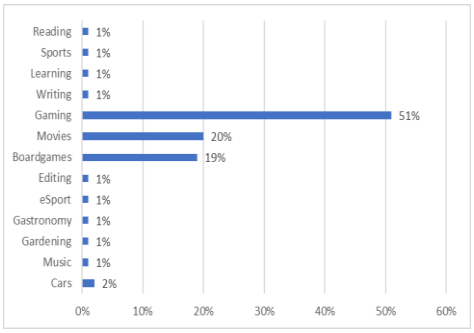


Figure 28 Hobbies of respondents. Source: own research, 2021, N= 714

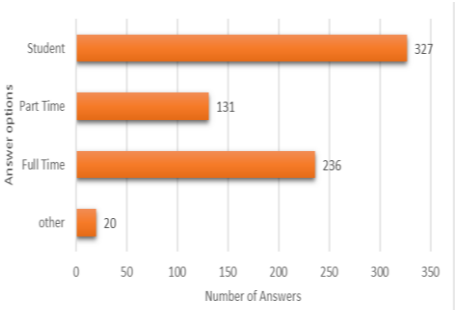


Figure 29 Employment status. Source: Own research, 2021, N=714

While in our case the majority of respondents (Figure 2) were male this shows to us that while the data might not be perfect due to the fact that as a male we have more male friends and these people are more likely to help us in getting responses for the questionnaire also has some merit to it, as it was previously mentioned in the eSports community females are harshly criticized some would say harassed by their male counterparts for these girls to show that they are as good as a male they would have to be above them in rank to a point that the male cannot argue the fact, otherwise it will be blatantly pushed on to the girl being lucky, this might be the reason the demographic between gamers and viewers differ to this extent in the gender department.

As it is visible in (Figure 4) provided by our research shows that these people are mostly gamers who prefer to game above most other things around them and they like sports which shows why they prefer eSports to traditional sports due to it combining their favorite hobbies. The choice was given to people to choose more than one hobby that they like or prefer but as you can see most of these people either did not have anything other than Gaming or are very reserved hobbies that one usually does by themselves or with a small group of friends. This creates this

group that is hard to access as the only real interest they have is playing games and watching content about these games let that be professional or only for mere entertainment value. Most of the people are Students or Full-time workers (Figure 5) while the option was given to choose more than one option so in these cases some people are both students and full-time workers or part-time workers. This creates a point where most people are at the beginning of their careers or getting towards the point they want to reach this shows us that they have a rather small amount of free time or they have a small amount of sleep other than their work or student responsibilities.

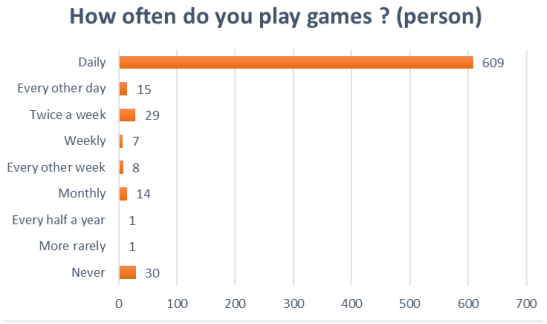


Figure 30 Regularity of playing games. Source: Own research, 2021, N=714

The data shows that most of the respondents are playing daily creating more and more opportunities for them to run into eSports or online gaming content. This creates players who are interested in getting better and are looking for players they can learn from and of videos online or even live streamer who are creating educational content.

Playtime (Figure 7) is another factor that might influence the chances of these people becoming part of the industry or just keeping themselves as gamers.

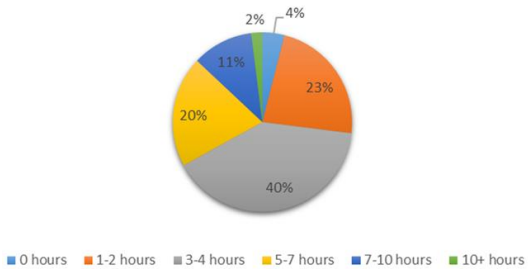


Figure 31 Typical hours played daily. Source: Own research, 2021, N=714

From the gathered data it shows that people who play games tend to play three to four hours a day that they play this might not be every day but in general a session of gameplay will go on for longer than a YouTube video in which they can leave at any given moment. While this might play into addiction in a regular state in the current condition of the COVID-19 virus pandemic and self-isolation these seem relatively correct as to how much time people have on their hand that otherwise, they might have not had. As such people most likely spend more time playing games than they would in case of a regular lifestyle.

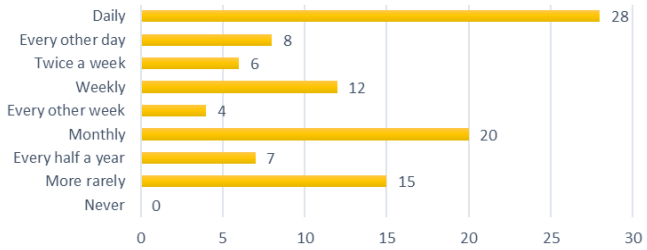


Figure 32 Regularity of viewing online gaming content among respondents. Source: Own research, 2021, N=714

eSports is also benefiting from the global quarantine as more people have a chance to view and watch what is going on this is going on both in Hungary and around the globe. The data itself might not show it as most people tend to spend relatively small time out of the amount of time watching gaming content on eSports but the global numbers show that there is a huge viewer base regularly watching so let us take a look at the biggest eSport currently League of Legends in from the 13th of April 2020 to the 19th of April 2020 its viewership varied from 3.68million (Newzoo 2020) hours to 6.19 million hours(Newzoo 2020) watched, with most of this viewership being on the official eSports channels of Riot Games, with the playoffs of several regions going on at the same time this is prime time for eSports fans to view games.

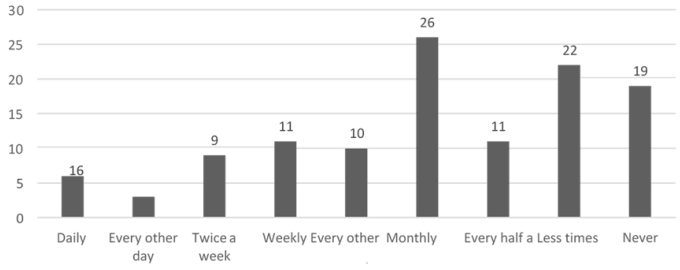


Figure 33 Regularity of viewing of traditional sports among respondents Source: Own research, 2021, N=714

From the gathered data (Figure 9) it shows that people who play and consume a high amount of online gaming content, video games, or eSports are less likely to watch a lot of traditional sports, but they usually still watch with some regularity. While this is not a perfect indication of what people prefer due to the vast amount of traditional sports available for everybody it is visible that these people are a lot more accessible on an eSports broadcast than on a traditional sports broadcast most likely due to the preference of the virtual world which they themselves find entertainment in, as well as the fact that these broadcast of traditional sports are usually paywalled behind a channel not everybody has access to while eSports in its current form is free to watch if you have internet access available let that be on your smartphone, smart tv, consoles or personal computer.

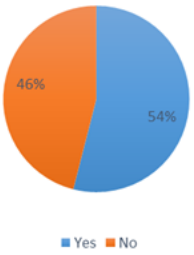


Figure 34 Do Hungarians watch the MNEB league Source: Own research, 2021, N=714

3.1.1

The state of the Hungarian eSports scene currently is slowly starting to grow (Figure 10) into something with the assistance of government funding. The first biggest step taken by the government was working together with V4 countries and making an eSport convention that moves from country to country creating opportunities for these countries to hold such events and show the big leagues of Europe that they can hold events successfully and be allowed to hold a bigger event with the assistance of the European league, this was about to happen in Budapest in 2020. As it is visible from the provided data most people do not care about the Hungarian league but similar to the world most of those that do follow, follow the same big games that are followed in the world which are LoL, CS: GO, R6, these games are the ones with most regular leagues and continuous broadcast both here in Hungary and in the world as well. The data collected also shows that people are more likely to listen in English than in Hungarian this creates a bigger break between us and the working league system that could normalize eSports in Hungary but what is the effect of this as previously mention they create an issue where even if the broadcast is at the same quality as the English versions due to the people being accustomed to the English broadcast a lot fewer people turn into the Hungarian broadcast.

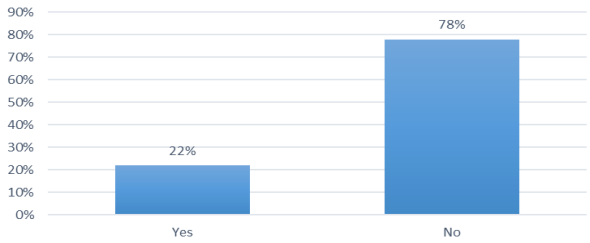


Figure 35 Likelihood of purchasing the equipment used by their favorites Source: Own research, 2021, N=714

Another question asked (Figure 11) was about their purchasing choices based around their favorite online personality let that be a team, a player, or just a streamer. While people who are favoring these items over their own choices are in the minority, it shows a good point that these players have respect in their opinions and can influence a decent amount of people to purchase an item that they are sponsored by or that they use regularly allowing for them to create a better opportunity for both themselves and the sponsors to be able to sell the products they are looking for

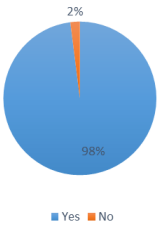


Figure 36 Do Hungarians purchase merchandise from their favourite esports teams. Source: Own research, 2021, N=714

While purchasing online and getting it delivered to them seems to create disinterest in people purchasing.

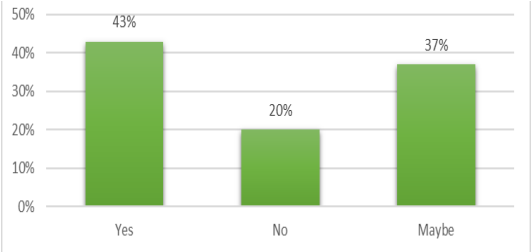


Figure 37 Would Hungarians purchase ingame items question among respondents. Source: Own research, 2021, N=714

In-game content related to their team is quite a popular idea that people embrace, as it shows even in the data gathered, while this concept is already happening throughout several games, the amount could be increased, as it shows that there is a demand for these items, as it is visible tough it shows that some people answered with maybe given the option this is most likely due to the fact that they would make a decision based on the look of the item itself and less about the organization, content creator.

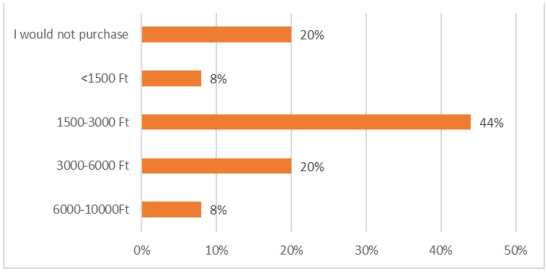


Figure 38 How much were the respondents willing to spend on these items. Source: Own research, 2021, N=714

While these items are likely to be purchased by people the price is something that could make or break someone's interest in buying such items if someone feels that the value, they get out from it is not big enough. As the collected data suggest most people in Hungary are willing to pay between 1500 Ft to 6000 Ft which is a relatively high amount for these types of items, as they are usually going for less than 6000 Ft. This shows that in the case of the skins being a good quality and well-designed, people will buy and will be willing to pay a relatively high price for microtransactions.

Sponsorships with different relations to the games are one of the main income sources of eSports, so it is important for them to try and get sponsors the fans would enjoy viewing the advertisements of, or they believe can create interesting advertisements relating to eSports.

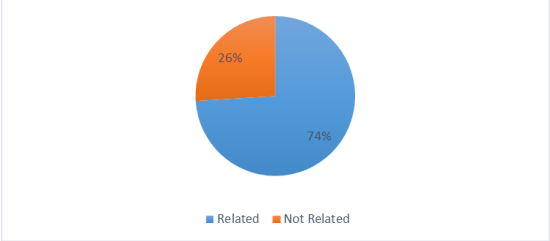


Figure 39 What types of sponsorships (related/unrelated) would the respondents be glad to see more in eSports Source: Own research, 2021, N=714

3.1.2

So, it is an important question to ask what kind of sponsors would prefer to see in eSports. As the data suggests, more people are interested in seeing items that are related to eSports, such as hardware, equipment, payment methods. The reasons given for this were mostly that they are found more useful by them, they must be better because they are promoted by these streamers. They give ideas about what to buy the next time people want to buy such equipment. This is what is important for them around gaming, and similar answers all around when asked why they choose their answer to the question of what types of sponsorships would they prefer to see in eSports. This is likely due to the fact that people trust that these relating brands are there to help and give them something they care about instead of just showing themselves off and not really giving anything other than a name to the eSports scene. Several answers given show that to some degree this is the case as it was previously shown as well. It is thought that they look better in the eSports scene. It is targeting a young audience who are not interested currently in buying a car, getting house insurance somethings that the non-related sponsors could be advertising to them. In general, the consensus in the answers siding with related sponsors was that because they are fit better, easier to sell, people prefer to buy stuff advertised with pro players, and in general, people are more interested in these than non-related ones.

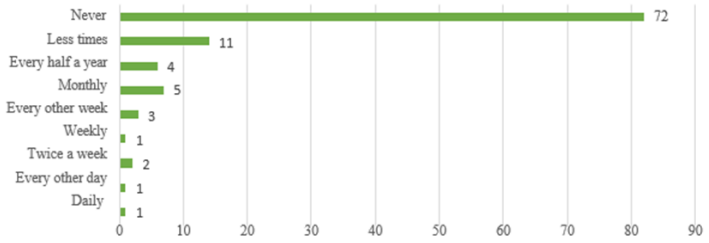


Figure 40 How often do the respondents bet on eSports. Source: Own research, 2021, N=714

eSport betting in Hungary is currently not that relevant most people do not bet on any type of eSports games with next to nobody betting regularly. The data our team has gathered shows this as well. While there are some outliers to this most people do not think of eSports as something to bet on in its current state. This shows that either it is unavailable to people or that they cannot find where to bet or they never had the intention to bet anyway.

With the help of the program called STATA, statistical analysis was performed as well. T-analysis was used in order to compare the relationship between in-game spending and e-sport watching habits. In the questionnaire that was consciously structured it was possible to add values to those 8 questions that involved the

analyzed topic. Intra-class correlation was performed to explore reliability which was based on the following values.

- In case of 0,5 > ICC – low reliability
- In case of 0,5-0,75 ICC – medium reliability
- In case of 0,75-0,9 ICC - good reliability
- In case of higher than 0,9 ICC - excellent reliability

To determine the relationship itself, Pearson's correlation analysis was performed in order to get a better understanding about the connection between the used questions. Due to the size of the sample, the exploration of the relationship was determined with modified values seen down below. (The value of alpha was determined to be 0.05 throughout).

- 0,00 - 0,20 – weak connection
- 0,21 - 0,40 – moderate connection
- 0,41 - 0,50 – medium connection
- 0,51 - 0,64 – strong connection
- 0,65 – 1,00 – very strong connection

Before starting the analysis, a Shapiro-Wilk normality test was performed. Logarithmic transformations were used for the non-normal variables. Based on the following values, (alpha value throughout 0,05) the results were considered statistically significant if the value of p is greater than 0,05.

Those who watch e-sports will most likely only watch games that they like (0,57.)

Players who watch e-sports in English will purchase e-sports merchandise more likely than those who only watches it in Hungarian (0,45).

Those who watch e-sports will most likely watch it in English (0,65). There is a very strong correlation between these two aspects that leads to the conclusion again that most Hungarian players are still watching e-sports in foreign languages.

	14th question	***15th question***	***16th question***	***17th question***	***31th question***	***32th question***	***33th question***	***34th question***
14th question	-	-	-	-	-	-	-	-
15th question	0,38*	-	-	-	-	-	-	-
16th question	0,24	-0,18	-	-	-	-	-	-
17th question	0,33*	0,4	0,31	-	-	-	-	-
31th question	0,41*	0,19	0,33	0,55^{VP}	-	-	-	-
32th question	0,21	0,18	0,36*	0,45^{VP}	0,65^{VP}	-	-	-
33th question	0,18	0,04	0,3	0,28	0,07	0,17	-	-
34th question	0,28	0,29	0,18	0,56^{VP}	0,57^{VP}	0,53^{VP}	0,18	-

Table 7 Correlation analysis Source: Own research, 2021, N=714

Conclusions

In general, the information that our team was looking for was found, as we successfully managed to get a good view of the Hungarian groups' consumption of both online gaming content and eSports. Information and data gathered from here showed that it is quite normal for these young people to view this type of content regularly and creating demand for it in both Hungarian and English with this in mind it became clear to us that eSports can and most likely with time will become more and more popular in Hungary, allowing for a new industry to create more workplaces, allowing for people to have a whole new foundation to their online entertainment in Hungarian. Although currently, the preferred language is not Hungarian with more and more Hungarian broadcasters and the European leagues' permission to be broadcasted in Hungarian from a different stream will allow those who are interested and are blocked by a language barrier from consuming eSports and online gaming content. The age group and gender ratio was something that did not surprise any of us, as most of the people who responded, most likely know us or one of our friends, and as such, having a primarily male audience with smaller female participation seems perfectly realistic. Also, this means that the data in its self might not be perfectly representative but this is pretty much a given, due to the fact that as a small research group we, unfortunately, do not have access to the same research facilities and budget as a research firm. Other than this the global pandemic itself creates some issues, as people spend more time at home and have more time to spend on their hobbies and in general in front of any type of entertainment that they can find. This also might make some of the hours viewed or played data inflated. While viewer bases are growing and keeping up with worldwide trends, other sides of this are lacking, for example, something that is quite common for eSports viewers is betting on these games similar to traditional sports fans. This does not happen in Hungary, as the majority of the respondents never bet on these games, talking about traditional sports we have to take a look at how much time are people spending watching these besides eSports and online gaming content and it shows that they view a lot less traditional sports than they view eSports and online gaming content showing that the easiest way to access these people for marketers of organizations is to go through the eSports systems. All respondents to the questionnaire were Hungarian so that our teams' goal to focus on the Hungarian viewership was fulfilled to the absolute maximum.

One of the main ways to reach a bigger audience for the Hungarian leagues is to normalize watching eSports in Hungarian and as such, create an environment, where people find out about it in Hungarian first and then later find out about the English, so their first memories are with the Hungarian shows, and as such, will be more likely to return there, as that is the place they find out first. Other suggestions for the MNEB are to promote more towards everybody and in general push more ideas and do not just use their own social media platforms but use other forums based around eSports to show that they are around, that they are trying to be better. Additionally, our suggestions include finding sponsors who have

relevance for the customers, at first going for sponsors that will bring you newer viewers who will see that they are there with twenty other people will show the wrong idea. As for sponsors and marketers wanting to reach gamers through eSports, we advise them to make it relating, trying to push your products into their lives from their point of view, you do not have to create a new product for them just make modifications to your basic ideas so that it interests them to create these advertisements using relating terms that they understand, make it fun for them, as they are not the average customer that you can just reach through television, newspaper while keeping this in mind these people have their preferences

References

[1] escharts.com, (2020), Escharts. (online) Available: https://escharts.com/ (Access date: 2021.04.10.).

[2] Warman, P. (2020). The eSports Economy Trends, Audience, Revenues & Opportunities. Published by Newzoo. Available:https://newzoo.com/insights/trend-reports/newzoo-global-esports-market-report-2020-light-version/

[3] Merwin, C., CFA, Duval, A., Heath P., CFA, Sugiyama, M., Mubayi, P., Hari, T., (2018): The World of Games eSports From Wild West to Mainstream [Redacted]. (e-könyv) Retrieved 2021.03.18 from https://www.goldmansachs.com/insights/pages/infographics/e-sports/report.pdf

[4] eNet, (2018). MAGYARORSZÁG 3,7 MILLIÓ JÁTÉKOS HAZÁJA Published by: eNET Internetkutató és Tanácsadó Kft. Available: http://enet.hu/hirek/magyarorszag-37-millio-jatekos-hazaja/

Factors of inequality in Hungary from an EU perspective

Valéria Szekeres

Óbuda University, 1084 Budapest, Tavaszmező u. 17, Hungary

szekeres.valeria@kgk.uni-obuda.hu

Abstract: The gap between rich and poor has been widening tremendously in many countries. Several reports have revealed the recent trends of growing inequalities and warned of the negative consequences. Social groups like low-skilled workers and young people might be badly hit, and it is becoming increasingly difficult for those who are lagging behind to catch up. The widening social divide is leading to tensions in society that is shadowing the lives of everyone regardless which social group one belongs to. To support convergence, we need to understand factors of inequality such as employment, unemployment, quality of job, income, gender, family background, belonging to ethnic group, access to education, and living in a disadvantaged location. The study provides an analysis of the Hungarian situation from an EU perspective.
Keywords: inequality, poverty, Hungary, EU comparison

1 Introduction

Strong and prosperous middle class is vital for any successful economy and cohesive society. The middle class sustains consumption, attracts investment in education, health care and housing. By paying taxes, the middle class plays a key role in maintaining the social safety net. In societies with a strong middle class, rate of crimes is declining, satisfaction, political stability, and good governance are more prevalent. When compared with their poorer fellow citizens, members of the middle class assign more importance to democratic institutions, hold more liberal social values and express more concern about the environment. As societies grow increasingly wealthy and people's basic needs are met, public values shift, with more importance attached over time to tolerance or trust. [1]

However, there are various indications that foundation for democracies and economic growth is not as stable as in the past. Over the previous thirty years in most OECD countries median incomes increased a third less than the average income of the richest ten percent. Moreover the cost of essential parts of the middle-class lifestyle increased more rapidly than inflation, for example house prices increased three times faster than household median income. At the same time employees faced the threat of rising job insecurity in fast transforming labour markets. More than one in five middle-income households spent more than their income. Over-indebtedness is more common among middle-class than low- and high-income households. [2]

In developed countries with only few exemptions, the gap between rich and poor has been growing. The average income of the richest ten percent of the population was about nine times that of the poorest ten percent, even though there are big differeences between countries such as United States[1] and the rather egalitarian Germany [3]. The value of Gini coefficient[2] of equivalized disposable income in Hungary increased to the largest extent in the European Union between 2010 and 2015 [4]. To support convergence in a society, we need to understand the underlying factors of inequality. In this paper we consider in EU comparison some factors which might contribute to the inequality in Hungary. The structure of the paper is as follows. We examine the circumstances of labour market, such as unemployment, quality of job, impact of family background and regional differences, paying attention to the situation of women, Roma people and those living in poverty. We consider the distribution of income and the consequences of access to education. Last, we conclude.

2 Labour market conditions

Despite some favourable trends, the gaps in employment in terms of gender, skills groups and vulnerable groups remain wide in Hungary in EU comparison. In 2017 the gender employment gap was 15.3 percent to the detriment of women. Inequality in the labour market between women and men can be rooted in the different level of housework burden. The employment rate of women with children under 6 fell substantially in majority of the EU countries as shown in Figure 1, but to the greatest extent in Hungary. This is due to the unbalance in sharing caring responsibilities between women and men, with its unfavourable impacts concerning women's labour market activity.

The employment rate of women with children under the age of 6 in the European Union was about 8 percentage points lower than the employment rate of childless women, which was exceeded by more than four times in the fall of the Hungarian level. In Hungary the share of children under the age of 3 enrolled in childcare facilities increased to 16.5 percent in 2018, but is much below the EU average of 35.1 percent and even the Barcelona objective[3] of 33 percent. The low

[1] According to the portfolio.hu of June 25, 2021, the wealth of the richest 1 percent in the United States was 16 times that of the lower half of society in the first quarter of 2021.

[2] The Gini coefficient or Gini index is a statistical measure of the distribution of income or wealth. The Gini coefficient ranges from 0 percent to 100 percent, with 0 representing perfect equality and 100 representing perfect inequality. A higher Gini coefficient means greater inequality.

[3] In 2002, the Barcelona European Council recognised that availability of high quality childcare facilities is crucial for enabling women and men, with caring responsibilities, to participate in the labour market and also an important tool to tackle possible social disadvantages of children. Two targets were set: 90 percent of children from age 3 until mandatory school age and 33 percent of children under 3 should be

employment rate of older women (aged 54-64) may also reflect that women are more likely than men to undertake the care of elderly or dependent family members, thus they are more likely to reduce their working hours or terminates the employment. Employment rate of women of 55-64 years old was about 20 percent lower than men's in Hungary in 2016. Among Roma people, the gender employment gap was even larger. [5]

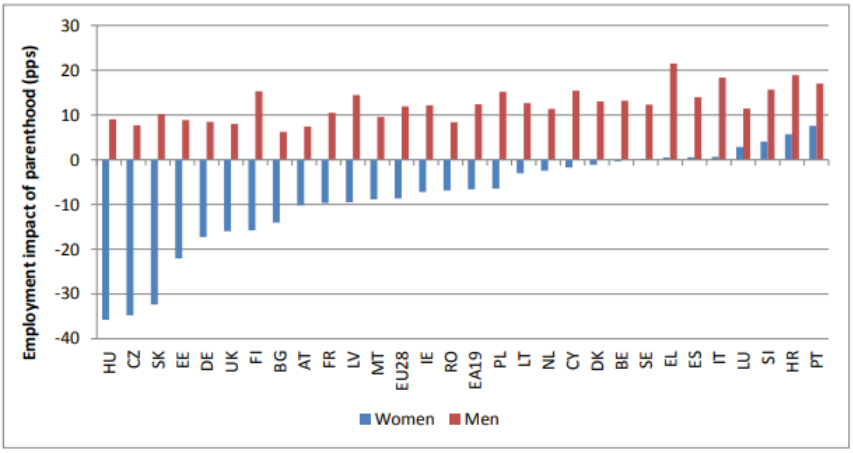


Figure 1

Employment impact of parenthood in 2015 (Data refer to women and men aged 20-49.)

Source: EC, 2017

In Hungary wages were low in regional comparison, and only wages in Bulgaria were lower in the European Union, moreover the dynamism of Bulgarian wage increase is higher. Many workers are not protected by adequate minimum wages. A survey on mostly Hungarian companies employing more than five workers revealed significant differences between the regions. In the more developed parts of the country, which are Central Hungary, Central and Western Transdanubia, the proportion of those employed on the minimum wage was 2-3 percent, and the proportion of those employed on the guaranteed minimum wage was between 2-10 percent. The proportion of minimum wage earners was typically 10-13 percent in the less developed regions, but reached a maximum of 16 percent in the Southern Great Plain. In the poorer regions the proportion of those working on the guaranteed minimum wage was 7-11 percent, but was the extreme of 17 percent in

ensured high quality and affordable childcare facilities. To increase the employment rate significantly and sustainably depends on, among other things, the opportunities men and women have to achieve a work-life balance. The availability of quality childcare facilities is crucial in this respect.

the Southern Great Plain [6]. The minimum wage was below 40 percent of the average wage in 2019.

There was a significant improvement in the level of employment after the crisis of 2008. However, unemployment among young people aged 15-24 remained a concern, and the rate among them was 10.2 percent in 2018. (The overall figure was 3.7 percent.) Unemployment rates varied to a great extent across regions and skill groups. The difference between the best and least performing regions was more than threefold, with a rate of 2 percent in Western Transdanubia versus 6.6 percent in the Northern Great Plain. The unemployment rate was about three times higher among the low-skilled than the medium-skilled workers. And it was just 1.3 percent among the tertiary graduates [7]. The duration of unemployment benefits is maximum 3 months, one of the shortest in the European Union, and substantially shorter than the average time (about 1 year) needed to find a job.

The quality of employment was relatively good in several respects. The ratio of people forced to make a living from multiple jobs was very low, and the proportion of those working more than 48 hours a week was just few percent. The ratio of people having atypical working hours was only 21.8 percent, the lowest in the Eurpean Union. The number of persons neither in employment nor in education and training (NEETs) declined and their ratio was 16.5 percent in 2018. Hungarian employees, however, are among those with the longest working hours per week and their relative position worsened in the last decade (39.6 hours is the sixth longest in the EU) [8]. According to the provision of the Hungarian Labour Code, which entered into force in 2019, employees may be required to work a maximum of 400 hours of overtime (instead of the previous 250 hours per year). Their income situation deteriorated, and their vulnerability considerably increased because the deadline for the payment of overtime was extended from one year to three years.

2.1 Distribution of income

In the first half of 2018, median income was HUF 240,000 gross in Hungary, so half of those living on wages and salaries that is about two million people earned less or more per month. Meanwhile, the average wage was HUF 324,000 gross in the same period [12]. However, the salary of 70 percent of Hungarian employees was below this amount. Between 2005 and 2010 the share of the bottom nine income deciles increased and that of the top decicle decreased. The situation was reversed after 2010. Since then, the income of the top two deciles, but, most of all, that of the the richest 10 percent has increased. (Figure 2) Increasing inequalities also characterize the pension system, because after 2016 wages increased 3 times faster than pensions. [8]

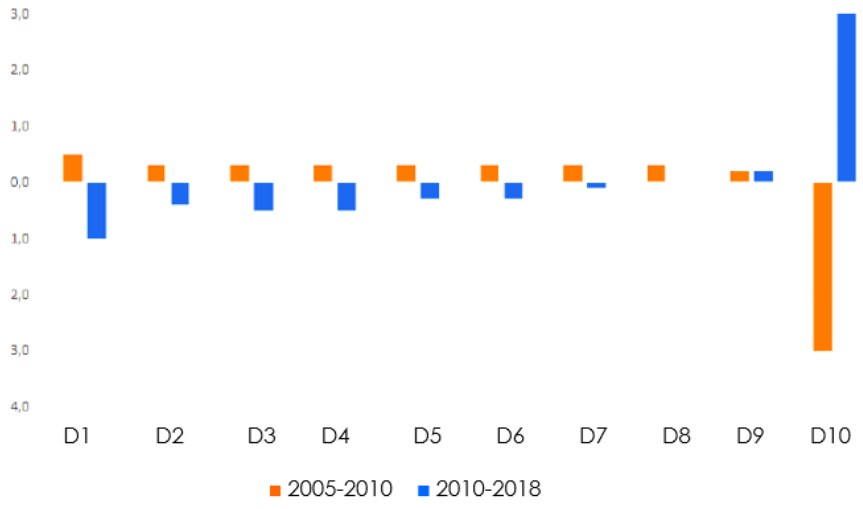


Figure 2

Change in the share of income deciles from national income

Source: Artner (2020)

Wealth growth from 2014 till 2017 was significant in all household groups. At the same time, the increase in wealth was significantly higher than the average in Central Hungary and the Great Plain, in the 66-75 age group, and, in terms of the size of wealth, in the upper 10 percentage of households. The share of the bottom 50 percent of households in total net wealth remained essentially unchanged (about 9 percent), with net indebtedness declining significantly in the lowest decile.[4] In the top 50 percent, the share of total net worth increased only in the top decile during the three years studied. The amount of net wealth per household (average value) was HUF 27 million, the median value was HUF 12 million and the richest 400,000 households each had HUF 153 million at the end of 2017. But the richest ten % of the population had 61 thousand billion forints, that it alone raised the average, whatever happened in the other nine deciles. The richest one-tenth of the population had 56.4 percent of Hungary's total net wealth. There were few super-rich people: the richest 1 percent of the country owned 25 percent of the total wealth. [9]

4 If we divide the data of the net wealth of the poorest 10 percent by 400 thousand (number of households in each decile), we get that in addition to the assets of HUF 4.4 million, a household has loans and other debts of HUF 5.6 million, ie. the balance sheet is negative overall.

2.2 Population at risk of in-work poverty

People are at risk of in-work poverty (IWP) if they are employed and live in a household that is at risk of poverty. A household is "at risk of poverty" if its equivalised disposable income is below 60 percent of the national equivalised disposable household median income. In 2017, 10.2 percent of the employed population aged 18-64 was at risk of in-work poverty. Although this rate is only slightly higher than the EU value, it rose by 78.9 percent between 2012 and 2017, which was by far the fastest in the European Union. The rate was higher for women because its increase was more than twice that of men. [10] Despite growing employment and wages, the rate of low-skilled workers in the labour market rose to over 55 percent in 2018. Wage dispersion increased from an already high level. Families with many children can receive huge tax allowance, the tax wedge for low-income single persons earning half of the average wage was 45 percent in 2018, 15 percentage points above the EU average. Although there has been a significant minimum wage increase, its level is low in EU comparison. The public work allowances amounted to about 50 percent of the minimum wage. As shown by Figure 3, in-work poverty increased for workers with temporary contracts and for lone parents.

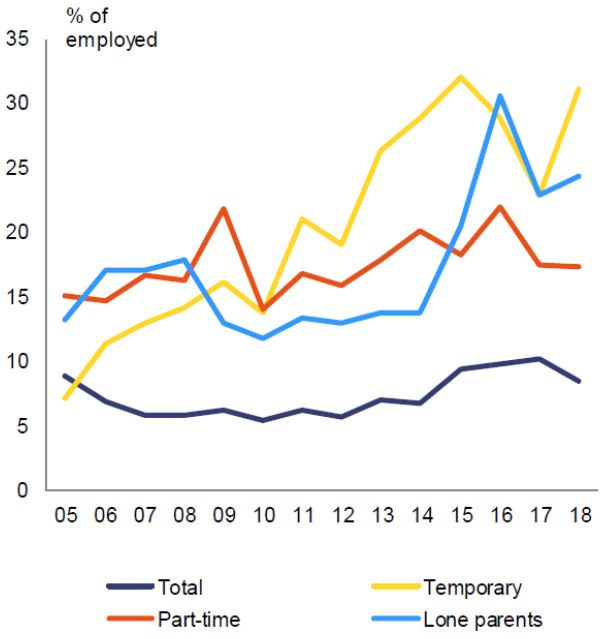


Figure 3

In-work poverty rate (2005-2018)

Source: EC, 2020

The IWP rate for those with upper secondary and post-secondary education was higher than for those with tertiary education. Compared to 2012, however, the intensity of the deterioration of their IWP rate was 88.5% and 338.9% respectively, which might be explained by that the income of public servants in a number of sectors, such as health care and education, did not increase significantly. Ratio of those in low-paying jobs drastically increased from 2009 to 2016 and proportion of workers in mid-paid occupations declined. There is an increasing demand for highly educated workers even in low-paid jobs, which may explain the dynamic growth of the in-work poverty rate among people with tertiary education [10].

2.3 Impact of family background

Participation in the labour market can greatly be hindered by family contraints. Reconciliation of work and family responsibilities is affected by a number of factors. It is particularly difficult for parents with small children and caregivers of sick, disabled or elderly family members and relatives to create a balance. 63 percent of women were ever in permanent absence due to childcare. Long-term absences from work due to childcare were used by women in 98 percent, although fathers are also entitled to childcare fee. This type of absences has ever been used by 63 percent of women aged 18-64 (1,929,000), one third of whom were away from work for more than 5 years. It is very unusual for women to return to work after maternity leave. Only 1.7 percent of them went back within six months, and the proportion of those absent for up to a year was only 4.8 percent [11]. (Figure 4)

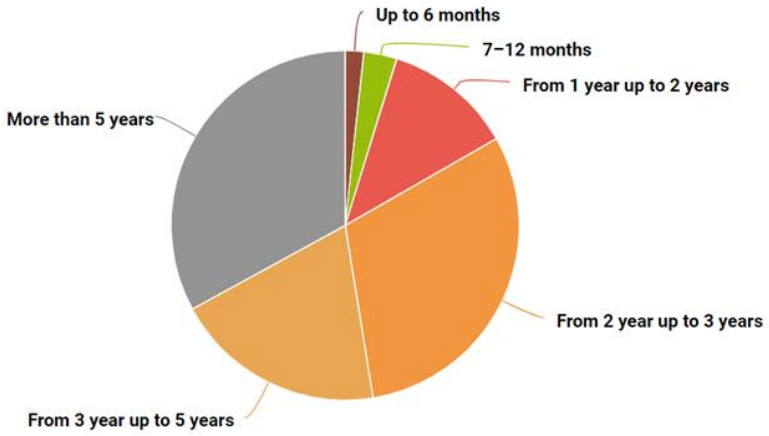


Figure 4

Distribution of women aged 18-64 by length of absence (at least one month) due to previous and current childcare (percent)

Source: KSH, 2018

In the second quarter of 2018, 277 thousand persons aged 18-64 cared for patients aged 15 or older and elderly family members and relatives. The caregivers mainly cared for an older family member or relative. This is indicated by that their share of the population over the age of 50 increases exponentially, reaching 8 percent among those aged 55-64. As shown in Figure 5, in terms of regional proportions, those living in Northern Hungary are the most exposed to these burdens, and the lowest extreme is represented by Budapest. Due to the declining number of people in smaller villages, the proportion of those in need of care is more common among the remaining aging population, so the proportion of caretakers for the sick and elderly is significantly higher in villages than in cities.

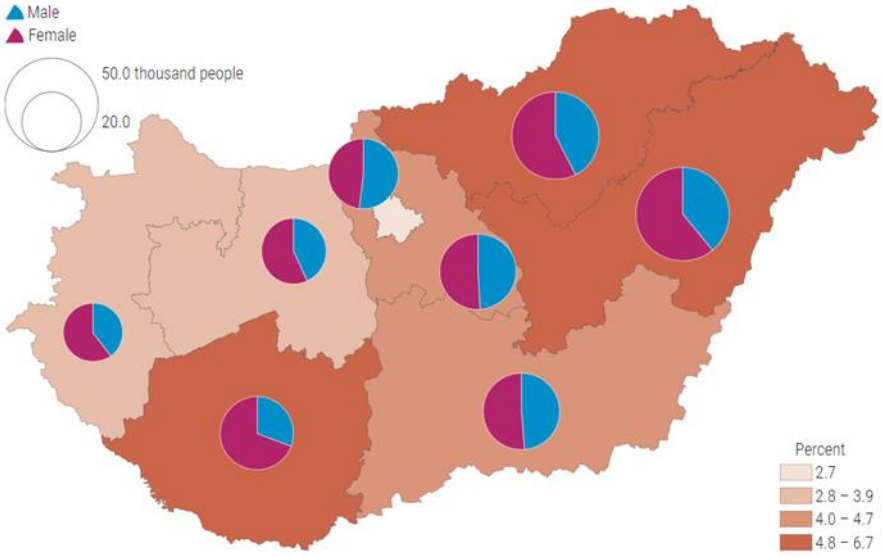


Figure 5

Share of people aged 18–64 with a patient or elderly care constraint in population by sex and region (percent)

Source: KSH, 2018

About one-fifth of 18-64-year-olds caring for the sick or elderly receive an old-age pension or some form of health care benefit, and 13 percent of them are entitled to a care allowance after a sick family member. 15 percent of women caregivers were old-age pensioners. 38 percent of the population aged 18-64 currently or ever working that means 2,113,000 people have ever had a caring or patient care obligation. **Hiba! A hivatkozási forrás nem található.** Measures and incentives on the part of both state decision-makers and employers taking into account the changing needs would be able to ease the difficulties of such groups of people.

3 People at risk of poverty or social exclusion

The social situation is usually characterized by the absolute and relative level of income and consumption, as well as by the degree of social integration. These are approximated by a series of indicators, of which relative income poverty, severe material deprivation and people living in households with very low work intensity are the most important. Relative income poverty refers to less than 60 percent of median income, including government transfers. Severe material deprivation means that at least four of the following nine characteristics occur as enforced inability: to pay unexpected expenses, afford a one-week annual holiday away from home, to avoid arrears, to afford a meal involving meat, chicken or fish every second day, the adequate heating of a dwelling, durable goods like a car, washing machine, colour television and telephone. People living in households with very low work intensity are those persons who live in a household where the members of working age worked less than 20 percent of their total potential during the previous 12 months.

The social situation in Hungary improved in the last 4-5 years that also characterized the European Union, including Central and Eastern Europe. Therefore, we just managed to maintain our regional position in terms of the various indicators. The content of the three indicators is expressed jointly by the so-called "people at risk of poverty or social exclusion". This is not a simple summary. If it were, almost 2.6 million people in Hungary, or 27.1 percent of the population, would have been at risk of poverty or social exclusion in 2018. However, by eliminating the overlaps, the figure was 1 million 887 000 people, which corresponded to 19.3 percent of the population, the fifth highest among EU members [8]. The severe material deprivation rate (10.1 percent) and the material and social deprivation rate[5] (20.1 percent) were still significantly above the EU averages (5.9 percent and 12.8 percent respectively). While the number of people at risk of poverty or social exclusion decreased, the poverty gap widened from 17 percent in 2017 to 24 percent in 2018. Children face higher deprivation rates than the rest of the population. The severe material deprivation rate among children (15.2 percent) and families with three or more children (22.0 percent) was among the highest in the European Union. The EU average rates were 6.4 percent and 6.7 percent. About half of the Hungarian Roma faced severe material deprivation.

[5] The indicator is based on 13 items. Seven items relate to the persons' household and six to the persons themselves. The seven household deprivations consist of six items already included in the "severe material deprivation" indicator and one new item (inability to replace worn-out furniture). The six personal deprivations are the inability for the person to replace worn-out clothes, to have two pairs of proper shoes, to have "pocket money" each week, to have regular leisure activities, to go out with friends at least once per month, and to have an internet connection. The deprivation rate is defined as the weighted proportion of people lacking at least five items in the whole population.

Poverty and social exclusion vary considerably by region. A quarter of the population in Southern Transdanubia, Northern Great Plain and Northern Hungary was at risk of poverty or social exclusion. In the least developed regions Roma communities are isolated to a great extent, which is one of the highest in the EU countries. In 2019, the Hungarian government announced a long-term programme, targeting 300 of the least developed municipalities (with about 3 percent of the population). The programme has already some results in providing intensive social work and improving access to services. [7]

4 Segregation in schools

Disadvantaged pupils are increasingly concentrated in certain schools characterised by the similar socio-economic background of their pupils. According to EC (2020) the share of schools with over 50 percent of Roma students increased to about 14 percent in 2018. The relationship between the socio-economic background and the learning outcome was the strongest in Hungary among the developed countries in 2017. By the age of 15, basic skills are not only much below the EU and regional averages, but also decreased over the last decade. Underachievement gap in reading between the bottom and top quarter of the socio-economic index[6] was the third largest in the European Union. (Figure 6) The school system might preserve and even reinforce inequalities. However, the two most important tasks of education would be effectiveness and providing equal opportunities at the social level. Effective education for all would be a tool towards inclusive social development and higher economic competitiveness. According to education researchers, the poor performance of Hungarian students compared to other countries is not so problematic, as taking one of the worst places in terms of how strongly the family background determines the school results. In higher education the share of disadvantaged students was very low, 1.4 percent, and the Roma's share was just 0.8 percent in 2017 [7]. The gender segregation of students is outstanding: girls are less motivated than boys to perform well in mathematics or science. Although the gender differences in comprehension skills decreased, this was not due to the improvment of boys' performance, but to the deterioration of girls' performance [13].

6 The index of economic, social and cultural status (ESCS) is a measure of students' access to family resources (financial, social, cultural and human capital), which determine the social position of the student's family/household.

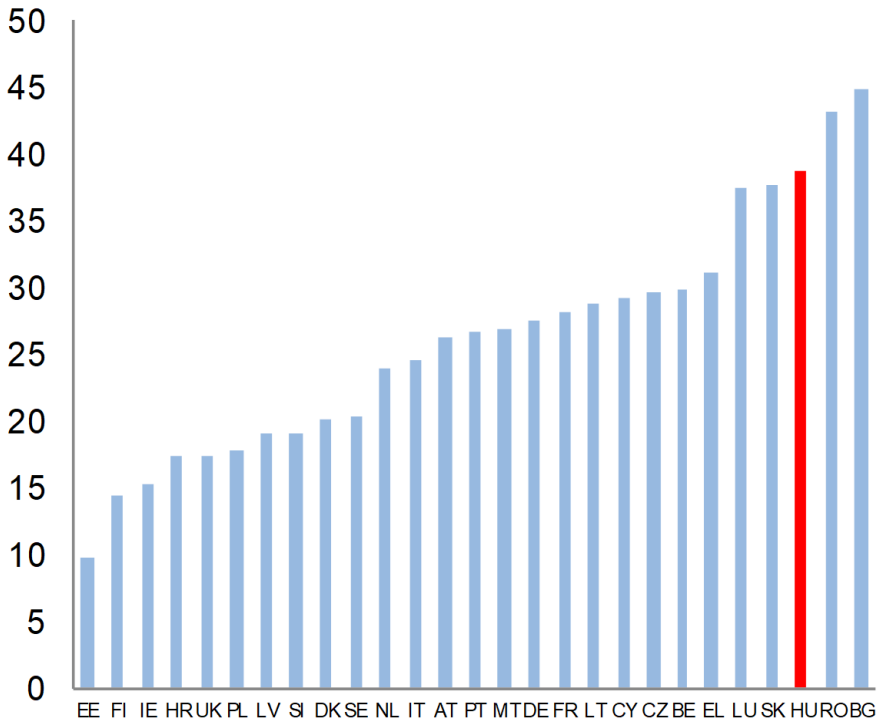


Figure 6

Underachievement gap in reading by socio-economic status, percentage points
Source: EC, 2020

The rate of early leavers from education and training remained stable at 12.5 percent (above the EU average of 10.6 percent) in 2018, despite the decreasing trend at EU level The rate is particularly high among Roma (65.3 percent) and in the least developed regions. Participation of 17 and 18 year-olds in secondary education dropped sharply by 2016 to 85 percent, due to that the age of compulsory education was lowered to 16 in 2012. The education system faced enormous challenges with the sudden onset of the pandemic. The reason was that most educational facilities are at odds with the digital revolution and keep well away from information technology. The Hungarian school system is geared toward catering for an old-fashioned model, despite the 2016 adoption of a Digital Education Strategy. The pandemic revealed that teachers as well as students are lacking technological tools and equipment. The effects of regional differences also were strong. In terms of digital access and device use Hungary lagged behind the European average and the proportion of households with internet was 76 percent in 2015, 7 percentage points lower than the union average.[7] There was a

[7] The DESI (The Digital Economy and Society Index) also measures the digital socio-economic development of the EU countries along five main dimensions: access,

significant regional difference in digital access. The advantage of Central Hungary was clear, Central and Western Transdanubia were similarly equiped, followed by Southern Transdanubia, while the Great Plain and Northern Hungary alike had the lowest access. [16] Thus, for most cases, the educational shift was not so much toward digital as distance-learning, with assignments e-mailed in PDF format, and parents obliged to scan answers. According to estimates, about 20 percent of Hungarian children were not successfully involved in education during the pandemic; and most of them are multiply disadvantaged children [14]. It is also clear that adapting rapidly to the new hybrid education model placed huge extra workload on most teachers during the pandemic. The teacher workforce is ageing, and about half were aged 50 or over. It was especially burdensome for working women to homeschool their own children, as well as manage the family.

Conclusions

This paper has provided insight into some of the most important factors of inequality in Hungary from an EU perspective. Compared to the other member countries, employment impact of parenthood is extremely negative for Hungarian women, while men benefit a lot from having a child. Care giving also keeps mostly women away from jobs. The unemployment rate is higher among Roma people, and in the less developed regions of the country. Romas are also hit by the consequences of segregation in schools.

The increase in income inequality has been driven by the relative rise of the top household income decile and the decline in the lower deciles. In-work poverty hits mostly temporary workers and lone parents, with single mothers in majority, which has a very detrimental effect on the society. Changes in the education system even widen the gap between the lower and upper social groups. Reducing the growing divide between rich and poor would require a policy shift in employment and education policy, and tax and transfer system. Also, society should be shifted towards a more balanced share of family responsibilities.

References

[1] Pew Research: The Global Middle Class, Washington, DC, 2009

[2] OECD: Under Pressure: The Squeezed Middle Class, Paris, 2019

[3] OECD: Divided We Stand: Why Inequality Keeps Rising, Paris, 2011

[4] Gabriela Inchauste, Jonathan Karver: Understanding Changes in Equality in the EU. Background to 'Growing United: Upgrading Europe's Convergence Machine. World Bank Report on the European Union'; World Bank: Washington, DC, USA, 2018.

---

including broadband access, internet use and its types, human resources (level of digital capabilities), digital technology integration (business sphere), and level of digital public services. The EU average of the index was 0.51 and the Hungarian value was 0.47 in 2016.

[5] European Commission: Women in the labour market, 2017, online https://ec.europa.eu/info/sites/default/files/european-semester_thematic-factsheet_labour-force-participation-women_en_0.pdf

[6] GKI Economic Research Co.: „A véges lehetőségek hazája” – a minimálbéren és a garantált bérminimumon foglalkoztató vállalatok helyzete ("Home of finite opportunities" – the situation of companies with minimum wages and guaranteed minimum wages), 2018

[7] European Commission: Country Report Hungary, Brussels, 2020

[8] Annamária Artner: Munkaerőpiaci és szociális helyzet Magyarországon – Európai tükörben (Labour market and social situation in Hungary – in the European mirror) (2020)

[9] MNB (Hungarian National Bank): Miből élünk? A 2017-es háztartási vagyonfelmérés első eredményeinek bemutatása (What do we live on? Presentation of the first results of the 2017 household assets survey), MNB, 2019

[10] Fruzsina Albert: In-work poverty in Hungary, EC, Brussels, 2019

[11] KSH (Hungarian Central Statistical Office): Munkavégzés és családi kötöttségek (Work and family ties), 2018/2, online https://www.ksh.hu/docs/hun/xftp/idoszaki/munkerohelyz/munkavegzes/index.html

[12] KSH (Hungarian Central Statistical Office): Munkanélküliségi ráta korcsoportok szerint, nemenként (Unemployment rate by age group, by gender), 2020 http://www.ksh.hu/stadat_files/mun/hu/mun0033.html

[13] Vera Noémi Alpár: Az iskolai esélyegyenlőtlenség, (Inequality of school opportunities) (2018)

[14] Zoltán Hermann: Hány diákhoz nem jut el az online távoktatás? (How many students do not reach online distance learning?), 2020, KRTK KTI, online, https://kti.krtk.hu/koronavirus/hany-diakhoz-nem-jut-el-az-online-tavoktatas/12769/

[15] Eurostat: Labour productivity and unit labour costs, 2021, online https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=namq_10_lp_ulc&lang=en

[16] Anikó Fehérvári: Digitális egyenlőtlenségek Magyarországon (Digital inequalities in Hungary) Educatio 26 (2), pp. 157–168. 2017

Efficiency of digital tuition in University education

Viktor Patrik, Csercsa Klaudia, Simon Dániel, Garai-Fodor Mónika

viktor.patrik@hotmail.com, claudiacsercsa@gmail.com,
simon.daniel277@gmail.com, fodor.monika@uni-obuda.hu

Abstract: The past, nearly one and a half year has brought a significant change to the daily lives of humanity. Due to the coronavirus epidemic, many areas of our lives have been overwritten with radical changes that previously seemed unthinkable. In March 2020, traditional tuition had to move and evolve into online education practically overnight. This situation posed a challenge to everyone, teachers, students and university executives alike. The aim of the authors was to explore and formulate the lessons learned of this recent period, so that the benefits and drawbacks of online education can be utilized and used to its highest potential in the upcoming years. Exploration of the topic was carried out with the help of qualitative and quantitative methodology within the framework of the primary research. The quantitative research was executed with the help of a standardized survey. The opinions and experiences of university students were revealed using snowball method on the basis of a non-representative sample. The three main questions of the dissertation are whether it is more difficult to motivate students to learn in the form of digital education, how the efficiency of learning has changed over the last year in the digital form, and finally, did teaching and learning become more difficult overall for both teachers and students? The results were presented using statistical indicators and conclusions were drawn based on the results. The research ended with a proposal for future semesters and a summary.
Keywords: Pandemic, Corona virus, Digital education, University, Online

1 Introduction

Due to the coronavirus epidemic, unlike previously, switching to digital education in a very short time was no longer an opportunity, but a must for all. Teachers, students, institutions and parents alike had to adapt to a very much unknown system. The past one and a half year showcased us the best, that Digital education has many advantages over traditional classroom lessons, but unfortunately it fell by far from the expectations in some of its areas.

During the research, the relevant secondary data collection was followed by the primary research, in which we used both quantitative and qualitative methodologies.

We conducted individual interviews with university lecturers and also surveyed students 'opinions using a standardized questionnaire. The data were analyzed and

interpreted using statistical methods, and in the end, based on the results, conclusions were drawn. Our studies were based on primarily on young adults, such as high school and university students.

At the start of the research based on our own experiences and the knowledge from the secondary literature, we created three hypothesis. We suggested that Students are more emotionally burdened by the lack of social connections during online education than through personal lessons. Learning is less effective in digital form than in person, and accountability is more difficult as well.

2 Literature

2.1 Learning environment

The learning environment has always played a big role in our lives, in many ways has also been interpreted over time. Proven to have a specific learning environment its implementation was influenced by a number of factors, such as the era culture, social habits, educational goals, etc.Various influencing the effectiveness and efficiency of learning environmental components are collectively referred to as the learning environment. Always is a central principle of pedagogy, the design and operation of which depends on several factors depends. It is widely accepted that learning is not a complete system of knowledge but in the course of interaction with the environment (Komenczi, 2009). The learning environment is a complex system that is broader sense, in addition to the school learning environment, also the home learning environmentincludes. Part of the school learning environment is the school as a learning "tool" (spaces, ergonomic design, etc.) and the learning environment itself. What is given a prominent role in defining a modern school have a school environment that motivates students adequately. Its most important conditions can be defined as follows (Papp-Danka,2014):

• flexible, mobile school equipment

• public spaces

• inspiring building and environment

• accessibility, inclusiveness, school community and special needs

for students alike (beyond school hours)

• innovative solutions: energy use, natural light,

sustainable materials

2.2 Blended learning

Blended learning, as an educational technology, is largely based on e-learning they can be interpreted together, they are closely related to each other, they cannot be

chosen separately. We live in a digital world where it is an essential part of our daily lives form ICT9 tools, the widespread use of which is essential condition for increasing the efficiency of education. Directly and indirectly has an impact on teaching-learning processes, teacher-student on going and for active communication. Knowledge is typical for the learner through Internet channels by providing the technological background. E-learning has a key role to play in today's education system. The education should be based on independent learning and creativity, for which it is innovative toolkit is provided by e-learning (Nagy, 2016).

In the education of the near future, as in the present, there will also be a need for direct human intervention cannot be completely ruled out, so the in reality, in most cases we cannot talk purely about e-learning, but we are talking about blended learning, so-called blended learning. This the method connects the traditional with modern forms of teaching and learning, essentially the integration of online and offline education. This combination is one can result in a very effective type of education (Nagy, 2016).It can be most effectively applied in trainings where it is theoretical together with knowledge, practical knowledge should also be transferred, such as in secondary schools, in higher education, adult education and many other areas of education. A blended learning educational technology for the effective application of two essential conditions must be met. The first and most important aspect is the learning process all participants have the necessary innovative technological tools and as unlimited as possible, with a sufficiently fast internet connection. This digital device can be computer, laptop, tablet or smartphone. Another an essential condition applies to ICT competencies as the method consciously builds on the confident use of digital devices. They give together the solid foundations. Blended learning is an innovative electronic environment form of learning, either independently or in collaboration (Forgó, 2015).

At the end of the 19th century, a new period began in the history of pedagogy. Representatives of reform pedagogies appeared, who with a new approach and educational principles were intended to replace previous traditional teaching methods. Of this the result of the process was the appearance and development of the project method. (Veszelszki, 2017) The foundations were laid by American philosopher John Dewey, an educator, emphasizing the importance of gaining experience for the individual, individual goals achievement, self-fulfillment and responsibility. William Kilpatrick attended the in the development and pedagogical application of the method, considering it important to 12 personality-shaping role, the importance of usable knowledge and school wide application (Honfi-Komlódi, 2010). From the beginning of the 1990s, the experiential process began to spread in Hungary learning-based methods that provide knowledge that can be used in practice. The project method gradually began to integrate into everyday pedagogy methodology. In contrast to frontal education, this is one that is effective a form of work of which action is an important part. “In a general

sense, we mean a complex task in a project that one-time, unrepeatable, resource-intensive, brings novelty, great carries a risk, has a specific risk of time and cost, and thus requires the involvement of a large amount of expertise to be the most optimal in the form of (Verők-Vincze, 2011)

In teacher-centered education, students are passive participants, whereas a during the preparation of the project work they become active participants, communicate,

they design, they work together. Emphasis is placed on co - operation, the adaptation, debate and consensus building. A characteristic of project pedagogy is that students acquire new knowledge already they build on previously acquired knowledge, they are acquired in a combined way (Honfi-Komlódi, 2010).

3 Quantitative primary research

3.1 Aim of the research

The aim of the research was to assess the advantages and disadvantages of online education based on the experiences of both students and teachers. The information gathering process was performed via an online, standardized questionnaire. The questionnaire included closed and open questions as well to ensure free association. The form began with a filter question about whether the respondent had an online class in the last one year. Those who answered "no", could not continue the completion of the questions. This was necessary because we examined the feelings and experiences developed in connection of the digital education during the last 1 year, due to the spread of the coronavirus. The questionnaire ended with questions on demographic data. Sampling was done by a snowball procedure. The questionnaire was completed by a total of 590 people. The sample is not representative.

3.2 Results of the research

Based on the information received from students, one of the greatest advantages of e-learning from a students' perspective is flexibility, which includes independence in time and space. Thus, students can continue their studies at their own pace, regardless of geographical location and time. But the biggest question was, will the student continue their studies without the close supervision from the teachers, by themselves?

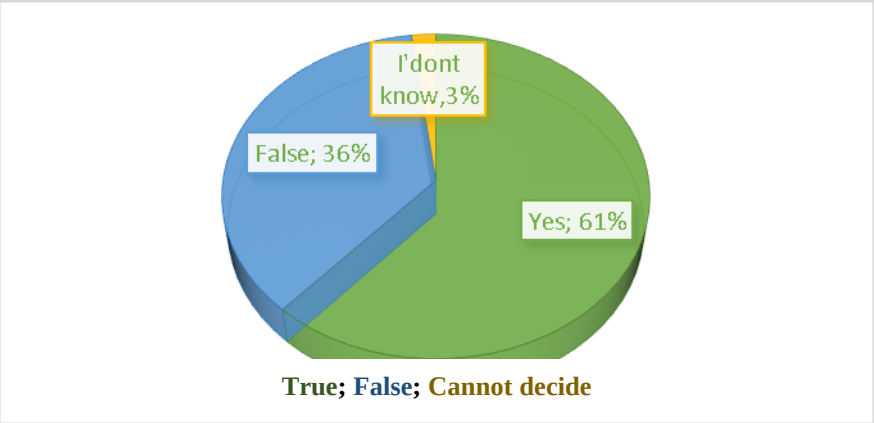
The biggest disadvantages of online education may be the lack of motivation, and the damage to the social interactions. Teachers cannot supervise students, during classes it is very easy to hide and to not pay attention. Also Teachers cannot see as well, if students do not understand something.

Students had to write words in association to online education and their most relevant experiences. It was clear that there are many benefits to online education, students wrote words like, comfortable, home, flexibility, but in large numbers,

negative responses appeared as well, like, boring, loneliness, stress, less-efficient. It was conspicuous, that these students had to spend the last year in total isolation and that, how burdensome the lack of human relationships is for most people.

3.2.1 Motivating the students

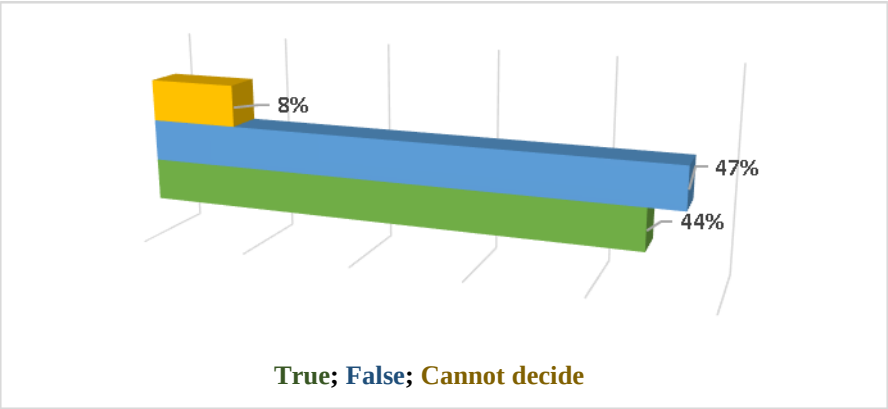
Based on the answers again, 75% of respondents felt that lack of personal connections was the biggest disadvantage of digital education. The second major disadvantage of online education is the more difficult acquisition of knowledge. There can be several aspects to this. Students can be harder to motivate, teachers cannot supervise their progress closely, and students tend to do other side activities during classes and this all leads to lack of knowledge, loss of attention and a bigger and bigger gap in progress which is already hard to regain.



1. Figure: Digital education was less exciting than its classical form

Source: Own editing, Own research, N = 590

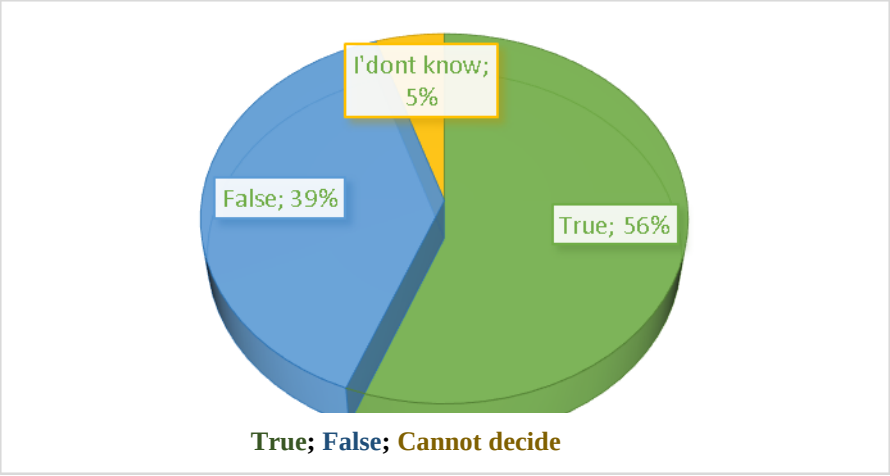
61% of the respondents said that digital education was less interesting than a personal contact lesson. 36% disagreed with this statement and 3% could not decide. Based on this result it is clear how hard it was for teachers to hold entertaining online lectures and to keep the contact with the students.



2. Figure: Digital education was more boring than its classical form

Source: Own editing, Own research, N = 590

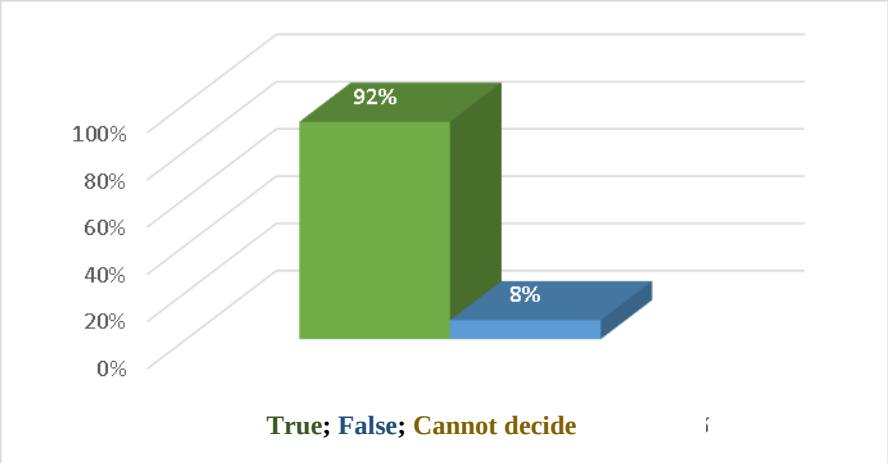
44% of the respondents said, most online classes were boring. 47% disagreed with this statement and 8% could not decide. This shows, that in summary it was possible to keep the students entertained, but it was by far a harder task then in normal cases. Students were surrounded with their own comfortable environment where they could easily perform other, secondary tasks during lessons. It was very easy for students to not pay attention. The temptation was very high to multitask during classes but in reality students cannot pay attention to the lecture in the same way.



3. Figure: Importance of activity during online classes

Source: Own editing, Own research, N = 590

56% of the respondents said, it was not as important to be active during online classes as it was during personal education. It is clear that teachers had a very hard time supervising their students during the pandemic. It is much easier to hide and to not take active participation in online classes.



4. Figure: Not paying attention on online classes

Source: Own editing, Own research, N = 590

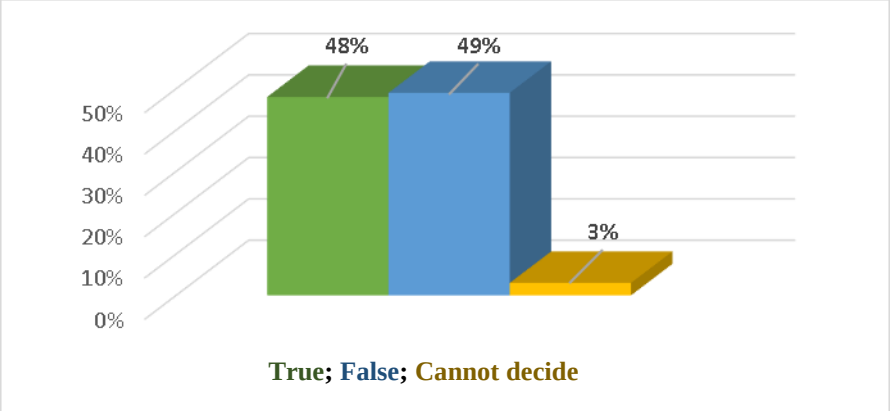
92% of the respondents said, that at least 1 time during digital education, they just logged into the class but did not pay attention. 46% of the respondents said that at least 1 time they went back to sleep while they were logged into the online class. 90% of students answered, that they participated in online classes where the teachers asked questions from them, but no one raised their hands or answered. 76% of the students were in a situation that they were sure about the correct answer but still did not reply. Based on their answers, this often led to embarrassing silence which gave the lessons a negative tone and a bad feeling between the students and the teacher. Teachers in this case usually assumed that no one is listening to them.

3.2.2 Online exams

Considering the positive aspects of online education, It is undoubtable that the biggest benefit of it, is convenience. The second biggest advantage is the time saving factor. Students and teachers could save hundreds of hours just by not having to spend their time with travelling. It is important as well to take a look at the third aspect, which is the easier accomplishment. Due to the pandemic and the online learning, it was much easier for students to cheat and to use other sources of materials to pass exams and to move forward.

Just like expected, 87 percent of those who completed the questionnaire said it was easier to pass exams online and 64% of students agreed that It was easier to prepare for the online Moodle tests. 73% of the students answered that they spent significantly less time learning during the pandemic than in normal times.

The primary goal of education and participation in universities and schools is to develop knowledge and encourage diligence. If this is lost in digital education, we really do have a lot to improve on. In addition to being a waste of resources, the knowledge loss has a detrimental effect on future generations and our society as a whole.



5. Figure: Preparing less for online education

Source: Own editing, Own research, N = 590

48% of the respondents had less need to prepare for the online, Moodle exams. Based on the students' answers, it was much easier for them to cheat on these exams. They could easily use other sources of materials, and most of the time they did not have to give their own answers, they could choose from pregiven ones in these tests.

In summary, based on the research, most of the answers supported the hypothesizes given at the beginning of the research. It was more difficult to motivate students to learn in the form of digital education.

Concluding the research, Digital education has many benefits, being more convenient, time-saving, and less stressful than a form of education that requires personal presence. It was clear however that during digital education, it is easier for students to hide, to avoid active attention in class and testing the students honest knowledge online was a difficult task. There is great potential in introducing semi-online tuition, but there are a lot to improve on.

Suggestions

Based on the quantitative results of the research, we came to the following results.

Digital education has many benefits, being more convenient, time-saving, and healthier than a form of education that requires a personal presence. However, there are still lots of drawbacks that will need special attention in the future.

The questionnaire research highlighted that online lessons are more boring and less serious for students to learn from in common. It is advisable to develop some pre-built method and to use different tools of teaching, so that the instructors can maintain the interest and the students can see the importance of learning regardless of the form of education. Teachers did not have time at the beginning of the pandemic to convert their educational methods into online forms, but the future may bring the opportunity to create quality teaching materials for students that are available for them online.

During digital education, it is easier for students to hide and to avoid active attention in class. The larger the number of online classes, the easier it is for students to not take part in the activity. Teachers can hardly see if a student is paying attention or having difficulties with understanding the material. One possible solution is to maximize the number of students in a given online class. However, this alone is not enough to keep students alert.

In the online space it is even more easier to lose the attention of the students. It would be important that the instructor provides meaningful information, does so with dynamic momentum and does not give the opportunity for students to divide their attention. This generation already gets a lot of pulses per second. Obviously, instructors cannot be expected to provide this degree of intensity and excitement, but newer generations are increasingly intolerant of boring, at least 90 minutes lectures. In an environment where they can simply do anything else without any consequence, they cannot be nailed to the computer, only out of respect or duty. Beyond their fault the temptation is too high to not to use the given time for multitasking. Irrelevant, unanimous, and inadequately informative presentations will be ignored. This is an issue because students will take away even less information from online classes than in regular cases.

It is necessary to adapt to these new needs. Hold shorter classes with impactful information, involve students in classes and suggest turning on their cameras. Human values must not be lost through the online space. It is very important for both the teacher and student to acknowledge each other's presence and well-being. By turning on cameras, emotions would become much more visible even through online classes. It is also recommended for the instructor to ask 3 cardinal questions about the last lecture at the beginning of the next class. With this, students are already involved in the class and they may be even more active later on.

Students would be encouraged to follow a daily routine and dress up in the same way as they should be physically present at the classroom. Also, it would be

highly suggested to have a separate work surface, a desk, from where they are able to join the lectures and create notes.

Measuring the students' knowledge was a very difficult task. Students could easily not pay attention during classes and cheating on exams was not a challenge for most. A well-structured accountability through the semester could be the solution to encourage learning. Students should actively spend time with their subjects from week to week. They could be encouraged by practical tasks which they have to hand in to time to time, so they have to acquire the necessary knowledge and use it as well. However, this should not mean that students would have to learn hours outside of classes in order to prepare their weekly tasks. Spending at least half an hour with one lecture weekly would already be a great achievement. This could mean reading through the study material, watching a recommended video or reading an article. In the case of online education it has to be accepted that students have a much larger power in deciding whether they want to learn or not. Forcing students to learn and to prepare for exams is very difficult. That is why accountability in online education has to move forward from these classical methods in the future. The principle of fairness and consistency is as important here as it is in any accountability.

More and more practical education may be the goal of e-learning. Teachers may want to take a role-playing game to practice situations, or reward the class with small achievements. Keeping the students involved is key. Of course, students should be treated in a non-degrading way, but looseness to some level could dissolve the tense mood and make it easier for students to be involved in the lesson. It is possible to understand the students mindset and to use it as an advantage in classes. Teachers do not have to think about big things, just small goals and the fulfillment of which will delight the student.

If the student is sufficiently motivated and happy to perform, a healthy competitive situation within the group will develop and the lessons can be closed with a win-win situation. Students feel good because they have took part in the class actively and been rewarded, while the instructor feels good because they have managed to put knowledge into their students heads within the framework of an exciting lesson. Undoubtedly, this requires effort from educators and students as well, but after a few occasions, it can also become a routine.

There is great potential in introducing semi-online, semi-classroom education. After all, students who do not attend exclusive classroom lessons could also attend the class online. Online materials could help students to keep in touch with the lecture and to catch up to the material if necessary.

With the help of a well-tuned camera that would capture the instructor's podium and board, a cloth-mounted mini microphone for the instructor, even classical classes could be easily recorded and shared with the students. Of course, it also requires a stable internet connection. With this solution, the university would also

provide a high degree of freedom for the students, as they can enter the class from home if they have to, but it is also possible to participate in person.

Conclusion

Currently one of the biggest questions of online education which is still unsolved is the testing of the students' acquired knowledge. A well-structured semester long accountability kept the students up to date in most cases. But the question to how to avoid cheating and using other sources of materials is still unsolved.

We hope that the epidemic will soon pass and, in the future, in addition to personal classroom lessons, institutions will be able to benefit from the experience gained in the current state of emergency on the field of digital education.

References

[1] Forgó S. (2015). Távoktatás, e-learning, blended learning [on-line]. KEZEK, Eger.ElérhetĘség:http://okt.ektf.hu/data/szlahorek/file/kezek/06_blended_04_11/3 21tvoktats_elearning_blended_learning.html

[2] Honfi A.; Komlódi, N. (2010). Projektpedagógia, Műszaki Könyvkiadó Kft., Budapest

[3] Komenczi B. (2009). Elektronikus tanulási környezetek, Gondolat kiadó, Budapest

[4] Nagy V. (2016). E-learning ABC, Vezetéstudomány [on-line]. ElérhetĘség: http://unipub.lib.uni-corvinus.hu/2568/1/VT_2016n12_Nagy.pdf [dowload:2020.december 28]

[5] Papp-Danka A. (2014). Az online tanulási környezettel támogatott oktatási formák tanulásmódszertanának vizsgálata, Elte Eötvös kiadó, Budapest

[6] Verók A.; Vincze B. (2011). Projektmunka [on-line]. Digitális tankönyvtár, Budapest.ElérhetĘség:http://www.tankonyvtar.hu/hu/tartalom/tamop425/0005_41_projektmunka_scorm_02/231_a_projekt_sz_jelentse.html [dowload:2020. december 30.]

[7] Veszelszki Á. (2017). Egy blended learning típusú oktatási rendszer tanulságai, Anyanyelv- pedagógia [online]. ElérhetĘség:http://www.anyanyelvpedagogia.hu/img/keptar/2017_2/Anyp_X_2017_2_4.pdf [dowload:2020.december 28.]

The popularity of distance learning among International students in Hungary

Wu Yue, Cao Xu, Wang Maomao, Tao Chengfang

Óbuda University

w1187892536@gmail.com, xu.cao.jm@gmail.com, 1564364639@qq.com, 1127272971@qq.com

Abstract: With the rapid development of economic globalization and information technology, distance learning makes students study without distance limitation. Nowadays, high-level education organizations are not only top students' privileges anymore, instead, everyone can get this opportunity due to distance learning. At the same time, studying at far-away organizations gradually comes true. Obviously, distance learning is influencing our life especially during the COVID-19 pandemic, which plays a pivotal role in education. However, it also has some disadvantages, such as the weak study motivation and study effect, and high requirement for devices. In this study, we examined some existing literature and our primary research will study the International students' attitudes and their expectations about distance learning in Hungary. The research purpose is to reveal the popularity of distance learning among International students and provide suggestions for future distance learning.

Keywords: distance learning; international students' attitude; future

1 Introduction

Distance learning is the kind of education in which students may not always be physically present at a school (Pardanjac, 2020). In the post-pandemic period, the number of universities offering distance education programs has significantly increased, that the courses have become more varied and that the number of students applying these programs is rising as well. In fact, this is not the first time that conventional education activities were suspended. The outbreak of SARS coronavirus and H1N1 Flu also negatively impacted conventional education activities around the globe (Muhammad Adnan et al., 2020). But there is no doubt that COVID-19 has brought more serious implications and opportunities for distance education.

Distance learning is increasingly influencing both classroom and campus-based teaching, particularly for the response to the COVID-19 pandemic, but more important is leading to new models or designs for teaching and learning. After more than a half year of online learning for the student, it is a great edge for improving distance education. However, to our best knowledge, not many studies directly investigate the satisfaction and effectiveness of international students with distance learning in Hungary. Besides, most of the literature is focusing on the

implications brought by COVID-19 to the traditional (face-to-face) teaching method. Moreover, Hungary as a safe and open country has a lot of study programs for international students with diverse excellent universities[1]. Therefore, we seek to answer the question: what are the attitudes and expectations of international students towards distance learning in Hungary? To answer this question, we employed qualitative and quantitative analysis. A questionnaire was generated to examine international students' experience and attitudes regarding distance learning in Hungary. We conducted questionnaire surveys at the Obuda University, the University of Pécs, the University of Szeged, and the Budapest University of Technology and Economics, and received a total of 233 valid questionnaires.

The structure of the study is as follows. Chapter 2 gives overviews of distance learning. We went through the literature on distance learning and summarized its advantages and disadvantages. Chapter 3 introduces the methodology used in this study. The design ideas and analysis methods of the questionnaire were also introduced in this chapter. Chapter 4 introduces sample data and analysis results. The last chapter is the conclusion and limitation of the study. This study will contribute to the literature on the effectiveness of distance learning and provide suggestions for related organizations and enterprises to improve distance education.

2 Literature Review

With the rapid development of economic globalization and information technology, distance learning is getting more popular, eliminating the distance limitation and access requirement. Distance learning is offering diverse opportunities to everyone who wants to study more conveniently and efficiently. However, distance learning as a creative study method cannot be perfect. Compared to the traditional study style, distance learning has some disadvantages. Distance learning is like a double-sword, which can be used perfectly only by an objective and comprehensive view.

2.1 The definition and short history of distance learning

Distance learning is also called distance education, which is similar to e-learning and online learning, but different. Distance learning offers the study convenience and flexibility for teachers and learners who are separated physically by digital learning technologies (Zilka,2021; Traxler, 2018; Al-Arimi, 2014; Kaplan & Haenlein, 2016). The distance learning format can be video and audio, and the learners can pause the proceedings anytime to review the study materials as they want (Al-Arimi, 2014).

The first mode of distance learning was founded by Isaac Pitman in England in the 1840s, who taught his students by his shorthand via a new postal system and gave feedback (Alan, 2003). In 1873, Anna Eliot Ticknor found the first

correspondence school especially for women in the United States. The purpose of this school was to teach women in case of less financial ability, less educational background, race, geographical location, or physical ability (Robinson, 2012). Wolsey Hall Oxford is the first distance learning college (non-profit) in the UK, founded by Joseph William Knipe in 1894. During the 1930s - 1980s, Wolsey Hall supplied degree-level courses via the University of London external degree program. In 1985, Wolsey Hall Oxford launched the world's first distance learning MBA with Warwick Business School. Till 2020, Wolsey Hall supplied the courses for aged 5-13 children[1].

2.2 The effectiveness of distance learning

Distance learning or online education is not novel. It has been applied earlier in the medical and military training fields. A large number of studies have been done on learning outcomes in distance education versus face-to-face instructional settings. These studies show that there are no significant differences in learning outcomes achieved by students engaged in face-to-face instruction (Barbara Means et al, 2010). This holds true regardless of the technology medium used (i.e speed of internet, camera etc.), the discipline, or the type of student. What is more, using the studies found on Nosignificantdifference.org as an indicator of the effectiveness of distance and online learning, it would be observed that about 92% of all distance and online education studies find that distance and online education is at least as effective. About 3% of the studies compiled by the site show the reverse, that traditional face-to-face format is more effective, and about 4% show mixed findings. However, given the issues of selection bias that later studies pointed out and the lack of rigorous methodology of the earlier studies, it is difficult to say how meaningful these numbers really are.

Furthermore, beginning around 2000, several studies, including meta-studies (review and analysis of hundreds of studies selected for their rigor), began to find significant differences in favor of online learning. The meta-analysis found that, on average, students in online learning conditions performed modestly better than those receiving face-to-face instruction.

2.3 The advantages and disadvantages of distance learning and the comparison of distance learning and traditional learning

The main advantages of distance learning can be described as follows. Firstly, it is knowledge accessibility. By learning remotely, we can gain knowledge from anywhere in the world. In general, a working laptop and the internet can produce huge learning achievements. Furthermore, we are not limited to a country or continent. You are free to get an education at any university in the world (Ahern and Repman, 1994). This availability is one of the advantages of distance learning.

Online lessons are usually held in two formats: pre-recorded video lessons, or live webinars. Live broadcasts which are the same as the usual offline classes - where you can see the teacher and presentation, ask questions, and communicate with classmates. The advantage of pre-recorded video lessons is to make the learning schedule and progress more flexible. It is convenient for learners to arrange courses according to their own time. But the disadvantage is that it is not suitable for lower grades or learners with procrastination.

The second advantage is flexibility. Distance learning provides us with a relatively flexible learning schedule. Students don't consider commuting time. In today's multitasking working environment, this is a mainstream learning method. For people who prefer to live on a non-standard schedule, distance learning is the best option (Djalilova, 2020). Besides, the time of online study can be easily adjusted to almost any work schedule (Means et al., 2009).

However, there are some negative impacts of distance learning as well such as limited choice of faculties or programs and feeling less motivated when studying individually. Not everything can be studied remotely. In some cases, we cannot do without practical exercises under the guidance of an experienced mentor. We can study history or programming remotely but it is difficult to become a pilot or surgeon under distance learning. Secondly, distance learning slowly forms friendships between lecturers and students. The face-to-face teaching method is how we build relationships and trust. Education isn't about content delivery, but about processes and skills that can only partially happen at a distance. For some respondents, these relationships are a crucial component of the learning experience. To some extent, student engagement highly depends on relationships with faculty. We should notice that online and real teaching are different and what works in the classroom often does not work online, and vice versa.

Thirdly, distance learning is difficult to avoid being disturbed by "other affairs". One of the biggest differences between distance learning and traditional offline learning is the lack of supervision. Lecturers and classmates supervise our classroom situation when studying offline. Therefore, we are totally concentrated in class and don't allow ourselves to interact with others by social media. In the case of distance learning, there is usually only an individual environment, which is easily influenced by many things such as social media, emails, etc.

3 Methodology

In this paper, both the secondary and primary research methods are used. Scientific research is used to study the basic information of distance learning, such as the introduction, history, advantages, and disadvantages. Besides, we also researched traditional learning, which is compared to distance learning. Our primary research is to investigate the students' attitude and their expectations about distance learning, especially among the International students in Hungary. A questionnaire is used in primary research as a quantitative method, including closed and open questions. In the questionnaire, the respondents answered the

questions related to their experience in distance learning before COVID-19 pandemic time, their opinion about the obligatory course study by distance learning, and their perspective about distance learning in a full-time and extra study in the future. Hungary is welcoming more and more international students, so it is useful to research the international students' opinions about distance learning. As all authors of this paper are studying master's and bachelor's degrees in Hungary, Budapest, Szeged and Pecs, we have enough respondents among International students to investigate their perspective about distance learning. The questionnaire data was collected by a professional questionnaire website Wen Juan Xing (2021). The data collection started from the 6th of June 2021 until the 13th of June 2021.

There was a pre-test of the questionnaire instrument to check if there is a potential mistake or unreliable information. After the well-structured survey design, There were 16 questions, including 14 close questions relating to the students' experience of distance learning and the student's attitude about distance learning, and one open question about the suggestions on distance learning, another open question about the barrier in distance learning. Due to the method of sampling, the sample cannot be considered as a representative one but gives a good base to discover the research questions.

4 Result And Discussions

Below we present the quantitative and the qualitative results, with supporting 233 questionnaires from the international students in Hungary.

4.1 Sample analysis

We have received 233 valid questionnaires, which contain 92 bachelor students, 99 master students, and 42 Ph.D. students. (Table 1 shows the number and percentage of international students' education.) Ph.D. students account for a small portion, this is because the number of international Ph.D. students in Hungary is relatively small compared with bachelor and master's students.

Education	Number	%
bachelor	92	39%
master	99	43%
PhD	42	18%

Table 1

Number and percentage of international students' education

4.2 The experience of distance learning

Participants were asked about their experience of distance learning. There are 5 grades, poor, below average, average, good and wonderful. We did a cross-analysis between the education and the experience of distance learning. Table 2 shows the results.

X/Y	Poor	Below average	Average	Good	Wonderful	Number
Bachelor	7 (7.61%)	8 (8.70%)	35 (38.04%)	40 (43.38%)	2 (2.17%)	92
Master	12 (12.12%)	12 (12.12%)	43 (43.43%)	31 (31.31%)	1 (1.01%)	99
PhD	3 (7.14%)	9 (21.43%)	23 (54.76%)	6 (14.29%)	1 (2.38%)	42

Table 2

Cross analysis between education and the experience of distance learning

From table 2, we find that the majority of master's students and Ph.D. students evaluate their experience of distance learning as average. However, for bachelor students, most evaluate their experience of distance learning as good. Compared to the master and Ph.D. curriculum, the bachelor curriculum is easier and not designed to study deep enough. Bachelor students don't need more practical skills and distance learning can meet their class needs. That's why their experience of distance learning had a good evaluation.

4.3 The attitudes and feelings about distance learning

To examine the students' feelings about distance learning, we asked the students how stressful is distance learning, 13.45% of international students think distance learning is a little stressful, 61.8% think it is moderate stressful, and 19.74% think it is more stressful, which indicates distance learning brings a certain sense of pressure to students. We also have a question about the effectiveness of distance learning. 7% of students think distance learning is not at all effective, 23.18% of students think distance learning is slightly effective. 51.93% of students hold the attitude that distance learning is moderately effective. The other students think distance learning is very effective. From this result, we know the effectiveness of distance learning does not achieve satisfactory results.

For the correlation between the effectiveness, the stress, the teachers' help, the students' preference, we conducted a Spearman rank correlation. Table 3 shows the results. As table 3 showed, teachers' help is significantly related to distance learning experience ($p < 0.01$), correlation coefficient value is 0.5, which means they have a very close positive correlation. A better teachers' help was associated with a good experience of distance learning. Besides, significant positive correlations were found between the student's preferences and the experience of distance learning. ($p<0.05$, $rs=0.26$)

			How effective has distance learning been for you?	Rate your overall Distance Learning Experience.	How helpful are your teachers while distance learning?	Which teaching mode do you prefer?
How effective has distance learning been for you?	1.90	0.66	1			
Rate your overall Distance Learning Experience.	2.97	0.93	-0.00			
How helpful are your teachers while distance learning?	2.93	0.74	-0.10	0.50**		
Which teaching mode do you prefer?	1.65	0.86	0.11	0.26*	0.21	1

Table 3

Correlations between study variables

4.4 The students' opinion about distance learning

In this study, we asked students' opinions about the future teaching mode after the COVID-19. 14.16% of students think school will be different: distance learning will become integral to school practices. 42.06% of students think the school will be a little different, with more distance learning. 30.47% of students think the school will return to its original practice, with minor changes. 13.3% of students think the school will return to its original practice. From this data, we know most international students think the school will make some changes with distance learning because of the COVID-19. Students mentioned distance learning has its own advantages, like improving self-learning ability, and flexibility of place and time. For students, it is more accessible and easy to get every lesson. Record lessons really helped them because that way they could watch again, to get details they missed, and understand them without a problem. Because of these advantages, schools will make some changes like adding more distance learning in the future.

Conclusion and Suggestions

Distance learning is a learning method that is in line with today's rapid economic and social development. Although the current advantages and disadvantages coexist, with the improvement of hardware and software, the advantages of distance learning will become more and more obvious. For example, eyes tracking software can identify learners' learning efficiency and remind them to focus and rest time. This study explored the distance learning of international students in Hungary for Hungarian universities during the COVID-19 pandemic. We find that in terms of students' academic qualifications, foreign undergraduates prefer distance learning in Hungary, and the evaluations given by masters and doctors are average. More than 50 percent of respondents evaluate their learning effectiveness regarding distance learning during the pandemic as moderate. Therefore, we can say the effectiveness of distance learning during the pandemic does not obtain satisfactory results. There is much room for improving distance learning whether from students' or universities' sides.

Furthermore, from our empirical study, lecturers' assistance was highly associated with students' performance on distance learning. Face-to-face teaching is how we build relationships and trust. Education isn't about content delivery, but about processes and skills that can only partially happen at a distance. For some respondents, these relationships are a crucial component of the learning experience. To some extent, student engagement highly depends on relationships with faculty. We should notice that online and real teaching are different and what works in the classroom often does not work online, and vice versa.

Therefore, we suggest that distance learning should actively engage students through challenging academic rigor, consistent and timely student-faculty interaction, a collaborative learning environment, and activities that enrich the development of the student. The Internet and related technologies have increased

the opportunity for learning through the elimination of time and place constraints and the availability of flexible and innovative channels for interaction.

References

[1] Abas, Hafiza. 2015. "The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons." MERLOT Journal of Online Learning and Teaching 11(2): 309–19.

[2] Adnan, Muhammad. 2020. "Online Learning amid the COVID-19 Pandemic: Students Perspectives." Journal of Pedagogical Sociology and Psychology 1(2): 45–51.

[3] Araya, Yoseph N. 2014. "Open Research Online The Open University ' s Repository of Research Publications Hydrosphere Book Chapter." (June).

[4] Alan Tait, T. 2003. Reflections on Student Support in Open and Distance Learning | The International Review of Research in Open and Distributed Learning. Retrieved 10 June 2021, from http://www.irrodl.org/index.php/irrodl/article/view/134/214

[5] Al-Arimi, A. 2014. Distance Learning. Procedia - Social And Behavioral Sciences, 152, 82-88. doi: 10.1016/j.sbspro.2014.09.159 Cole, Elizabeth Robinson. 2012. "The Invisible Woman and the Silent University."

[6] Djalilova Khurshida Mirkholikovna (2020). Advantages and disadvantages of distance learning. Наука и образование сегодня, (7 (54)), 70-72.

[7] Muntajeeb Ali Baig. 2011. "A Critical Study Of Effectiveness Of Online Learning On Students' Achievement." i-manager's Journal of Educational Technology 7(4): 28–34.

[8] Frederickson, Norah, Phil Reed, and Viv Clifford. 2005. "Evaluating Web-Supported Learning versus Lecture-Based Teaching: Quantitative and Qualitative Perspectives." Higher Education 50(4): 645–64.

[9] Ghirardini, Beatrice. 2011. "Food and Agriculture Organization of United Nations. E-Learning Methodologies. A Guide for Designing and Developing E-Learning Courses: A Handbook."

[10] Kaplan, Andreas M., and Michael Haenlein. 2016. "Higher Education and the Digital Revolution: About MOOCs, SPOCs, Social Media, and the Cookie Monster." Business Horizons 59(4): 441–50. http://dx.doi.org/10.1016/j.bushor.2016.03.008.

[11] Larmuseau, Charlotte, K U Leuven, and K U Leuven. 2011. "Investigating the Effectiveness of Online Learning Environments for Complex Learning." : 1–6.

[12] Lawrence, Jill, Alice Brown, Petrea Redmond, and Marita Basson. 2019. "Engaging the Disengaged: Exploring the Use of Course-Specific Learning

Analytics and Nudging to Enhance Online Student Engagement." Student Success 10(2): 47–58.

[13] Means, Barbara et al. 2010. "Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies." http://eprints.cpkn.ca/7/1/finalreport.pdf.

[14] Pardanjac, Marjana, Dragica Radosav, and Snežana Jokic. 2020. "Advantages and Disadvantages of Distance Learning." MIPRO 2009 - 32nd International Convention Proceedings: Computers in Education 4: 237–41.

[15] Robinson, Chin Choo, and Hallett Hullinger. 2008. "New Benchmarks in Higher Education: Student Engagement in Online Learning." Journal of Education for Business 84(2): 101–9.

[16] Salazar, Jose. 2010. "Staying Connected: Online Education Engagement and Retention Using Educational Technology Tools." Clinical laboratory science : journal of the American Society for Medical Technology 23(3 Suppl).

[17] Sousa, Maria José, Rui Cruz, and Jorge Miguel Martins. 2017. "Digital Learning Methodologies and Tools – a Literature Review." EDULEARN17 Proceedings 1: 5185–92.

[18] Study in Hungary. 2021. Retrieved 10 June 2021, available at https://www.study.eu/country/hungary

[19] Research on the Effectiveness of Online Learning, 2018. Available at https://www.immagic.com/eLibrary/ARCHIVES/GENERAL/ACPTR_US/A110923F.pdf

[20] Traxler, John. 2018. "Distance Learning—Predictions and Possibilities." Education Sciences 8(1).

[21] The Wolsey Hall Story Timeline | Wolsey Hall Oxford. 2021. Retrieved 10 June 2021, from https://wolseyhalloxford.org.uk/about-us/

[22] Zilka, G. C. 2021. "Distance Learning during the COVID-19 Crisis as Perceived by Preservice Teachers."

[23] Передельская, Алена Дмитриевна. 2015. "Дистанционное Обучение." Инноватика - 2015 : Сборник Материалов Xi Международной Школы-Конференции Студентов, Аспирантов И Молодых Ученых, 21-23 Мая 2015 Г., Г. Томск, Россия. Томск, 2015. С. 560-565 152: 82–88. http://dx.doi.org/10.1016/j.sbspro.2014.09.159.

ANNEXES

1. Your education.
    a. Bachelor
    b. Master
    c. PhD

2. Did you have a distance learning experience before the epidemic?
    a. Yes
    b. No

3. Rate your overall Distance Learning Experience.
    a. Poor
    b. Below Average
    c. Average
    d. Good
    e. Wanderful

4. How easy has it been to submit your work to your teacher?
    a. Very Easy
    b. I managed
    c. Tricky
    d. Impossible, I have not been able to do it.

5. How effective has distance learning been for you?
    a. Not at all effective
    b. Slightly effective
    c. Moderately effective
    d. Very effective
    e. Extremely effective

6. How stressful is distance learning for you during the COVID-19 pandemic?
    a. Little
    b. Moderate
    c. More stressful

7. How do you communicate with your teacher during distance learning?
    a. Email
    b. The distance learning website, eg: Teams
    c. Social media
    d. Phone

8. How helpful are your teachers while distance learning?
    a. Not at all helpful
    b. Slightly helpful
    c. Moderately helpful
    d. Very helpful
    e. Extremely helpful

9. How long is the appropriate time for each distance education?
    a. 30 minutes
    b. 60 minutes
    c. 90 minutes
    d. More

10. Which teaching mode do you prefer?
    a. Face-to-face
    b. Distance-learning
    c. Hybrid learning

11. Do you want to continue distance education after the epidemic is over?
    a. No
    b. Yes, totally distance learning
    c. Hybrid

12. What do you think is the advantage of distance learning?
    a. Flexibility of study time and place
    b. Improve self-learning ability
    c. Make the excellent courses shared
    d. Other

13. What do you think is the disadvantage of distance learning?
    a. Get tired easily
    b. Less interaction
    c. The teacher cannot know the learning state of the students
    d. Lack of learning atmosphere

14. In your opinion, due to the current circumstances created by the COVID-19 virus, when schools fully reopen, will online/distance teaching remain part of school practice?
    a. School will be different: distance learning will become integral to school practices
    b. School will be a little different, with more distance learning
    c. The school will return to its original practice, with minor changes
    d. The school will return to its original practice

15. Do you have some suggestions to help improve the whole process of distance learning?

16. What is your biggest barrier in effective distance learning?