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Research Results
Резултати от научни изследвания

STATE AND BARRIERS TO THE DIGITALIZATION OF SMALL AND MEDIUM-SIZED ENTERPRISES IN BULGARIA

Dr. Boyko Takov
University of National and World Economy

Abstract. In the year 2021, small and medium-sized enterprises (SMEs) constituted 99.81% of the total number of enterprises in Bulgaria. The number of individuals employed by SMEs accounted for 74.2% of the entire workforce. These enterprises contributed 66.5% of the overall economy's added value, and this share has consistently been on the rise. Their development significantly influences the employment rate, overall economic growth, and the prosperity of our nation.

Technological advancements and recent crises in recent years have spurred accelerated digitization across all spheres of public life, including business sector. It is increasingly penetrating SMEs in Bulgaria, albeit with a certain lag compared to the EU. There is no doubt that the digitization of SMEs serves as a crucial mechanism for achieving competitiveness and economic success, not only for the enterprises themselves, but also for our country as a whole.

Given this context, the objective of this publication is to briefly present the summarized results of an analysis of the level of digitization of SMEs in Bulgaria and the examination of the key factors hindering its further development, serving as barriers to its progress. These findings can be valuable for guiding the efforts of managers and government entities in fostering the advancement of digitization in SMEs.

Keywords: small and medium-sized enterprises; digitization; barriers; research; results

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Introduction

1. According to data from the Executive Agency for the Promotion of Small and Medium sized Enterprises in 2021, small and medium-sized enterprises (SMEs) accounted for 99.81% of the total number of enterprises in Bulgaria. The number of employees in these enterprises constituted 74.2% of the entire workforce. They contributed 66.5% of the added value to the overall economy, and this share has

been steadily increasing[1]. Their development significantly influences the employment rate, overall economic growth, and the prosperity of our country. However, SMEs face growing challenges and uncertainties. They are highly vulnerable to a series of emerging crises, including supply chain disruptions, rising resource prices, demographic challenges, and more. The trend is an increasing competition at both regional and global levels. In these conditions, their flexibility, innovation, and their approach to developing knowledge and skills become crucial for their success.

Technological advancements and recent crises in recent years have prompted accelerated digitization across all spheres of public life, including the business sector. It is increasingly permeating SMEs in our country, albeit with a certain lag compared to the EU, and brings significant opportunities for expediting their development.

The advantages of digitization for SMEs are multifaceted, continually expanding with technological progress. It facilitates the rapid and easy collection, processing, and analysis of information for making timely and informed management decisions. It is associated with streamlining communications and expediting transactions with partners, automating manual processes, and rationalizing operations. As a result, productivity is enhanced, costs are reduced, control is improved, and the quality and competitiveness of products are heightened. It forms the foundation for optimizing administrative activities and the development of digital marketing.

Digitalization facilitates the international contacts of SMEs, providing them with timely access to current information about markets and competitors and supporting their rapid response to new requirements and changes. Thus, despite being small in size, these enterprises can successfully participate in international trade and gradually transform into international companies. Digital methods assist SMEs in their innovative activities and in the development and implementation of various projects.

Cybersecurity is of paramount importance for any company, as untimely and incorrect decisions can result in significant losses. Some external factors that can negatively impact the enterprise include foreign corporate espionage in the field of the company's development activities, related to new products, know-how, trade secrets, new markets, prices, quality of raw materials, and more (Krushkov 2020).

Intellectual property is a topic that directly impacts the digitization of SMEs, as per Stoyanova P.'s thesis, identifying intellectual property is crucial for the successful digital transformation of businesses. Recognizing the potential of intellectual property in the digital economy is essential as a primary driving force for competitiveness and innovative activities. The digital strategy of a business results from close collaboration between management, intellectual property experts, software developers, and digital marketing. (Stoyanova 2023).

These and a series of other advantages of digitization contribute to the enhancement of the adaptability and flexibility of SMEs, their efficiency, competitiveness, and the sustainability of their long-term development.

The significance of digitization is increasingly recognized by Bulgarian busi-

ness leaders. According to the results of a study conducted by the Association of Industrial Capital in Bulgaria, involving 116 enterprises from 13 economic sectors, 70% of the surveyed businesses in Bulgaria consider digitization to be of crucial importance for the development of successful operations[2].

There is no doubt that the digitization of SMEs is a crucial mechanism for achieving competitiveness and economic success not only for individual enterprises but also for our country as a whole. As the practical importance of digitization continues to grow, so does the number of scientific research studies and publications dedicated to it. However, despite this increase, numerous essential aspects of this process within SMEs remain unresolved or is not sufficiently well-developed. Among these are the issues related to clarifying the fundamental factors hindering (barriers) the digitization of SMEs in our country.

Based on the results of the study of V. Petrova (2021) regarding the artificial intelligence (AI) in digital enterprises, in the initial years the patent activity increases in recent years – in 2018, 2019 and 2020. Applicants for patents in the field of artificial intelligence and education are mainly Chinese individuals and legal entities. Digital businesses need to make significant changes to their patent policy. For a digital enterprise to be successful, it must invest in the creation of technological developments in the field of artificial intelligence, which will receive patent protection. Regarding the Bulgarian business environment, it should be noted that digital enterprises do not create innovative products in the field of artificial intelligence to be protected by a patent for an invention (Petrova 2021).

Given this context, the aim of this publication is to provide a brief overview of the generalized results from an analysis of the level of digitization in SMEs in Bulgaria, along with a study of the key factors hindering its further development, acting as barriers. These results can be valuable for guiding the efforts of managers and government entities in stimulating the digitization development in SMEs.

1. Methodological Section

To obtain the presented results and conclusions, an initial analysis of the level of digitization in SMEs in the country was conducted. This analysis involved researching and systematizing results from published studies by both domestic and foreign organizations. Subsequently, an author-conducted survey among Bulgarian SMEs was carried out to clarify their perspectives on the barriers hindering their digitization.

The survey was conducted at the end of 2023 through the collection of empirical data via a questionnaire distributed to the selected sample of Bulgarian SMEs. A specialized research methodology was employed (Velev, Tsvetanova, Veleva 2019), and data processing and analysis were performed using statistical methods and specialized software. The study encompassed gathering opinions from owners and managers, and when not feasible, lower-level managers were included in the survey.

The sampled businesses included 100 micro, small, and medium-sized enterprises from various sectors within the manufacturing industry. To facilitate comparisons of opinions among leaders of enterprises of different sizes, 69 micro-enterprises, 22 small enterprises, and 9 medium-sized enterprises were studied. This distribution corresponds to the established distribution of SMEs in the country as a whole.

The main research hypotheses were:

a) Digitization in SMEs is hindered by strongly influencing financial factors.

b) Digitization in SMEs is impeded by a lack of adequately trained personnel.

c) Barriers to digitization are higher in smaller-sized enterprises.

While the surveyed sample of SMEs may not be fully representative of the country as a whole, the obtained results are indicative of the challenges facing their digitization processes. These findings can be valuable in directing the efforts of responsible government entities to support the development of SMEs.

2. State of Digitization in SMEs in Bulgaria

Bulgaria ranks 26th out of the 27 EU member states in terms of integrating digital technologies into businesses, according to the European Commission's Digital Economy and Society Index (DESI) for 2022. Despite an average annual increase of 9% over the last five years, the adoption of digital technologies by small and medium-sized enterprises (SMEs) in Bulgaria is nearly half of the EU average. Only 6% of Bulgarian enterprises use big data, 10% use cloud services, and 3% use artificial intelligence (AI), compared to the EU targets of 75% for each technology by 2030[3]. The report also notes that our country lags behind in the share of its workforce in ICT specialists (3.5% compared to the EU average of 4.5%). Only in the field of connectivity do we achieve a very good result.

The coverage of optical lines to buildings is provided for 85% of households, compared to 50% in the EU. The offered prices are relatively low, but the overall adoption of fixed and mobile broadband internet access remains low.

According to a World Bank report, Bulgarian firms have the lowest level of digital intensity among all EU countries, indicating a significant lag in the adoption of digital technologies. More than 50% of SMEs have a very low digital intensity index, measuring the overall use of technologies by enterprises. Our country has the lowest share of firms with a high index of digital intensity – only 16%, compared to the EU average of 29%. This places Bulgarian SMEs at the bottom in terms of digitization in the region, and this conclusion is valid for all sizes of firms and sectors[4].

The report also notes that only half of Bulgarian SMEs have a website, which is the fourth-lowest share among EU countries. Most enterprises do not use social media for business purposes, which is 25% less than the EU average. All of this hinders online visibility and interaction with customers. Furthermore, only one in eight Bulgarian SMEs sells its products or services online, which is below 50% of the EU average.

A report from PricewaterhouseCoopers Bulgaria indicates that there has been a comprehensive improvement in the use of ICT among SMEs over the past decade. However, currently, only 13.7% of enterprises have a fairly high or very high level of ICT activity, while smaller enterprises continue to have a relatively lower level of ICT usage compared to larger enterprises[5].

In the World Bank report, it is indicated that Bulgarian SMEs typically do not utilize advanced technologies but rather prefer elementary and moderately advanced technologies for performing common daily tasks. These technologies are primarily applied to address administrative tasks, including those related to accounting and human resources, as well as for utilizing online banking services, financial transactions, and similar activities. Bulgarian SMEs heavily rely on paper invoices and exhibit limited acceptance of electronic invoices. Only 16% of them send electronic invoices, hindering online business transactions and indicating a low level of digitization in their business processes.

A similar perspective is supported by the European Commission's Digital Economy and Society Index (DESI), which highlights that only 25% of SMEs in Bulgaria have at least a basic level of digital intensity. They lag behind in online sales as well, with only 10% of SMEs conducting such transactions, approximately half of the EU average. These findings align with the results of a study conducted by the Bulgarian Small and Medium Enterprises Promotion Agency (BSMEPA), revealing that merely 8% of Bulgarian SMEs engage in online sales, contributing a mere 3% to their total turnover. This discrepancy is also evident among enterprises with a website (51%) and those sending electronic invoices (10%), in contrast to the EU average of 76% and 35%, respectively[6].

The World Bank report reveals that the adoption of modern digital tools, such as CRM and ERP systems, among Bulgarian SMEs is relatively low compared to the EU average. The use of CRM systems, which facilitate the capture, storage, and accessibility of customer information in organizations, as well as the analysis of such data for marketing purposes, is 21% lower in Bulgaria. Similarly, the utilization of ERP software is 42% below the EU average. Additionally, the use of big data analytics, both internal and external, is below the EU average, indicating untapped potential for data-driven decision-making. Bulgarian SMEs exhibit limited adoption of cloud computing services, ranking lower than most countries in the region.

Overall, only one in ten firms in Bulgaria does not frequently use digital tools in at least one business function. However, only one-third of SMEs leverage the most advanced technologies available to them on a daily basis[7].

According to the DESI index for 2022, our country significantly lags behind the EU average in terms of digital skills, ranking 26th out of 27 EU member states. The percentage of individuals possessing at least basic digital skills is

only 31%, compared to the EU average of 54%. Moreover, the share of those with digital skills beyond the basic level is lower than the EU average, with a substantial difference of 8% (compared to the EU average of 26%). This indicates a considerable gap in achieving the EU's goal for 2030, where 80% of adults are expected to have at least basic digital skills.

In 2020, only 7% of businesses provided ICT training for their personnel, significantly below the EU average of 20%. However, Bulgaria demonstrates positive outcomes regarding women in ICT professions, constituting 28% of all ICT specialists compared to the EU average of 19%. Simultaneously, the proportion of individuals with higher education in the ICT field is also high in Bulgaria[8].

3. Barriers to the Digitization of Bulgarian SMEs

The presented results from the conducted research are generalized for the entire population of examined SMEs. This is necessary due to the limitations in the scope of the current study.

Initially, it was found that a very small fraction (around 8%) of SME managers have a clear understanding of the digitization process and its scope. A significant portion of managers (91%) associate this process with the use of computers for carrying out elementary, daily activities. At the same time, almost all surveyed managers are convinced of the benefits and objective necessity of digitizing their businesses. Only 9% of them state that their business cannot be digitized or that they do not wish for it.

The survey revealed that digitization in SMEs is most commonly defined as a means of online information retrieval and exchange, maintaining accounting records, electronic invoicing, and data storage for daily operations. Only a small portion of managers connect it with a higher level of digitization of core business processes and a transformation of business models (Veleva, Tsvetanova 2020).

The obtained results exhibit significant variations across SMEs of different sizes. In line with the main objective of the study, factors hindering the adoption and development of digitization in SMEs were examined. The following table presents the averaged ratings from respondents, representing all surveyed enterprise groups, regarding the strength of the negative impact of these factors. Ratings for the negative influence of the factors are on a 7-point scale, where a score of 1 indicates very weak negative influence on the process, and the maximum score of 7 signifies a very strong impact.

Factors hindering digitization in SMEs

№	Factors	Micro companies		Small companies		Medium Companies	
		Negative impact assessment (from 1 – very weak to 7 – very strong)	Order by strength of negative impact	Negative impact assessment (from 1 – very weak to 7 – very strong)	Order by strength of negative impact	Negative impact assessment (from 1 – very weak to 7 – very strong)	Order by strength of negative impact
1	Huge risk of business failure	4,75	12	4,70	13	4,20	12
2	Lack of interest	6,72	5	4,30	15	3,70	16
3	Insufficient speed and crashes on the Internet	3,0	16	3,90	16	4,10	13
4	Very high costs	6,90	2	6,40	3	6,30	3
5	Insufficient financial capabilities.	6,95	1	6,35	4	5,80	5
6	Lack of suitable funding sources	6,75	4	6,00	6	4,70	9
7	Organizational obstacles	4,60	13	4,50	14	4,60	10
8	Low digital culture and staff skills	6,70	6	6,50	2	6,35	2
9	Lack of qualified IT staff	6,80	3	6,65	1	6,40	1
10	Internal resistance to change	4,40	14	4,80	12	4,00	14
11	Lack of information about modern digital and technologies	6,20	8	5,25	9	3,80	15
12	Risk of hacker attacks	6,10	9	6,30	5	6,20	4
13	Risk of loss of control	4,80	11	5,20	10	5,50	7
14	Insufficient support from the state	6,40	7	5,80	7	5,10	8

15	Possible dependence on IT specialists	4,90	10	5,3	8	5,55	6
16	Rapid obsolescence of digital technologies	4,2	15	4,85	11	4,50	11

The results presented in the table indicate that the operational environment strongly negatively impacts the digitization process of SMEs. This holds true for all three groups of SMEs, with a clear intensification of the negative impact as the size of enterprises increases. It is evident that the significance of factors with negative impacts varies depending on the size of SMEs.

For instance, according to the assessments of surveyed managers from micro-enterprises, the most substantial hindrances to digitization are the insufficient financial capabilities of the enterprises and the high costs associated with digitalization. In the third position for negative impact is the lack of qualified IT personnel, a serious issue even for larger SMEs. Generally, factors related to costs, financing, and the absence of suitable digital culture and skills in the workforce are at the forefront of inhibiting digitization. The fifth-ranked factor, the lack of interest in implementing digitization elements, suggests that managers themselves may lack the necessary qualifications and understanding of the benefits of digitization. Lastly, for micro-enterprises, potential issues with the internet are ranked least significant.

Financial factors once again rank high in terms of negative impact, even for smaller enterprises. However, for both small and medium-sized enterprises, the top two factors with the most inhibiting impact on digitization are "Lack of qualified IT personnel" and "Low digital culture and skills of the staff." These two factors hold the first two positions for medium-sized enterprises as well. For both small and medium-sized enterprises, it is noticeable that the factor "Lack of interest in digitization" is placed at the end of the ranking, providing optimism for their development.

Clearly, the lack of funds, high expected expenses, and issues with staff qualifications are the primary obstacles to digitization for SMEs. According to the respondents, the lack of sufficient support from the state has also significantly hindered digitization in enterprises.

The results obtained from the study provide confirmation for the main research hypotheses, namely: a) digitization of SMEs is impeded by strongly acting financial factors; b) digitization of SMEs is hindered by a lack of qualified personnel; c) barriers to digitization are greater for smaller-sized enterprises.

Conclusion

Digitization is crucial for companies due to its multifaceted impact on various

aspects of business operations. By enhancing operational efficiency through process automation and minimizing errors, digitalization streamlines workflows. This, in turn, leads to significant cost reductions, as companies can optimize resource utilization and decrease reliance on physical infrastructure.

Moreover, digital tools contribute to enhanced productivity and flexibility within the workforce. Seamless collaboration, quick access to information, and the ability for employees to work remotely become achievable, fostering a dynamic and efficient working environment. Considering this, the publication briefly presented the achieved level of digitization in Bulgarian SMEs, as well as summarized the results of the study on the main factors hindering it.

The obtained results showed that digitization of Bulgarian SMEs faces several barriers. The main ones are related to financial problems and a lack of qualified personnel, as well as the overall negative impact of the operating environment. This signals the need for state support – financial support, workforce training, etc.

Companies require training for digitalization to ensure that their workforce possesses the necessary skills and competencies to effectively leverage digital tools and technologies.

The trainings are an investment in human capital that ensures employees are equipped with the skills and knowledge necessary to navigate the digital landscape, contributing to the overall success of a company's digitalization efforts.

Various national and European-level programs are available for the companies in this direction, and they should be utilized to enhance their performance. The digitization of SMEs should be considered a shared aspiration of the private and public sectors for the development of a modern and competitive economy, especially in the context of companies' internationalization.

The developments in this publication could serve as a basis for further discussion on the identified issues and be useful for directing the efforts of state authorities and managers to stimulate the development of SMEs, particularly in their digitization efforts.

NOTES

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✉ **Dr. Boyko Takov**
Intellectual Property and Technological Transfer Department
Business Faculty
University of National and World Economy
Studentski district
19, December 8th St.
1700 Sofia, Bulgaria
E-mail: boyko.takov@unwe.bg