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IMPACT OF THE COVID-19 PANDEMIC ON THE DIGITALIZATION OF THE EU MEMBER STATES

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Abstract

The new reality caused by the COVID-19 pandemic forced businesses to seek flexible solutions and the application of innovations in all fields of management. Living in the era of predictable unpredictability, the topic of entrepreneurship, digitalization, innovation, and competitiveness must be perceived by business representatives as a straw for existence. Thus, the main purpose of the current study is to identify good practices and innovative trends in the field of management and entrepreneurship utilizing digital solutions. The research object is the EU member states and it is focused on the e-commerce, web sale, and way of communication of the enterprises under the pandemic. For the evaluation of good practices and their possible implementation in business, we used comprehensive desk research based upon literature review and secondary analysis of empirical data in the period December 2021 – March 2022. Empirical data collected from national and international empirical studies conducted by private and state sociological agencies, as well as authors' teams of scientific and educational institutions, are the arrays on which secondary data processing was made. The results show that innovative management behavior of digital enterprises can provide added value based on the favorable reputation that they create.

Keywords: entrepreneurship, digitalization, pandemic

JEL: L26, P33, O33

Introduction

Many research and empirical data suggest the rise of a new category of entrepreneurship, i.e., digital entrepreneurship. It is described as a relevant socio-economic and technological phenomenon, which can be considered as the joining of traditional entrepreneurship with an emphasis on leveraging new digital technologies

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in novel ways, such as social, mobile, analytics, cloud, and cyber-solutions, all to shift the traditional way of creating and doing business in the digital era (European Commission, 2014). Living in the period of the Fourth Industrial Revolution, or Industry 4.0, which revolutionizes the automation, monitoring, and analysis of supply chains through smart technology, entrepreneurs must look forward to applying innovative management solutions, making everything in the supply chain smart, which presents the basic part of any company's digital transformation. The COVID-19 pandemic just intensified these processes. The current global situation accelerated the companies to fight for survival that is tightly associated with the implementation of innovations (Angelova & Pastarmadzhieva, 2020).

The authors' thesis is that applying new ways of doing business and digital instruments under crisis conditions is an opportunity for company survival. The main purpose of the current study is to identify good practices and innovative trends in the field of management and entrepreneurship based on digitalization solutions. Furthermore, we investigate the impact of the COVID-19 pandemic on the digitalization of the EU member states according to changes in the use of e-commerce, web sales, and ICT implementation in enterprises. In a pandemic situation, it is necessary to look for sales opportunities despite the physical distance that is imposed. It is also important to create conditions for active communication, both with customers and within the company between employees, to ensure synchronization and competitiveness of the products offered. The research object is the EU member states and it is focused on the dynamics in the share of enterprises with e-commerce, web sales, and a remote way of communication of the enterprises under the pandemic. To achieve our goal, we used secondary data and comprehensive desk research based on a literature review performed in the period December 2021 – March 2022. Empirical data collected from national and international empirical studies conducted by private and state sociological agencies, as well as authors' teams of scientific and educational institutions, are the arrays on which secondary data processing was made. Data from the Eurostat, Doing Business 2020 of the World Bank (2020) and the Strategic Plan 2020 – 2024 of the EU were used. The SPSS v.21 program was applied for statistical analyses.

The following limitations have been introduced in the research:

1. This study is focused on e-commerce, web sales and remote communication as tools of the digitalization process.
2. The scope of enterprises under study is narrowed to a survey of EU-27 countries.
3. The focus of the research is to investigate the dynamics in applying digital instruments during a pandemic.
4. The collected and analyzed secondary data is from national and international empirical studies conducted by private and state sociological agen-

cies, as well as authors' teams of scientific and educational institutions, Eurostat, Doing Business 2020 of the World Bank, and the Strategic Plan 2020 – 2024 of the EU.

The paper is structured as follows: following the introduction, the second part is describing a conceptual framework of innovation management solutions. This analysis paves the way for the third part, in which the digital entrepreneurship and the application of information and communication technologies (ICTs) as a base for a sustainable entrepreneurship post-crisis model is highlighted. The paper closes with conclusions and recommendations for future research in the field of investigation of the innovative trends and management solutions in entrepreneurship.

Innovative Management Solutions during a Pandemic

The New Reality after COVID-19

The new reality is accelerating business model transformation at a faster pace than ever before to ensure existential survival in a crisis for which no one was prepared. However, our team's research during the last two years (Angelova, Dimitrova & Pastarmadzhieva, 2021; Pastarmadzhieva & Angelova, 2021; Wojtyto et al., 2021) focused the attention on the influence of the COVID-19 pandemic, having a dramatic impact on society, business (entrepreneurship) and government institutions. The topic of the COVID-19 pandemic consequences and dissemination in modern society is in its infancy, at least because it is unfolding spatially and temporally on a local, regional, and global scale. This is a good opportunity to make an in-depth analysis of the problem area under consideration.

The unexpected pandemic situation transformed the ordinary and business life, and this globally changed the way of doing business. First, the impact of quarantine and social distancing on mental health (Hristova, 2021) and the qualities of the human capital play a significant role connected with their professional realization. Second, business organizations may have to regulate measures according to different policy environments. All businesspersons had to search for new opportunities to avoid social unrest and bankruptcies and to prevent the next wave of the pandemic. In our opinion, this is a critical moment, because stakeholder alignment refers to the nature of the organization's relationship with its stakeholders, such as customers, suppliers, partners, and investors.

Interesting is McKinsey's (McKinsey & Company, 2022a) standpoint according to which the path to sustainable, inclusive growth lies in building resilience now. Furthermore, the companies must focus their attention on women's health, which has been considered a niche market and a mere subset of healthcare. Changing how

the industry thinks about women's health is an important step toward identifying value-creating opportunities for meeting women's healthcare needs.

McKinsey also stresses the importance of communication and states that: "When employees feel understood and supported by their employers, they tend to be happier, more effective, and more likely to stick around. Companies can use the power of artificial intelligence (AI) and machine learning to coach employees. An AI-driven system can be designed to identify key moments when employees would benefit from a "nudge" that guides them toward positive actions, including improving their health, accessing training, and trying a different performance approach." This analysis paves the way for the importance of new technologies that create value and inculcate the approbation of ICTs in companies (Angelova & Desev, 2020).

The research of McKinsey & Company (2022b, p. 4) summarizes the trends in the post-COVID world. They predict that in coming years, the global insurance industry will be profoundly shaped by some megatrends that have emerged and accelerated since February 2020. Some are shifts in the macroeconomy; others are changes in competitive dynamics. The most dramatic may be changes in customer and employer behaviours. While most of these trends are not completely new, they have accelerated during the pandemic. In aggregate, they are shaping a new operating environment for insurers that is hugely disruptive and that challenges traditional ways of value creation.

Innovation and Trends in Management

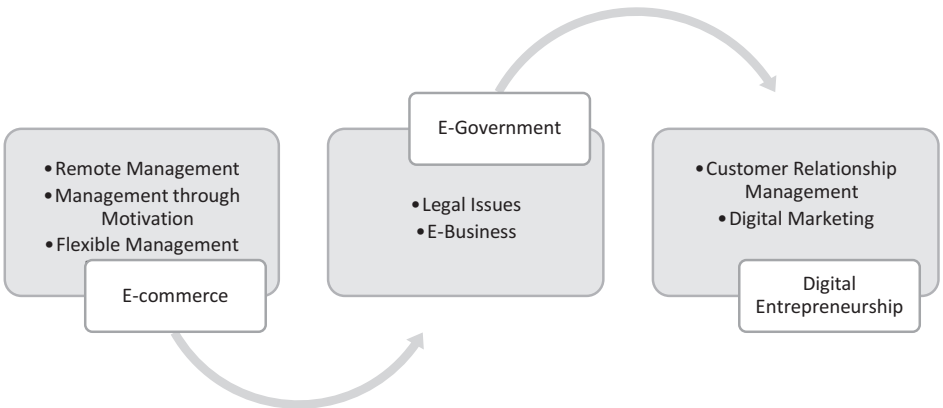
There are several good practices that teach the managers how to act in different scenarios. The book of Mintzberg (2013) offers a practical sensibility as it reflects on the roles and responsibilities of managers in the workplace. This valuable study offers a practical overview of the job of managing that acknowledges the inherited flaws of those which occupy these challenging roles. Based on these assumptions, it can be summarized the idea that "good management practices" is a term based on the knowledge and the strategy Life-long learning. This is all important in crisis situations and the managers must be focused on pro-active behaviour that will help their enterprises to overcome the crisis.

The other basic topic relates to the manner of innovation. The process of innovation has been defined as "the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context" (Van de Ven, 1986, p. 591). These notions of developing new ideas and taking a chance on them to seize new opportunities seem central to entrepreneurs.

During the pandemic, growth and continued expansion of remote working and videoconferencing have been observed. These processes and the emergence of connected large corporate tools will likely continue growing. Uzzaman (2020)

makes a summary stating that many new ventures are emerging in the remote working sector. Start-ups Bluescape, Eloops, Figma, Slab, and Tandem have all provided visual collaboration platforms enabling teams to create and share content, interact, track projects, train employees, run virtual team-building activities, and more. These tools also help distributed teams keep track of shared learning and documentation. Users can create a virtual office that replicates working together in person by letting colleagues communicate and collaborate with one another easily. Uzzaman's view toward the management topic focuses the attention on the increased development of the 5G infrastructure, new applications, and utilities; on the rapid growth of AI, robotics, internet of things, and industrial automation; on the augmented reality and virtual reality - immersive technologies that are part of everyday life, from entertainment to business; on the start-ups that are leading the innovation in micro mobility; and on the major progress in autonomous driving technology.

The new normal helps drive major technological and business innovations. We can summarize the new trends in management on figure 1.



Source: Authors' interpretation

Figure 1: Management model in the new reality

There are some imperatives that the leadership teams need to apply to the management system and the entrepreneurship model in accordance with the new reality for doing business (McKinsey & Company, 2022b, p. ii); to make environmental, social, and governance considerations a core feature of the business model; to regain relevance through product innovation and coverage of new risks; to enhance and personalize customer engagement and experience; to engage with ecosystems and to develop new businesses for the digital age; to scale the impact

from data and analytics; to modernize core technology platforms; to reimagine culture, diversity, and ways of working to attract and retain talent.

The research of Amue et al states that for innovation to flourish, the business culture needs to be supported by team-based entrepreneurial activities. The concept is meant to represent all aspects of developing an outlook that fosters and encourages innovation at all levels of entrepreneurial business, with particular attention paid to education (Amue, Igwe & Abive, 2014, p. 108).

Digital Entrepreneurship based on the ICTs Implementation

According to the Ease of doing business ranking (World Bank, 2020, p. 4), Bulgaria is in the 61st place from a total of 190 countries. The rankings are benchmarked to 1 May, 2019 and are based on the average of each economy's ease of doing business scores for the 10 topics included in the aggregate ranking. Economies that score well in Doing Business benefit from higher levels of entrepreneurial activity and the increased entrepreneurship generates better employment opportunities, higher government tax revenues, and improved personal incomes. However, the study was conducted before the pandemic, therefore it is useful to apply other indicators to benchmark the business activity in Bulgaria.

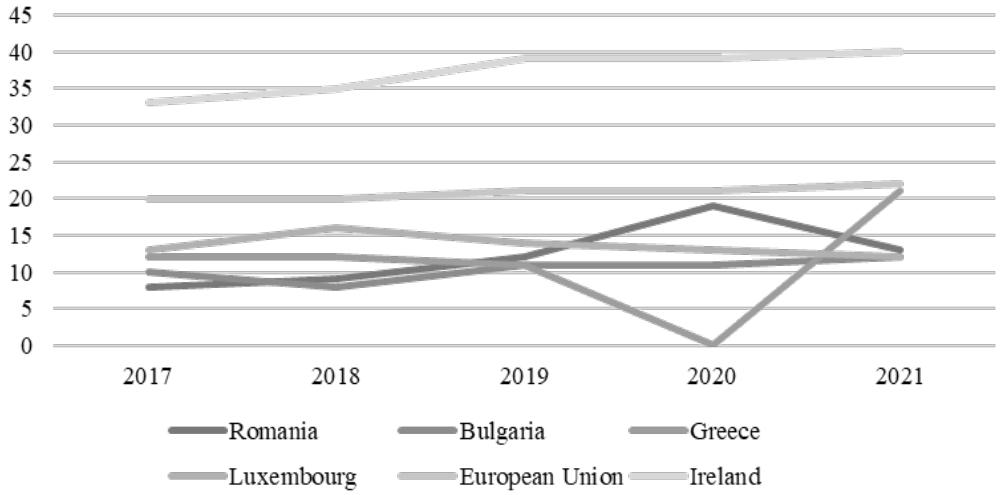
The outbreak of the COVID-19 pandemic in the early 2020 dramatically affected all countries and ecosystems of the economy of the EU member states. To help repair the economic and social damage brought by the coronavirus pandemic, kick-start a European recovery and protect and create jobs, the European Commission came forward with a major recovery plan for Europe on 27 May 2020 (European Commission, 2020, p. 4). The core values of the Strategic Plan lie on the common efforts at the European level. This will support countries to make the best out of the opportunities and challenges arising from an increasingly digitalized global and rapidly changing world. As Bulgaria is a full EU member state, the policy's aim is to help entrepreneurs with great business ideas obtain the necessary support to start up, grow and thrive. The general objective is focused on a Europe fit for the digital age that includes covering key dimensions like the level of connectivity, human capital, the use of internet, integration of digital technology and digital public services (p. 7).

Yang et al (2020) state that ICTs allow for faster responses by supporting large-scale participation and mass collaborations across state and national boundaries. They give many examples like involving new entities in the existing humanitarian collaboration network (e.g., volunteer, and technical communities who assist during disasters, including pandemics); facilitating new forms of disaster relief activities (e.g., digital humanitarians, online self-support groups); and enabling diverse civic engagement (e.g., digital archives of deleted posts to counter censorship, efforts to counter disinformation campaigns).

Researchers argue that a nation's digital entrepreneurial capacity depends largely on digital entrepreneurial behaviour, culture, and strategies as well as on a supportive innovation ecosystem in which governments, industry, business, educational institutions, and non-government organizations (NGOs) work together (Kiss et al., 2012). The measurement challenge of digital entrepreneurship lies in the pervasive nature of the phenomenon itself that cannot be captured by count-based measures of individual-level entrepreneurial action. Therefore, it becomes important to monitor the conditions which set the business context of entrepreneurs in the different EU member states (Venkatesh & Pusnkala, 2018). The European Index of Digital Entrepreneurship Systems (EIDES) addresses the measurement challenge by appraising the framework and systemic conditions for stand-up, start-up, and scale-up activities in the 27 EU member states. Furthermore, the EIDES index also attempts to disentangle the digital component of the just-mentioned entrepreneurial conditions and stages of development. There are different stimuluses and motivation policies in the digital era that are focused on the opportunities for competitiveness, practical application of innovative ideas as start-ups. The financing programs are established to provide the development of EU SMEs (Relevant programmes and projects, n.d.).

The research methodology is of a survey-descriptive type. Also a secondary processing of quantitative data concerning certain economic indicators during the period under review is performed. The processing of the information is done with a specialized software product. Data Collection is based on secondary data from national and international empirical studies conducted by private and state sociological agencies, as well as authors' teams of scientific and educational institutions, Eurostat, Doing Business 2020 of the World Bank, and the Strategic Plan 2020 – 2024 of the EU. Furthermore, to get more insights in the digitalization problems in Bulgaria, the Research utilized relevant secondary, qualitative, and quantitative data as well. The external analysis of the Bulgarian enterprises was done based on the findings from Desk Research. Its goal is to establish a level of consistency in digitalization practices and to distinguish itself from the current digital instruments used by EU-27 SMEs. It will also point out their common communication tools as well as their weak spots in terms of representation.

Indeed, the COVID-19 pandemic forced the digitalization processes and we wanted to identify to what extent and in which areas this impact is most significant. Thus, we checked if there is a growth in the share of enterprises with e-commerce sales after the pandemic.

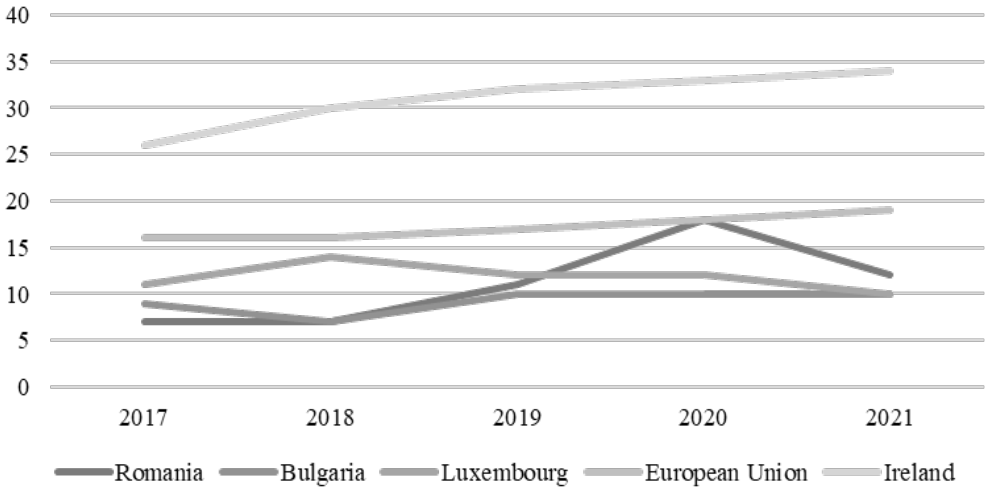


Source: Based on data from Eurostat.
Note: The EU data for 2020 and 2021 is for 27 countries and there is no data for Greece in 2020.

Figure 2: Dynamics in the share of enterprises with e-commerce sales, 2017 – 2021, % of all enterprises

The results presented on Figure 2 display the countries with the smallest share and the largest share in the examined years, alongside with Bulgaria and the EU average. The data shows that there is not a unified single trend across the EU member states and as concerns the EU average there is a slight increase.

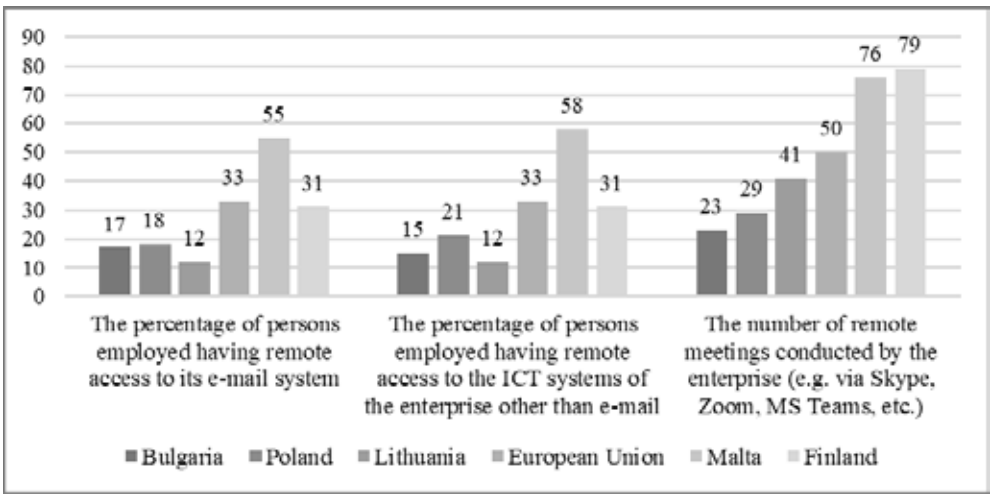
We also tested the dynamics of the web sale of the enterprises across the EU member states (Figure 3). The next figure displays the results of the countries with the smallest share and the largest share in the examined years, alongside with Bulgaria and the EU average. The results show that in Ireland, which is the country with the highest share of web sale, there has been constant growth since 2017, which does not seem to be affected by the pandemic. Across the other countries there is a variety of the results. A growth in the EU average is also observed.



Source: Based on data from Eurostat.
Note: The EU data for 2020 and 2021 is for 27 countries.

Figure 3: Dynamics in the share of enterprises with web sales (via websites, apps or marketplaces), 2017 – 2021, % of all enterprises

We also used Eurostat data, which directly measure the effect of the pandemic. Figure 4 presents the results for three indicators, regarding the digitalization of the enterprises.



Source: Based on data from Eurostat

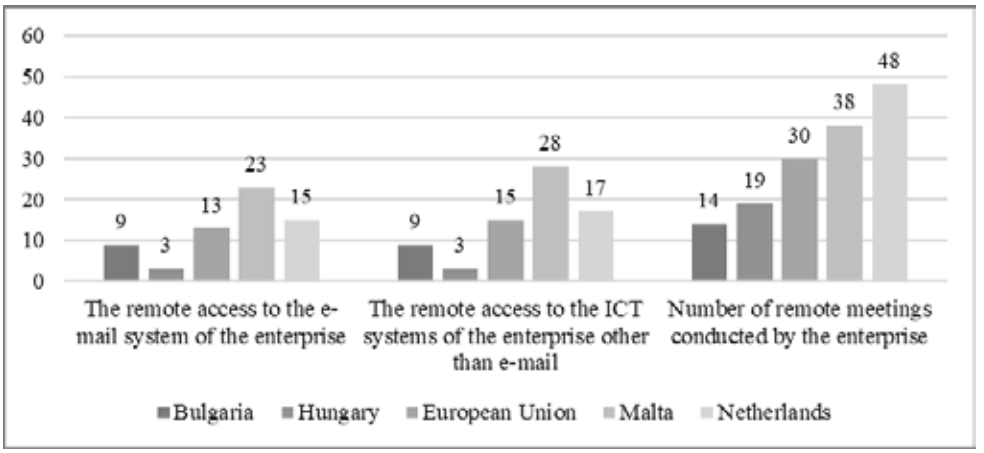
Figure 4: During 2020, enterprises have increased…, % of all enterprises

Figure 4 displays the results of the countries with the smallest share and the largest share in the examined years, alongside with Bulgaria and the EU average. In each of the EU member states there is an increase in the percentage of persons employed having remote access to their e-mail systems. It varies from 12% in Lithuania to 55% in Malta.

The results are similar as concerns the percentage of persons employed having remote access to the ICT systems of the enterprise other than e-mail. The increase is 12% in Lithuania to 58% in Malta.

The area, which is most significantly affected by the pandemic is the number of remote meetings conducted by the enterprise (e.g., via Skype, Zoom, MS Teams, etc.). In Bulgaria their number increased by 23% and in Finland – by 79%.

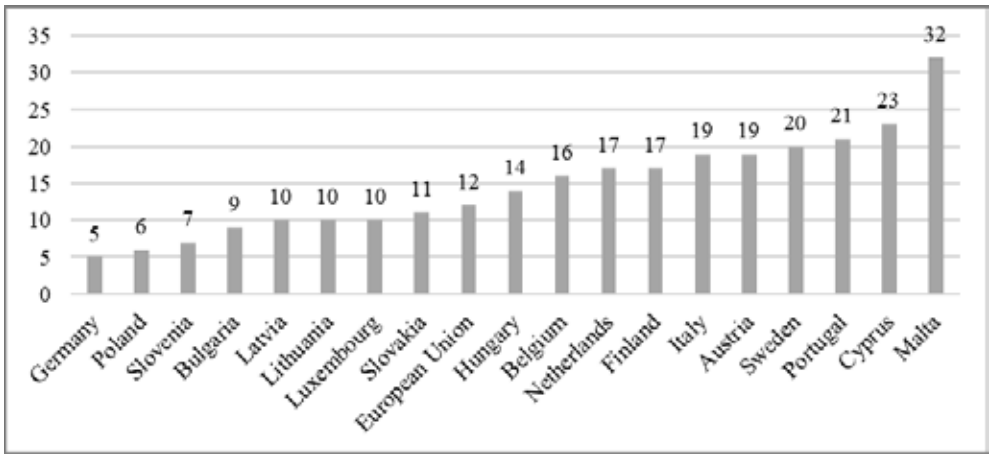
Figure 5 shows even more specified data, measuring the direct impact of the pandemic on the transformation. It displays the results of the countries with the smallest share and the largest share in the examined years, alongside with Bulgaria and the EU average. The COVID-19 pandemic is attributed to enterprises that report an increase in remote access to their e-mail system of up to 23% (in Malta). Up to 28% (in Malta) declared that the pandemic caused the remote access to their ICT systems. As concerns the increase of the remote meetings, up to 48% (in the Netherlands) of the enterprises from the EU member states is due to the COVID-19.



Source: Based on data from Eurostat.

Figure 5: Enterprises with an increase in… fully due to the Covid-19 pandemic, % of all enterprises

Furthermore, Figure 6 presents results, which show the direct impact of the pandemic on the enterprises to start or increase the sale of goods or services via internet. There is a variety across the EU member states regarding this indicator. The share of the mentioned enterprises varies from 5% in Germany to 32% in Malta. The EU average is 11% and Bulgaria is positioned under the average having 9% of the enterprises, which started or increased the sale of goods or services via internet.



Source: Based on data from Eurostat.

Figure 6: During 2020, due to the Covid-19 pandemic, the enterprises started or increased efforts to sell goods or services via internet, % of all enterprises

Conclusion

Digitalization has several facets and is thus complex to manage. However, if managers can unify these disparate facets together under the central idea of going after opportunities as the key to future success and prosperity, it may help to persuade employees.

This research suggests that while the presence of a digital enterprise might be assumed, the 'strength' or quality of that process can necessarily be ascertained a priori. In other words, being a 'digital firm' by virtue of growth characteristics, for example, is a guarantee of having a unified innovation policy.

Innovation is the key to economic growth, competitiveness, and social welfare in the 21st century. The capacity of a society to realize innovation is a critical factor for its economy. Analysis of collected data using statistical software indicated that among different dimensions of digitalization, there is dynamics in the share of enterprises with e-commerce and web sales (via websites, apps, or mar-

ketplaces). This is evidence, which confirms the authors' thesis, namely that the ability to apply digital solutions will lead to a greater effect on its management.

Digitalization in the context of Industry 4.0. presents an intriguing and fertile ground for organizational research. It is an exciting phenomenon with broad implications on strategy, innovation, and the workplace environment. Although the research is at an early stage, this work has made important strides towards comprehensively identifying that due to the Covid-19 pandemic, the enterprises started or increased efforts to sell goods or services via internet to fight for survival in this pivotal period. We can suggest to managers to increase organizational agility and optimize customer relationship management with Intelligent Business Automation systems. Digital transformation has been going on for many years. However, many businesses do not use digital tools to their full potential or do not take the essential actions to get results. Performance and digital maturity go hand in hand. For instance, nations that continue to innovate and successfully implement digital transformation programs are more effective and productive than others.

The result of these efforts is an opportunity for interesting future scholarship. We can identify several potential new research streams that arise from a more comprehensive understanding of digitalization processes and instruments. As future research it would be interesting to conduct in-depth interviews with managers from digital enterprises. These streams will provide significant scholarly contributions to digital enterprises as a theoretical construct and to the entrepreneurship field at large.

The performed research clearly demonstrated that the COVID-19 pandemic inevitably has impacted the digitalization of the EU member states. Another important conclusion is that the digitalization processes are not affected the same way and there is variety across the countries of the EU. Although there is an increase in the enterprises, which started to use internet to perform their business the most affected area is the way the business meetings are made, namely using various platforms for remote meetings such as Skype, Zoom, MS Teams, etc.

However, the current study not only provides answers but raises additional questions. One of the most important concerns the factors which are relevant for the level of digitalization of the countries. Why in some countries the enterprise adopts many digital approaches and instruments, while in others even COVID-19 was not able to force to a high degree the processes of digitalization? Furthermore, we intend to research more European countries to examine if there are clusters.

Acknowledgements

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References

Amue, J., Igwe, S., & Abive, H. (2014). ICT entrepreneurship and small business innovation: A mechanism for sustainability, European Journal of Business and Social Sciences, 3(6), 103-112.

Angelova, M. & Desev, K. (2020). Machine Learning Application in Human Resources Management, Economic and Social [Dis]Integration, pp. 236-246.

Angelova, M. & Pastarmadzhieva, D. (2020). Development of bio-based economy: Entrepreneurial endeavors and innovation across Bulgarian wine industry, Journal of International Studies, 13(2), pp. 149-162, https://doi.org/10.14254/2071-8330.2020/13-2/11

Angelova, M., Dimitrova, T., & Pastarmadzhieva, D. (2021). The Effects of Globalization: Hyper Consumption and Environmental Consumer Behavior during the Covid-19 Pandemic, International Journal of Economics and Business Administration, IX(Issue 4), pp. 41-54, https://doi.org/10.35808/ijeba/733

European Commission. (2014). Fuelling Digital Entrepreneurship in Europe, available at: https://ec.europa.eu/docsroom/documents/5313/attachments/1/translations

European Commission. (2020). Strategic Plan 2020 – 2024. European Commission, available at: https://ec.europa.eu/info/system/files/idea_sp_2020_2024_en.pdf

European Commission. (n.d.). Eurostat, available at: https://ec.europa.eu/eurostat

Hristova, E. (2021). Personal Perceptions of (In)Security, Scientific Atlas, 1, available at: https://scientificatlas.com/uploads/news_docs/8-Nauchen-atlas-Elitza-Hristova.pdf

Kiss, A. N., Danis, W. M. & Cavusgil, S. T. (2012). International entrepreneurship research in emerging economies: A critical review and research agenda, Journal of Business Venturing, 27(2), pp. 266-290, https://doi.org/10.1016/j.jbusvent.2011.09.004

McKinsey & Company. (2022a). As Omicron reminded us, health is everything (Briefing Briefing note #92; COVID-19: Implications for Business), McKinsey & Company, available at: https://www.mckinsey.com/business-functions/risk-and-resilience/our-insights/covid-19-implications-for-business

McKinsey & Company. (2022b). Creating value, finding focus: Global Insurance Report 2022, available at: https://www.mckinsey.com/~/media/mckinsey/industries/financial%20services/our%20insights/creating%20value%20finding%20focus%20global%20insurance%20report%202022/creating-value-finding-focus-global-insurance-report-2022-vf.pdf

Mintzberg, H. (2013). Simply managing: What managers do and can do better, Berrett-Koehler Publishers, Inc.

Pastarmadzhieva, D. & Angelova, M. (2021). Covid-19 Pandemic as a Contemporary Challenge and Determinant of EU Citizens' Priorities. SHS Web of Conferences, 120, 01010, https://doi.org/10.1051/shsconf/202112001010

Relevant programmes and projects. (n.d.). Erasmus for Young Entrepreneurs, available at: https://www.erasmus-entrepreneurs.eu/page.php?cid=22

Uzzaman, A. (2020, December 15). Top Business and Technology Trends in 2021: 10 fields that will see significant innovation in the new year, Inc. Magazine, available at: https://www.inc.com/anis-uzzaman/top-business-technology-trends-in-2021.html

Van de Ven, A. H. (1986). Central Problems in the Management of Innovation, Management Science, 32(5), pp. 590-607, https://doi.org/10.1287/mnsc.32.5.590

Venkatesh, K. A. & Pusnkala, N. (2018). Digital entrepreneurship: The technology deployment in internationalization speed in the digital entrepreneurship era, International Journal on Recent Trends in Business and Tourism, 2(4), pp. 39-42.

Wojtyto, D., Michalik, J., Pałęga, M. & Angelova, M. (2021). Identification of Risk: An Empirical Evidence, System Safety: Human – Technical Facility – Environment, 3(1), pp. 179-191, https://doi.org/10.2478/czoto-2021-0019

World Bank. (2020). Doing Business 2020: Comparing Business Regulation in 190 Economies, Washington, DC: World Bank, https://doi.org/10.1596/978-1-4648-1440-2

Yang, S., Fichman, P., Zhu, X., Sanfilippo, M., Li, S. & Fleischmann, K. R. (2020). The use of ICT during COVID–19, Proceedings of the Association for Information Science and Technology, 57(1), https://doi.org/10.1002/pra2.297.