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Micro, Small and Medium-sized Enterprises in the Digital Economy: Barriers to Digitalisation

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ABSTRACT

Objective: To identify the barriers to digitalisation micro, small and medium-sized enterprises (SME) in Poland face, using enterprises in Dolnośląskie voivodeship as an example.

Research Design & Methods: A review of the subject literature on the essence, level and importance of the digitalisation of enterprises, as well as on the limitations in the use of digital technologies by SMEs. The review is complemented by empirical research conducted in June and July 2023 on a sample of 50 enterprises. The research was preceded by field observation. A questionnaire was administered in electronic (Microsoft Forms) and paper form among clients of an accounting office in the Dolnośląskie voivodeship.

Findings: The results confirm that the level of digitalisation among micro, small and medium-sized enterprises in Poland is low. The owners of enterprises point to a range of barriers that discourage them from implementing digital solutions. The research showed that, among the micro, small, and medium-sized enterprises surveyed, the most frequent barriers to implementing digital solutions were a successfully functioning business, a lack of knowledge on available digital solutions, and a lack of clarity regarding the benefits that such solutions may bring. Meanwhile, firms that have already begun digital transformation indicated a range of barriers to further implementation of digital solutions, including a lack of suitable competences, high investment

costs, and concerns about leaving traces in the digital world and being exposed to various types of inspections.

Implications/Recommendations: There is a need for education and support of digital competences, as well as to increase awareness among the owners of small firms as to the benefits digitalisation promises. At the same time, data and privacy must be protected in order to encourage entrepreneurs to safely implement digital solutions.

Contribution: The research conclusions fill a research gap and can be used by both practitioners and theoreticians. Understanding both the level of digitalisation in SMEs and the barriers hindering the use of digital technologies should help the field develop.

Article type: original article.

Keywords: digital economy, micro, small and medium-sized enterprises (SMEs), digitalisation barriers, digital competencies.

JEL Classification: D22, O33.

1. Introduction

Digital transformation is today considered to be a leading way for a company to build competitive advantage, improve its products and services, and broaden its market. As such, the development of the digital economy commands widespread interest among researchers. Applied digital solutions can help firms survive rising energy prices, disruptions to supply chains, the increasing costs of servicing credit, and the continuing fallout from the COVID-19 pandemic.

It is widely believed that economic entities using information and communication technology (ICT) solutions is the foundation upon which the digital economy will develop. Given that the micro, small and medium-sized enterprise (SME) sector constitutes 99.8% of all enterprises in Poland, it has a key role to play in developing the digital economy (PARP, 2023). It is therefore crucial to monitor the sector's push into digitalisation, identify the barriers to their digitalisation, and work to streamline and accelerate the implementation of digital solutions. At the same time, SMEs in Poland have largely failed to digitalise, making research on barriers to the implementation of digital solutions all the more important. This is even more relevant as digital transformation is expected to have an increasing impact on enterprise survival and growth opportunities. The digitisation of SMEs in Poland faces multiple barriers, including financial constraints, lack of competences, organisational challenges (Marcysiak & Pleskacz, 2021; Szwajca & Rydzewska, 2022; Brink & Packmohr, 2023) as well as a lack of skilled personnel and human capacity (Mohamad *et al*., 2022; Le-Dain *et al*., 2023). Most of the solutions Polish SMEs use are limited to the most basic forms of digitalisation, such as online financial and telecommunications services and having a website (Chaber, 2017), while they

have used advanced solutions to only a minimal extent. With a view to developing the digital economy, it is important to determine which factors cause micro, small and medium-sized enterprises not to make use of digital solutions, as well as those that limit such digital transformation once it has begun. The aim of the paper is to identify and understand the principle barriers that keep SMEs in Poland from moving forward with digitalisation, and to fill the research gap in this regard.

2. Literature Review

Numerous contemporary scientific studies have shown that global socio--economic changes have forced digital transformation upon small and medium--sized enterprises (Su *et al*., 2022). This changes their traditional business model and the process of creating value for customers (Matarazzo *et al*., 2021). The traditional approach to digitalisation involves "using computer and internet technologies to provide a more efficient and more effective process of creating economic value" (Reddy & Reinartz, 2017). Digital transformation also entails changing one's approach to the customer, as well as the organisation comprehensively changing to new ways of functioning with the use of the latest digital technologies (Gajewski, Paprocki & Pieriegud, 2016). It involves making significant changes to the existing principles by which enterprises operate. A good example of this came about as a result of the COVID-19 pandemic, which vastly accelerated the pace of digital transformation, including among small and medium-sized enterprises (Papadopoulos, Baltas & Balta, 2020; Skare, de las Mercedes de Obesso & Ribeiro--Navarrete, 2023).

Digital transformation can boost sales and productivity, as well as in innovation in the creation of value and interaction with the customer (Matt, Hess & Benlian, 2015; Węgrzyn, 2023). It can facilitate and streamline financial management and payments, thus increasing digital integration (Shofawati, 2019). Digital technologies cover a range of tools, devices and electronic resources, as well as systems used to generate, store, process and transform data (GUS, 2022b). Relatively cheap and simple digital solutions make it possible to easily communicate with potential clients, as well as gather data on consumer preferences and analyse such data based on the artificial intelligence used in cloud-based solutions (Marr & Ward, 2019). Digitalisation also provides greater flexibility and dynamics when implementing innovative solutions (Yoo, Henfridsson & Lyvtinen, 2010; Kowalczyk, 2017).

Thanks to digital solutions, enterprises obtain access not only to their home market, but also to global markets, and at a relatively low cost. It is equally important that thanks to global platforms, small and medium-sized enterprises are also able to expand globally. At the same time, consumers in local markets gain access to global products (Chądrzyński *et al*., 2021). Thanks to the popularisation of cloud services and the development of software, such changes can occur both in large as

well as the smallest economic entities. A dozen or so years ago, only large enterprises could afford advanced stock management systems and accounting software. Today, every shop can track sales and inventory using suitable dedicated applications. The owners of small entities can manage their own accounting using software solutions or online services. The digitalisation of enterprises provides the impetus to employ innovation and change across multiple sectors. It can bring about countless benefits for small and medium-sized enterprises, but requires the appropriate knowledge and resources in order for its potential to be exploited and threats avoided.

Research on digitalisation in micro, small and medium-sized enterprises has focused mainly on the benefits achieved by implementing new technologies, innovations and new business models. However, many authors have also addressed barriers to digitalisation, especially among small and medium-sized enterprises (Peillon & Dubruc, 2019). The barriers to development SMEs face are usually divided into internal (microeconomic) and external (macroeconomic) ones. The former are those on which the enterprise has an influence, and include factors related to the enterprise itself, including its competences, weaknesses in management and production. External barriers, or elements in an enterprise's surroundings, threaten the process of founding enterprises and their operation on the market. "External barriers are the product of an enterprise's surroundings, and are related to its low potential, high complexity and the uncertainty of operating in a changing economic environment" (Klimek, 2017, p. 97).

SMEs are decidedly less well-prepared to adapt new technologies than large firms (Moeuf *et al*., 2020). The literature describes numerous classifications of the barriers and limitations affecting SMEs seeking to implement ICT. One of the most frequently mentioned is the lack of resources, both financial and personnel-related (Orłowska & Żołądkiewicz, 2018). The lack of financial resources can significantly hamper SMEs in realising developmental projects (Kocsis, 2012; Mittal *et al*., 2018). According to von Leipzig *et al*. (2017), typical barriers indicated by SMEs themselves include insufficient IT structures, lack of technical skills, unsuitable business processes, the high risk of implementation and costs. Other issues raised, by both the owners and employees of SMEs, concern competences and skills. According to Lerch and Gotsch (2015), the principal barrier to digitalisation is the lack of qualified employees for developing and providing such services.

3. The Essence of SMEs and the Level of Digital Advancement

SMEs are those that employ fewer than 250 employees, and whose annual turnover does not exceed 50 million euros, and/or whose total annual balance sheet does not exceed 43 million euros (Ustawa z dnia 6 marca 2018 r. Prawo przedsiębiorców). The basis for classification is most commonly the number of employees according

to the following division: micro firms: 1 to 9 employees, small firms: 10 to 49 employees, medium-sized firms: 50 to 249 employees, large firms: 250+ employees.

SMEs make up over 99% of all enterprises in the European Union, are the greatest employer in the EU economy, and make the greatest contribution to its development. In Poland, SMEs are even more common, constituting 99.8% of all enterprises in 2021, with the most numerous group being microenterprises (97.2%; 2.3 million) (PARP, 2023). In the years 2013–2021 in Poland the number of microenterprises increased by 351,600, or 17.5%. What is more, the greatest average annual pace of growth was in entities employing one person, with an increase of 4.4% compared to an average annual increase of 3.3% for microenterprises as a whole. According to ZUS data, the tendency to opt for self-employment (B2B agreements) over more traditional employment contracts has been on the rise, especially as a result of the coronavirus pandemic. In 2021, the proportion of those who were self-employed among all professionally active individuals in Poland was 15.5%, placing the country third in the European Union, behind Greece and Italy. At the same time, only one in five of the self-employed was an employer (ranking the country fifth in the EU alongside Lithuania), while the EU average was almost one in three (Lasocki, 2021). Table 1 presents the main features of microenterprises in Poland in 2021.

Table 1. Features of Microenterprises in Poland in 2021

Feature	2021
Total number of microenterprises	2,355,639
Including the number of microenterprises with 1 employee	1,748,074
Working (as of 31.12)	4,445,189
According to type of accounting records (in %)	
Accounting books	11.5
Tax book of income and expenses	65.6
Revenue records	19.7
Tax card	3.2
Microenterprises by business activity (PKD) section (in %)	
Agriculture, forestry, hunting and fishing	0.4
Industry (sections B–E)	8.8
Construction	15.2
Trade, vehicle repairs	20.1
Services (sections H–S)	55.5

Source: GUS (2022a, pp. 16–17, 22).

In Poland, microenterprises create over 4.4 million jobs, and mainly operate in services and trade (75.6%), construction (15.2%) and industry (8.8%). A vast majority (88.5%) maintain accounting records in simplified form, with most using a tax book of income and expenses (65.5% of all microenterprises). Such a preponderance of microenterprises in the economy is worrying, as the power of the economy is, as a rule, built by larger firms, which are also more innovative and more often make use of digital solutions. This may threaten a wider rollout of digitalisation in the Polish economy, a problem noted by the European Commission, which made support for micro, small and medium-sized enterprises in their digital development a main political priority for the years 2019–2024 (European Union, n.d.). The Digital Single Market Strategy for Europe DSM (European Union, n.d.), the Digital Compass 2030: The European Digital Decade (European Commission, 2021) and the SME Strategy for a Sustainable and Digital Europe assume, among others, a considerable increase in the number of SMEs using digital technologies (European Commission, 2020).

Digitalisation figures prominently in economic policy throughout the world, and many institutions and firms create their own sets of digital indicators in order to make international comparisons (Święcicki, 2022). Analysis of the maturity of the digital economy usually takes into account how digitalisation – the process of using technology and digital tools to conduct economic activity – spreads in individual sectors of the economy (Adamczewski, 2018).

Among the numerous studies that have measured the extent of economic digitalisation, the most frequently cited tool is the Digital Economy and Society Index (DESI), which has been prepared periodically since 2014 by the European Commission. The index focuses on five key dimensions of digital transformation: connectivity, human capital, use of internet services, integration of digital technologies, and digital public services. Alongside Romania, Bulgaria and Greece, Poland ranks poorly on the DESI index. In 2022 (as in 2021), it ranked 24th from among the 27 EU Member States. The overall 2022 DESI index for Poland was 40.5, against an EU average of 52.3 (in 2021, the figures were 41 and 50.7).

The statistics published as a part of DESI regarding the use of ICTs in enterprises contain a great deal of detailed information on various aspects of economic activity. SMEs in Poland are considerably below the EU average for use of digital technology in business. Digital intensity in enterprises is categorised into four levels based on the number of digital technologies implemented, with each technology contributing one point to the overall score: 0 to 3 points: very low digital intensity, 4 to 6 points: low digital intensity, 7 to 9 points: high digital intensity, 10 to 12 points: very high digital intensity. Table 2 presents the results for the digital economy index for Poland and the European Union in the field of integration of digital technologies by enterprises.

Table 2. DESI Integration of Digital Technologies for 2022 – Poland and the European Union (Data from 2021)

Specification	Poland	EU
Integration of digital technology indicators in DESI 2022	22.9	36.1
SMEs with at least a basic level of digital intensity (% SMEs)	40	55
SMEs selling online (% SMEs)	14	18
Selling online cross-border (% SMEs)	5	9
Electronic information sharing (% enterprises)	32	38
Social media (% enterprises)	18	29
Big data (% enterprises)	8	14
Cloud (% enterprises)	19	34
AI (% enterprises)	3	8
E-invoices (% enterprises)	13	32

Source: European Commission (2023).

Around 40% of Polish SMEs achieved at least a low level of the indicator for the use of digital technologies. This came in well below the EU average of 55%. In Poland in 2021, 14% of firms in the SME sector conducted internet sales (13% in 2020), while 5% conducted cross-border sales to other EU countries. The averages for the European Union were higher, at 18% and 9%, respectively. That said, advanced technologies are slowly but steadily becoming popular among Polish enterprises, 19% of which use cloud solutions (*versus* 15% in 2021, and 34% on average for the EU as a whole). Electronic information sharing was used by 32% of Polish firms, while the EU average was 38%. However, only 18% of Polish enterprises actively use social media, and only 3% use artificial intelligence technology in their activity. E-invoices and large datasets are not used widely. In Poland in 2021, 13% of enterprises used e-invoices (the EU average was 32%), and only 8% of enterprises used large datasets, while the European Union average was 14%. This shows that there are gaps in the adoption of new digital technologies, and there is untapped potential among Polish SMEs. Greater effort should be made to increase the use of cloud services, large datasets and artificial intelligence.

The second popular indicator that is used to assess digital advancement is the Digital Intensity Index (DII) developed by the European Investment Bank. This index has a somewhat narrower scope and describes firms' use of digital technologies (digital intensity), access to industrial infrastructure, investment in software and the organisation of digital business processes, the use of strategic digital monitoring systems, and perspectives for further digitalisation. It reflects the degree to which enterprises make use of various digital technologies, as well as the level of economic integration in various sectors of the economy, such as production, financial services, healthcare and retail. As such, the DII can be used to compare the digital strengths

of various countries. It can also identify areas in which further investment in digital technologies is necessary.

The composition of the DII varies in each year the study is conducted depending on the questions used in the research, and thus its comparability over time is limited. The basic level assumes the use of at least 4 of 12 selected digital technologies (e.g. any AI technology, e-commerce at the level of at least 1% of total turnover). The basic level covers entities that have a low, high and very high level, while excluding those with a very low level. In Poland, 55% of micro, small and medium-sized enterprises had a basic level of digital intensity, compared to 88% of large enterprises. Research shows that this discrepancy causes a slowing of digital transformation in the economy (Rückert, Weiss & Revoltella, 2020). Data from 2022 shows that Polish firms are above the EU average in terms of using augmented and virtual reality, artificial intelligence and big data analysis, at the EU average in the use of drones and advanced robots, and below average for 3D printing, the Internet of Things and digital platforms (European Investment Bank, 2023).

4. Research Methodology

Based on a review of the subject literature on the essence and level of the use of digital tools among SMEs in Poland compared to the EU as a whole, empirical research was conducted in order to complement the theoretical considerations. The qualitative research was preceded by field observation in order to understand the real-life circumstances in which selected SMEs operate. The empirical research was conducted in June and July 2023 among 50 firms that were clients of an accounting office. The characteristics of the research sample are presented in Table 3. The qualitative research made use of a study questionnaire prepared in Microsoft Forms, as well as in paper form.

Table 3. Research Sample Characteristics

Entrepreneur Characteristics	Number of Indications $N = 50$	Percentage
Owner's gender		
Female	13	26
Male	37	74
Owner's age		
Up to 25	2	4
From 26 to 35	18	36
From 36 to 45	9	18
From 46 to 60	13	26
Above 61	8	16

Table 3 cnt'd

Entrepreneur Characteristics	Number of Indications $N = 50$	Percentage
Business experience in years		
Up to 10	41	82
From 11 to 15	2	4
From 16 to 19	1	2
20 or more	6	12
Area of activity		
Production	2	4
Construction	10	20
Services	38	76
Legal form		
Self-employed	39	78
Partnership	2	4
Private limited company	9	18
Number of employees		
Sole proprietorship	30	60
Up to 9	9	18
From 10 to 49	10	20
From 50 to 249	1	2

Source: the author.

The link to the questionnaire was sent to 55 enterprises – clients of the accounting office – and an additional eight questionnaires were completed by company owners. A total of 42 entrepreneurs answered the electronic questionnaire, which together with the paper versions gave a total of 50 correctly completed questionnaires.

The enterprises in the study were dominated by microenterprises (78%) conducting activity in the services sector (76%) in the form of a sole proprietorship (78%).

5. Research Results

The results of the survey into the barriers to the digitalisation of SMEs in the surveyed sample are presented in Figures 1–5. In their responses to the first question, the enterprise owners defined their firm's level of digitalisation. Among the study sample, nine firms reported that digital solutions had been implemented in almost every area of the firm's operations, while eight firms indicated that digital

solutions are present in the firm, but that there are still areas that require digitalisation. Of all the firms in the study, 44% (22 firms) had not yet undertaken digitalisation, while 22% (11 firms) had only begun the process (Fig. 1).

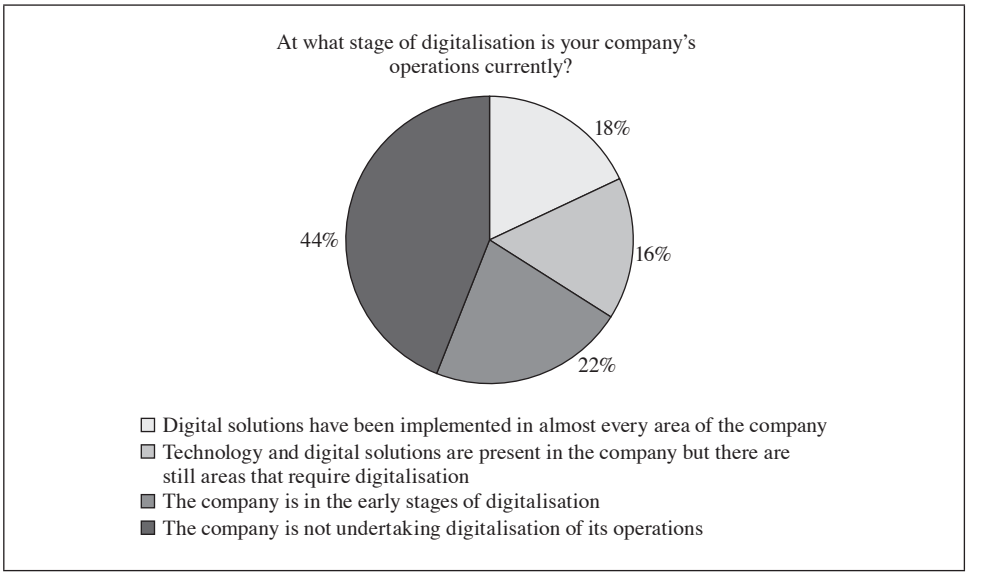

Fig. 1. Stage of Advancement of Digitalisation in Operations
Source: the author.

At this stage of the questionnaire, depending on the answer provided to the first question, the enterprise representatives answered the subsequent sections of the survey, which contained different questions. Those who indicated that they were not undertaking digitalisation were asked to indicate the key factors that had influenced their decision not to do so (Fig. 2).

This part of the questionnaire was completed by 22 enterprises. Among the most common reasons was the belief that the firm functions well without digital solutions (45.6%), lack of orientation of the available solutions on the market and the opportunities they offer (40.9%), the need to investment a great deal of time (36.4%) and lack of competency needed to implement digital solutions (27.3%). These were the key factors influencing the decision not to undertake digitalisation. Such answers were provided respectively by 15, 9, 8 and 6 of 22 firm owners. Five firms, or 22.7% of the study sample, indicated concerns about leaving traces in the digital world as the reason for not using digital tools. These entrepreneurs avoid using digital tools so as not to attract the attention of various administrative bodies and not expose

themselves to inspections. None reported concerns about the low return of investment as a reason for not undertaking digitalisation.

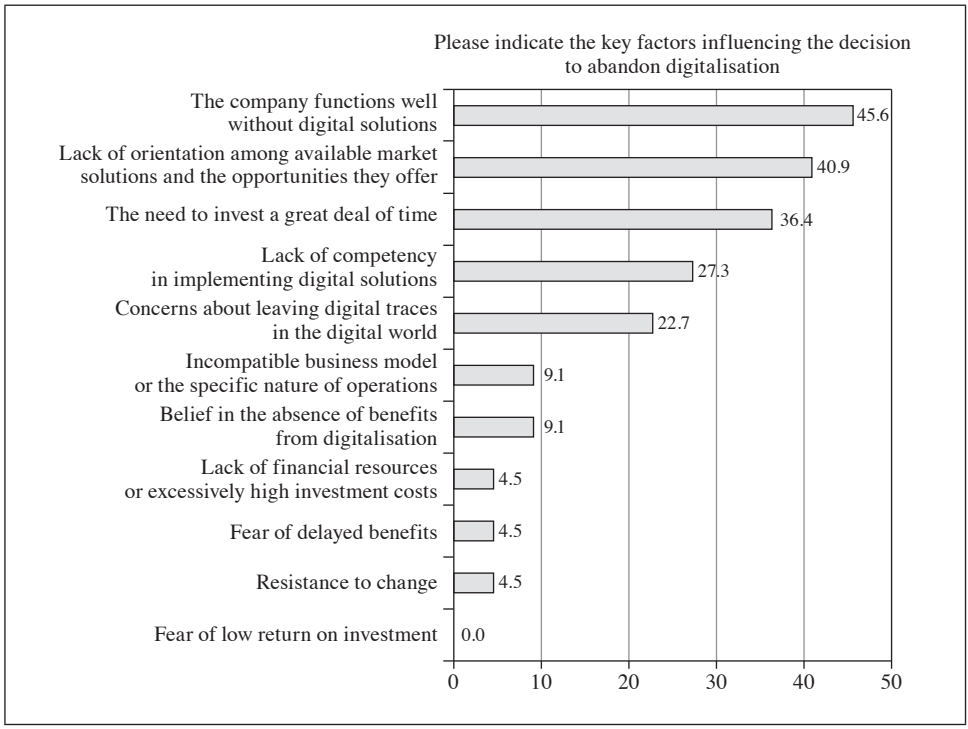

Fig. 2. Factors Influencing the Decision Not to Undertake Digitalisation (in %)
Source: the author.

The next part of the questionnaire was addressed to the 28 entrepreneurs who were undertaking digitalisation (56% of all the firms in the study). The questions related to areas in the firm in which digital technologies were used. Here more than one answer could be chosen. Almost 90% of the entrepreneurs indicated that digital technologies were used in their firm mainly for marketing and customer relations (Fig. 3).

Interaction with suppliers (46.4%), accounting (35.7%) and sales (32.1%) were somewhat less popular in the digitalisation of operations. Only 10.7% of the respondents (three firms) indicated employee communication as an area in which digital technologies were used.

The next question asked the entrepreneurs to indicate specific digital solutions they had implemented. The purchase and use of digital equipment and infrastructure

to equip the firm at a basic level (including computers, photocopiers and scanners) was the most common response. 100% of firms selected this answer (Fig. 4).

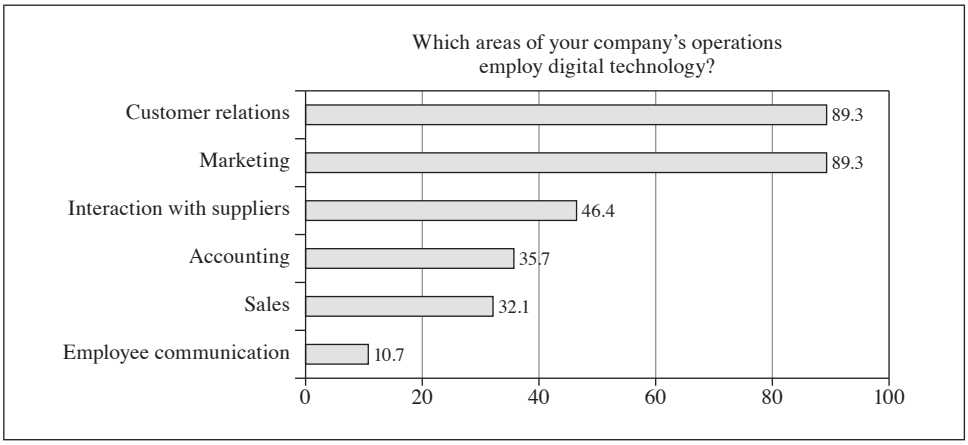

Fig. 3. Areas of the Firm's Operations in Which Digital Technologies Are Used (in %)
Source: the author.

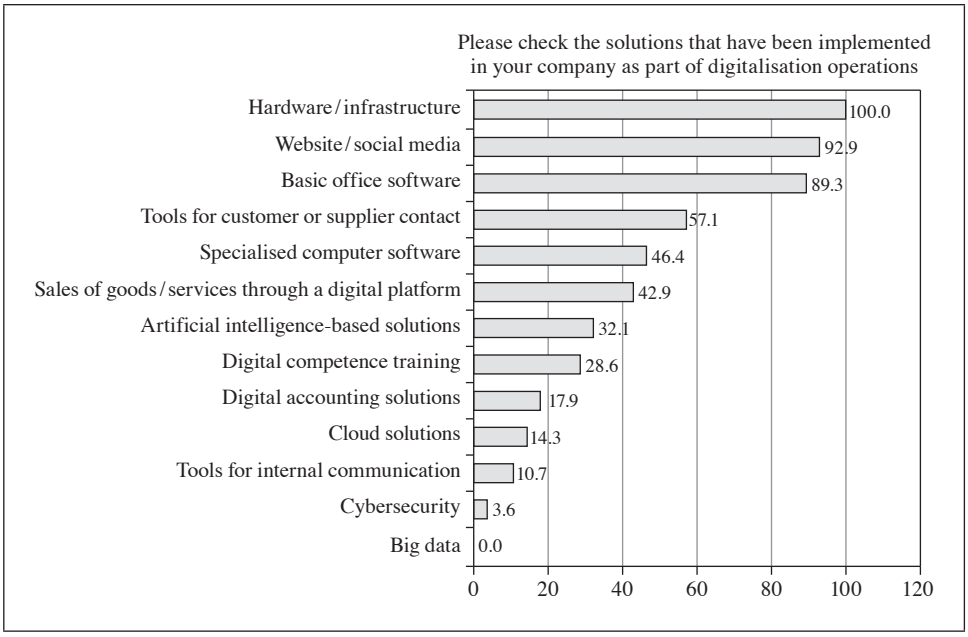

Fig. 4. Digital Solutions Implemented in the Firm (in %)
Source: the author.

92.9% indicated that their firm has its own website, social media feed, or information in browsers. Almost 90% indicated that they use basic office software. 57.1% use digital technologies for contacting customers, while 42.9% sell goods and services via a digital platform. A large gap was noted between these solutions and more advanced ones. Nine firms (32.1%), mainly in the real estate sector, use solutions based on artificial intelligence. Real estate firms also use various applications that employ augmented and virtual reality to generate graphic material such as visualisations, virtual walks and 3D models. Advanced digital solutions including big data were not used in the firms involved in the study.

As regards the most significant barriers to firms implementing digital solutions, four firms (14.3%) indicated that they had no barriers to implementing such solutions (Fig. 5).

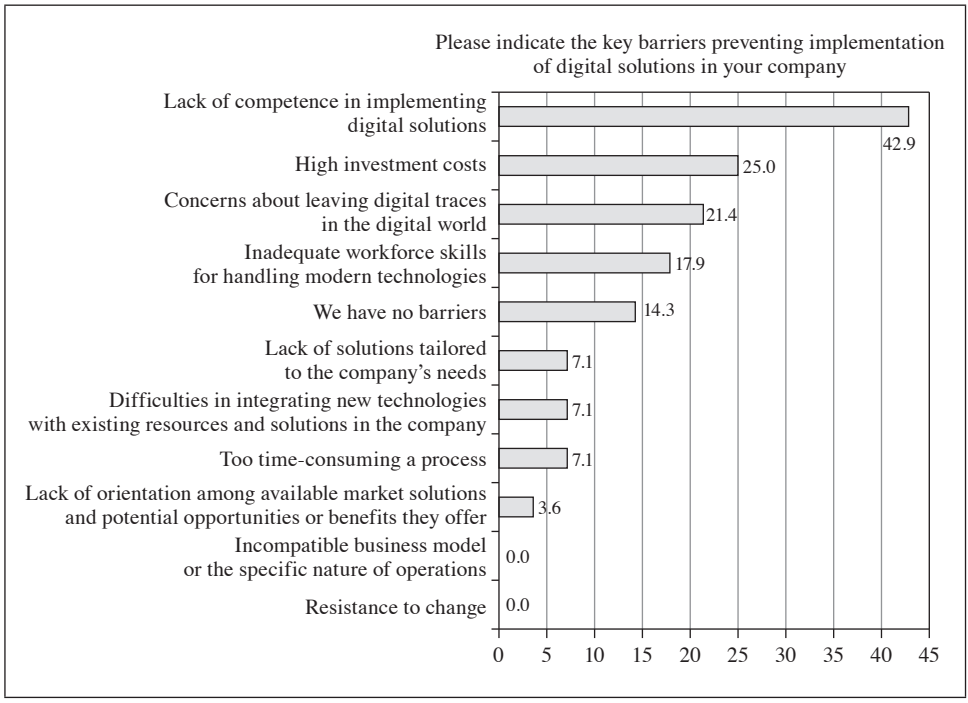

Fig. 5. Barriers Hindering Firms' Implementation of Digital Solutions (in %)
Source: the author.

42.9% lack the competence to implement digital solutions. 25% of the firms saw excessive investment costs as the main barrier to digitalisation, while six firms (21.4%) indicated concerns about leaving traces about the firm's operations

in the digital world. Among the remaining answers were inadequate workforce skills for handling modern technologies (17.9%), excessively time-consuming process, difficulties in integrating new technologies with existing company resources and solutions, and lack of solutions tailored to the needs of the firm. None of the entrepreneurs indicated resistance to change, or an incompatible business model or specificity of operations as barriers hindering the implementation of digital solutions. The research covered only a small percentage of the enterprises in the Dolnośląskie voivodeship; however, it can serve as an example of the general state of digitalisation in Poland and its prospects for development.

6. Conclusions

Digitalisation is changing the world and people's lives. Micro, small and medium-sized enterprises are of key importance, as such firms are numerous and, as a whole, provide employment to huge numbers of people. That said, the research results presented here are based on a purposive sample of 50 SMEs, and therefore cannot be generalised to the entire population of Polish SMEs.

Research analyses of the DESI indicator results and the digital advancement Digital Intensity Index developed by the European Investment Bank paint a picture of digitalisation among micro, small and medium-sized enterprises in Poland. Unfortunately, digitalisation in this sector remains low, which is a serious challenge for the development of the digital economy in the country. Polish SMEs use digital solutions less than the EU average. Moreover, the use of advanced solutions has not been encouraged, leaving basic equipment and software for supporting daily tasks and duties the main area of digitalisation addressed.

The integration of digital technologies with marketing practices is essential for SMEs to improve customer relations, enhance marketing effectiveness, and boost business performance (Pergelova *et al*., 2018). Nearly 90% of enterprise owners in our study sample indicated that they use digital technologies primarily for marketing and customer relations. This is supported by the literature, where digital platforms play a crucial role in enhancing customer interactions, facilitating marketing activities, and expanding market reach for SMEs (Nazaruddin, Utami & Rahmawati, 2024). Adopting digital marketing channels, such as search engine marketing and social media marketing, can optimise business performance among SMEs (Kurniawan, Logaiswari & Umar, 2023).

The research provides valuable conclusions both on the reasons digitalisation has not been undertaken and the factors hindering the further development of digital solutions once they have been implemented. A main takeaway is that many owners felt their firms functioned well without digital solutions, so existing business processes can be said to be effective in their current form. Firms have opted not to

undertake digitalisation due to a lack of knowledge of the digital solutions available on the market, the fact that implementing digital solutions is time-consuming, and the lack of clarity as to how such solutions may benefit users.

The main barriers to digitisation among the Polish SMEs surveyed include a lack of competence (42.9%), high investment costs (25%), and concerns about leaving digital traces (21.4%). These findings are consistent with those of Uzule and Verina (2023), who also emphasised the importance of digital competence gaps and the challenges of integrating new technologies as major obstacles in the transformation of businesses. Additionally, our research confirms the observations of Pergelova *et al*. (2018) and Nazaruddin, Utami and Rahmawati (2024), who highlight the crucial role that education and support in data security play in overcoming barriers to digitalisation.

It is surprising but important that 14.3% of the firms that had already started their digital transformation declared that they had not faced any barriers in the process of implementing digital solutions. This indicates that some enterprises are already well prepared for digitalisation. However, 85.7% of the firms recognise clear barriers to further digitalisation, a fact which must be addressed. As barriers hindering further progress in the digitalisation of their operations, enterprises indicate a lack of suitable competences, high investment costs, as well as concerns about leaving traces in the digital world and being exposed to various types of inspection. The latter is of key importance, as it reveals a need to ensure an appropriate level of data security and privacy protection in the digitalisation process. There is also a need for education and support in the field of digital competencies, as well as education among the owners of the surveyed small firms as to the benefits stemming from digitalisation. At the same time, appropriate data and privacy protection must be ensured so as to encourage entrepreneurs to safely implement digital solutions.

In conclusion, the main barriers preventing SMEs from digitalising include financial constraints, organisational barriers, lack of skilled personnel, reluctance to invest in digital technologies, and challenges in measuring the return on digital investments. Overcoming these barriers is crucial for SMEs to successfully navigate the digital transformation process and leverage the benefits of digital technologies for their growth and competitiveness. This study underscores the importance of providing targeted support and training for SMEs to enhance their digital capabilities. Future research could focus on developing specific strategies and frameworks to assist SMEs in overcoming these obstacles and fully embracing digitalisation. The results, while informative for the sample studied, should be interpreted cautiously and may not be representative of the entire SME sector in Poland. Nonetheless, the findings can serve as useful empirical material for diagnosing the situation in the SME sector, in particular for the purposes of regional innovation strategies and regional promotional programmes.

Conflict of Interest

The author declares no conflict of interest.

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