Viacheslav Makedon*

Doctor of Economics, Associate Professor
Oles Honchar Dnipro National University
49010, 72 Nauky Ave., Dnipro, Ukraine
https://orcid.org/0000-0001-8131-0235

Dmytro Koptilyi

PhD in Economics, Deputy Director
Flight Control Limited Liability Company
49170, 115 Nauky Ave., Dnipro, Ukraine
https://orcid.org/0009-0004-7390-8746

Digital transformation and artificial intelligence as factors in the economic recovery of enterprises following armed conflicts

Abstract. Digital transformation and the introduction of artificial intelligence present new opportunities for the recovery and gradual development of economic activity in small enterprises, enhancing their ability to respond to post-war challenges and utilise innovative technological solutions more effectively. The purpose of the study was to assess the impact of digital tools and artificial intelligence on the economic recovery of small enterprises in the post-conflict period. To collect data, a structured online questionnaire was developed, comprising six sections addressing various aspects of digital transformation in small enterprises. The questions covered the extent of digital technology adoption, the types of tools utilised, key barriers to digitalisation, and the impact of digital transformation on the economic recovery of enterprises. Correlation and regression analysis of the responses enabled an evaluation of the statistical relationship between digital technology adoption and the recovery of economic activity in businesses. The majority of the 50 small retail enterprises surveyed in the Kyiv region actively employ digital tools, including online stores, mobile applications, artificial intelligence, and cloud technologies, indicating a high level of adaptation to contemporary business conditions. However, the study uncovers that innovative solutions such as ERP systems and blockchain technology are implemented less frequently, suggesting the need for resources and technical support. Correlation analysis confirmed a moderate positive relationship between the extent of digital technology adoption and the economic recovery of enterprises, reinforcing the importance of innovative solutions in ensuring business stability and development in times of economic challenges. The findings of this study may be valuable to governmental bodies and state institutions involved in shaping policies to support the digitalisation of small businesses and enterprises considering investments in new technologies

Keywords: cloud technologies; blockchain technologies; mobile applications; chatbots; information technologies

INTRODUCTION

In 2025, small businesses face challenges, including escalating conflicts, military actions, economic instability, market demands, and the need to ensure sustainable growth. As many businesses are forced to suspend operations due to warfare, the issue of restoring their economic activity becomes paramount. However, these challenges also present new opportunities for transformation through the adoption of digital technologies, including artificial intelligence (AI). Gradually, technological advancements are reshaping conventional business approaches, providing

Suggested Citation:

Makedon, V., & Koptilyi, D. (2025). Digital transformation and artificial intelligence as factors in the economic recovery of enterprises following armed conflicts. *Economics, Entrepreneurship, Management*, 12(1), 33-48. doi: 10.56318/eem2025.01.033.

*Corresponding author

small enterprises with new tools to enhance their efficiency, particularly in the face of uncertainty in internal and external environments and in emerging markets. In the post-conflict period, solutions based on digital tools and AI contribute to the accelerated recovery of businesses by facilitating demand forecasting, optimising supply chains, and developing personalised customer interaction strategies. Moreover, the accessibility of these technologies enables even small businesses with limited resources to implement them, fostering equal opportunities for recovery and development. The integration of such technologies allows small enterprises to mitigate the consequences of economic shocks and lays the foundation for sustainable growth in a new economic reality.

According to Eurostat (2025), only 8% of businesses in the EU had adopted AI technologies in their operations in 2023, while more than 30% of large companies, primarily in the information and communication sector, had implemented them. This indicates that, although these technologies are gaining traction, their adoption remains relatively limited across businesses. IT companies, telecommunications providers, and other organisations engaged in software and hardware development, data security solutions, and e-commerce are typically the first to implement technological innovations and automate processes. Consequently, these enterprises have greater opportunities to integrate AI to enhance service efficiency and operational effectiveness, including through the implementation of energy efficiency management (Makedon *et al.*, 2019).

The relevance of digital transformation and AI adoption in the context of post-conflict economic recovery lies in their potential to optimise processes, improve efficiency, and accelerate business restoration. Research on digital transformation and its role in business recovery after crises, particularly military conflicts, explored various aspects of this complex issue. For instance, V. Voronkova *et al.* (2024) examined the conceptual foundations for developing human resource strategies in industrial enterprises. Their study focused on improving management efficiency in the context of complex socio-technological interactions within industrial companies. Furthermore, R. Stepanenko (2024) highlighted the priorities and risks associated with digital transformation. His study is closely intertwined with the work by O. Chorna (2022), who focused on the regulatory aspects of transitioning businesses to the digital economy. O. Chorna emphasised the need to refine legislative frameworks to support digital initiatives.

N. Yevtushenko & D. Stetsenko (2024) examined the impact of the war in Ukraine on the business environment, highlighting the opportunities that digitalisation offers businesses even in times of crisis. Their findings are supported by V. Tyshchenko *et al.* (2024), who analysed the role of digital technologies in the recovery of affected regions, demonstrating their importance in the development of new infrastructures. H. Mykhalchenko *et al.* (2023) complemented these findings with research on crisis management in wartime conditions. Meanwhile, N. Kholiavko *et*

al. (2024) explored the impact of innovative digital technologies, such as programming interfaces, the Internet of Things, blockchain, and cloud computing, on the recovery of Ukrainian universities, emphasising the role of artificial intelligence in the personalisation of learning and the improvement of educational services.

C. Li & Y. Wang (2024) argued that the level of corporate governance determines the extent to which digital transformation contributes to business resilience; the higher the level of corporate governance, the greater the impact of digital transformation on resilience. G. White & S. Liptak (2024) investigated the use of artificial intelligence in the development of business continuity plans for small enterprises. Their conclusions align with the predictive asset maintenance model proposed by J Chen *et al.* (2021) for crisis scenarios, particularly in the post-pandemic period following Covid-19. Furthermore, R. Martín-Rojas *et al.* (2023) underscored the importance of digitalisation tools in supporting the resilience of small and medium-sized enterprises, particularly in the aftermath of the pandemic.

Thus, studies on digital transformation in businesses encompassed a wide range of aspects, from managerial and regulatory considerations to innovative technologies. These studies provided insights into how digital solutions contribute to recovery and long-term business resilience in times of crisis. However, gaps remain concerning the use of digitalisation tools and artificial intelligence to restore small enterprises' economic activity, specifically in the aftermath of military conflicts. Accordingly, the purpose of this study is to assess the impact of digital tools and artificial intelligence on the recovery of small enterprises' economic activity during and after military conflicts. The research objectives are as follows:

1. To describe the current state of digital transformation worldwide, including its key advantages and limitations.

2. To assess the level of adoption of digital tools and artificial intelligence among small enterprises in the Kyiv region of Ukraine.

3. To determine the relationship between the adoption of digital technologies and the recovery of economic activity among enterprises in the Kyiv region of Ukraine.

MATERIALS AND METHODS

For this study, ten small enterprises engaged in retail and wholesale trade in the Kyiv region were selected. The names of these enterprises are not disclosed to ensure the confidentiality of the collected data. This measure is necessary to uphold ethical research standards, protect the commercial information of the enterprises, and prevent external factors from influencing their operations. Instead, the data were analysed in an aggregated manner, allowing the study to focus on identifying general trends and challenges in the retail and wholesale trade sectors in the Kyiv region without compromising the rights of the research participants. The selection of small enterprises was driven by their

ability to rapidly adapt to changes and implement new digital technologies and artificial intelligence, which is crucial for business recovery following military conflicts. The Kyiv region was chosen due to its economic importance, the presence of a large number of small enterprises, and the diversity of conditions, which enables a representative sample from different parts of the region. Retail and wholesale trade were selected for their vital role in post-conflict economic recovery, as these sectors directly impact the supply of goods, price stability, and the provision of essential consumer needs. Moreover, these industries are actively adopting digital technologies that enhance operational efficiency in post-conflict recovery settings.

A structured online questionnaire comprising 16 questions was developed to assess the use of digital technologies and artificial intelligence in enterprises following the cessation of active hostilities in early 2022 (Table 1).

The respondents in this study were primarily individuals in managerial positions within small enterprises, including business owners, directors, and mid-level managers. Contact with respondents was established through official company communication channels, such as email. Prior to participation, all respondents were informed about the study's objectives, the conditions of their participation, and the fact that their responses would be used exclusively in an aggregated format. No information that could identify individual respondents or enterprises will be disclosed in the public domain. This approach ensures adherence to confidentiality and ethical principles in research. Respondents were asked to assess the level of adoption of various digital technologies, including online stores, Customer Relationship Management (CRM) systems, Enterprise Resource Planning (ERP) systems, process automation, artificial intelligence, chatbots, and mobile applications.

Table 1. Questionnaire for surveying enterprises on the use of digital technologies
and artificial intelligence for the recovery of economic activity following military conflicts

No.	Question	Answer
	Information about enterprises	
1	Company name	
2	Number of employees	
3	Field of activity (wholesale or retail trade)	
4	Location (city, region)	
	Digital technologies at the enterprise	
1	Assess the level of use of digital technologies at the enterprise	1 (low) / 2 / 3 / 4 / 5 (high)
2	How often are digital technologies used in your business?	1 (never) / 2 / 3 / 4 / 5 (often)
3	Which of the following digital technologies do you use at your company? (Select all that apply)	Online stores CRM systems ERP systems Artificial intelligence Chatbots Mobile applications Blockchain Cloud technologies Others (specify)
4	How do you assess the impact of digital technologies on the efficiency of your enterprise	1 (minimum) / 2 (medium) / 3 (maximum)
5	What impact did digital technologies have on your company in the process of economic recovery after the war?	1 (insignificant) / 2 / 3 / 4 / 5 (significant)
	Knowledge and training	
1	What is the level of digital knowledge of your employees?	1 (low) / 2 / 3 / 4 / 5 (high)
2	Do you conduct training for employees on the implementation of new digital technologies?	Yes No
	Factors of implementation of digital technologies	
1	Which of the following factors contributed to the implementation of digital technologies at your company? (Select all that apply)	Market needs Competition Cost reduction Increasing efficiency Improving the quality of customer service Others (specify)

Table 1. Continued

No.	Question	Answer
	Problems of implementing digital technologies	
1	What problems arose during the implementation of digital technologies? (Select all that apply)	High implementation costs Insufficient level of knowledge and qualifications of employees Technical problems (incompatibility, failures) The need for constant support and updating Lack of necessary resources Others (specify):
	Prospects for the use of digital technologies	
1	How do you assess the prospects for the use of digital technologies in your field of activity?	1 (unprofitable) / 2 / 3 / 4 / 5 (profitable)
	Additional comments	
	Your suggestions or comments for improving the process of implementing digital technologies in the enterprise	

Source: developed by the authors

In addition, the questionnaire included questions on the effectiveness of implementing these technologies and their impact on business recovery after the conflict. It also examined the factors influencing the adoption of digital technologies and the challenges faced by enterprises. Analysis of Variance (ANOVA) was applied to assess differences between groups of enterprises based on their level of digital technology and artificial intelligence usage (Ståhle & Wold, 1989). The study adhered to the ethical and data protection guidelines outlined by the European Commission (2021). Accordingly, respondents were provided with clear assurances that their data would be used exclusively within the scope of this study and would not be disseminated or used in other contexts. Each participant was informed that their personal data would not be shared with third parties and that the survey results and collected data would be used solely for the preparation of this manuscript. This ensured a high level of confidentiality and compliance with ethical standards.

At the initial stage, the primary research objectives were defined, the study design was developed, and data collection instruments were prepared. A correlational method was chosen to analyse the impact of digital technologies and artificial intelligence on the recovery of economic activity in enterprises following military conflicts. It was decided to employ ANOVA to examine statistical differences between groups of enterprises concerning their adoption of digital technologies and artificial intelligence and their impact on the recovery process. Moreover, the questionnaire structure was developed for data collection.

During the second stage of the study, data were gathered through a survey method. Each enterprise completed an online questionnaire in which respondents assessed the extent of their use of digital technologies, including artificial intelligence and their impact on business recovery following military conflicts. The questionnaire included questions addressing various aspects of digital technology usage, the factors driving adoption, the challenges faced by enterprises, and plans for digital transformation.

At the final stage, an analysis of the collected data was conducted. A correlation-variance analysis using ANOVA was performed to evaluate statistically significant differences among enterprises based on their level of digital technology and artificial intelligence adoption and their impact on business recovery. To assess respondents' perceptions of digital technology implementation, a five-point Likert scale was employed, allowing respondents to rate the level of digital technology adoption and its impact on business recovery on a scale from 1 to 5 (1 – "minimal", 5 – "maximum") (de Winter & Dodou, 2010).

RESULTS

As of 2025, digital technologies have become a key factor in enterprise development, transforming conventional approaches to business process management. They serve not only as tools for automation but also as platforms for creating new opportunities. The survey results are presented in Table 2.

Digital transformation means the introduction of digital technologies to transform business processes and services from a traditional, non-digital format to a digital one. This includes transferring data to the cloud, using technological devices and tools for communication and collaboration, and automating processes. Global digital transformation spending is projected at USD 3 billion in 2025, and by 2027, this figure could reach USD 3.9 trillion (Fig. 1). The main driver of the growth of digital transformation is the COVID-19 pandemic, which greatly accelerated the pace of digital change in companies around the world in 2020. Although the pandemic is over, remote work has remained and even gained popularity in many organisations, which was an additional impetus for further digitalisation.
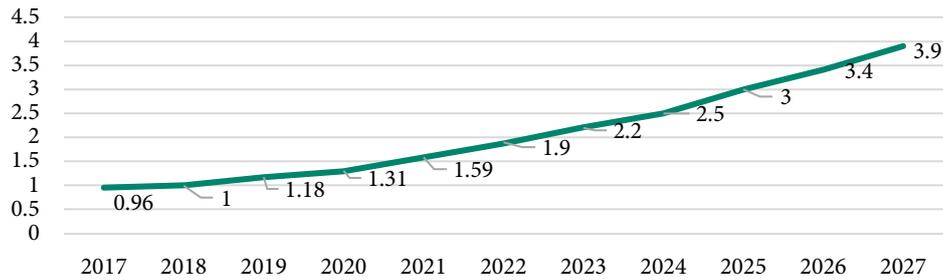
Table 2. Survey results

Enterprise	Enterprise 1	Enterprise 2	Enterprise 3	Enterprise 4	Enterprise 5	Enterprise 6	Enterprise 7	Enterprise 8	Enterprise 9	Enterprise 10
Level of digital technology adoption (1-5)	4	3	5	4	5	4	5	3	4	4
Frequency of digital technology usage (1-5)	4	3	5	2	4	3	5	2	4	5
Types of digital technologies employed (e-commerce platforms; CRM systems; ERP; artificial intelligence; chatbots; mobile applications; blockchain; cloud technologies)	CRM systems; e-commerce platforms; mobile applications; chatbots; cloud technologies	ERP systems; artificial intelligence; cloud technologies	artificial intelligence; CRM systems; e-commerce platforms; chatbots; cloud technologies	CRM systems; chatbots; artificial intelligence; cloud technologies	e-commerce platforms; artificial intelligence; mobile apps; blockchain; cloud technologies	ERP systems; artificial intelligence; chatbots; cloud technologies	artificial intelligence; online stores; blockchain; CRM systems; cloud technologies	CRM systems; mobile applications; artificial intelligence; cloud technologies	e-commerce platforms; ERP systems; CRM systems; chatbots; artificial intelligence; cloud technologies	e-commerce platforms; artificial intelligence; chatbots; cloud technologies
Perceived impact of digital technologies on enterprise efficiency (1-3)	3	2	3	1	3	2	3	1	3	3
Impact of digital technologies on economic recovery (1-5)	5	4	5	3	4	3	5	2	4	5
Level of knowledge about digital technologies (1-5)	4	3	5	2	4	4	5	3	4	5
Digital learning (Yes/No)	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No

Table 2. Continued

Enterprise	Factors driving digital technology adoption	Challenges in digital technology adoption	Prospects of digital technologies (1-5)	Additional comments
Enterprise 1	Market demand; competition; innovation	Integration costs; lack of skilled personnel; absence of governmental support	5	Increased technical support is required
Enterprise 2	Process optimisation; service improvement; reduction of human error	High implementation costs; limited access to high-speed internet	4	More active monitoring is needed
Enterprise 3	Innovation; expansion of customer base; data management simplification	Technical difficulties; shortage of specialists	5	Assistance with data analysis is required
Enterprise 4	Cost reduction; service efficiency; enhanced competitiveness	Increased costs; insufficient experience; challenges in integrating new technologies	3	Additional support is necessary
Enterprise 5	Process enhancement; increased efficiency; need for rapid solutions	System integration; lack of technical resources	4	Staff training is essential
Enterprise 6	Improved communication; competition; workflow enhancement	Market instability; need for infrastructure upgrades	4	Process stability is required
Enterprise 7	Innovation; service improvement; expansion of customer base	Implementation costs; integration with existing systems; data security concerns	5	Technical support is needed for further development
Enterprise 8	Management simplification; need for data analysis; market expansion	Low personnel qualifications; Internet connectivity issues	3	Assistance is required for adaptation
Enterprise 9	Need for digitalisation; financial process improvement; cost reduction	Integration costs; technical difficulties	5	Consideration of additional resources is necessary
Enterprise 10	Enhanced competitiveness; market expansion; service improvement	Implementation costs; integration complexity; data security concerns	5	Expansion of technical support is crucial

Source: developed by the authors

Figure 1. Global spending on digital transformation technologies and services
Notes: period – from 2017 to 2027; in USD
Source: compiled by the authors based on A. Sherif (2024)

Other factors include growing demand from consumers and the need to compete with other businesses. In general, the introduction of digital transformation technologies allows organisations to become more flexible in response to changes in the market and promotes innovation, which increases their resilience to external challenges. For a substantial part of entrepreneurs, the war was a kind of impetus for rethinking and improving tools for optimising and automating business processes. Many enterprises that previously managed with minimal technical means began to consider the need to automate and ensure the sustainability of their business processes for the first time, given the new challenges associated with threats of shelling, damage to infrastructure, and regular power outages. Table 3 systematises the advantages and potential risks of using digital technologies in small businesses.
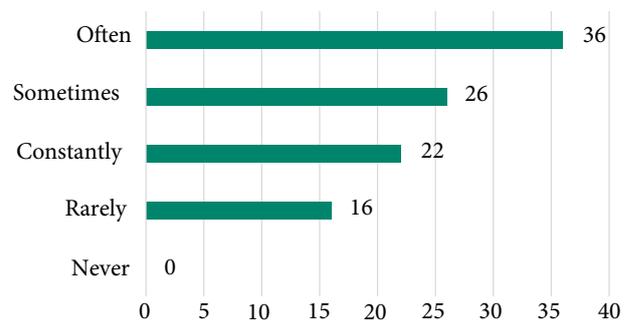
The use of digital technologies allows small businesses to seriously improve the efficiency of their operations, reduce costs, and enhance customer service. Technologies such as artificial intelligence, cloud platforms, and CRM systems help automate routine processes, and blockchain provides a high level of security and transparency in financial transactions. Thereby, the implementation of such technologies can be complex and require considerable financial and human resources, as well as a careful approach to ensuring data security and adapting to specific business needs.

A study conducted by International Business Machines Corporation (2022) showed global trends in the introduction of artificial intelligence in business practice. Globally, 35% of companies have already integrated AI into their operations, and 44% of them plan to implement these technologies in the future. This shows that artificial intelligence is gradually becoming the standard in some industries (automotive industry, financial sector), providing not only increased efficiency but also improved strategic decision-making.

According to International Business Machines Corporation (2022), there is also a division by company size: more than 50% of large companies with more than 5,000 employees already use AI, which is a clear indicator that large corporations are actively implementing these technologies to optimise business processes. 25% of small businesses also use artificial intelligence, although in smaller volumes, which indicates the availability of technologies even for

small businesses. AI technologies are most often used in manufacturing, information services, and healthcare (12%). In construction and retail, this figure is lower – only 4%.

In 2025, in Ukraine, due to the long war, small businesses act as a certain driver of economic stability and state development. One of the key areas of adaptation and survival of enterprises in these conditions is the introduction of digital technologies that allow not only to reduce costs and increase efficiency but also to ensure flexibility and competitiveness in the market. Figure 2, based on Table 2, shows the frequency of use of digital technologies by small enterprises of the Kyiv region that took part in the survey.

Figure 2. Frequency of use of digital technologies by 50 small businesses in the Kyiv region, %
Source: developed by the authors

The graph in Figure 2 shows that of the 50 small businesses operating in the retail and wholesale trade sector in the Kyiv region, the majority (58%) actively use digital tools. This demonstrates their desire for change and the introduction of new technologies in their activities. This level of digitalisation helps optimise business processes, improve customer service, and manage resources efficiently, which are important factors for ensuring stability and competitiveness in a long-term war. Thereby, about 26% of enterprises use digital solutions only sometimes, which may be due to limited resources, insufficient technical support, or lack of information about the capabilities of digital technologies. Another 16% of respondents reported rarely using such solutions, which indicates that barriers to their wider implementation exist. This calls into question

Table 3. Advantages and potential risks of using digital technologies in small businesses

Digital technology	Description	Advantages for small businesses	Application examples	Potential risks or limitations
Artificial intelligence	A technology that analyses large amounts of data and makes decisions based on algorithms.	Process optimisation, cost reduction, trend forecasting, and automation of routine tasks.	Sales analysis, demand forecasting, and automation of request processing. Artificial intelligence, in particular ChatGPT in version 4.0, performs the functions of a personal assistant. Although it is not able to completely replace real assistants, its capabilities make it easier to perform a variety of tasks. AI requires initial training, but then adapts to the specific needs of the user, analyses situations, and offers solutions that consider what will be acceptable to the customer and what will not. Due to this, it can be configured as much as possible according to individual requirements.	Paid subscription to GPT-4o. The need for staff training, the complexity of developing algorithms.
Cloud technologies	Technologies for storing and processing data on remote servers.	Reducing IT infrastructure costs, accessing data at any time and from any device, lowering the risk of data loss.	Cloud technologies are divided into three main types. Infrastructure as a service (IaaS) leases virtual resources, such as servers and storage (for example, Amazon Web Services, Microsoft Azure). Platform as a service (PaaS) allows developers to create and deploy applications on a ready-made platform (Google App Engine, Heroku). Software as a service (SaaS) provides access to applications through a subscription without the need for installation (Google Workspace, Microsoft 365, Dropbox).	Dependence on the internet connection, risks of failures in the operation of cloud servers, privacy issues.
Blockchain technologies	A decentralised system for storing data and conducting transactions.	Increasing transparency, security of financial transactions, protection against fraud.	Common in the world: Ethereum is mainly used for developing smart contracts and decentralised applications. Quorum is used to minimise the risk of data falsification during transactions. Hyperledger Fabric is used to develop enterprise applications that meet the needs of organisations in various industries. Multichain is a universal blockchain platform for various business areas (finance, education, retail, HR management).	Implementation complexity, limited by a lack of specialists, and high implementation costs.
Mobile apps	Software for smartphones and tablets that provides specific functionality.	Facilitating customer interaction, accessing services and products, and automating tasks from anywhere.	Online stores, mobile payment systems, logistics management.	High competition in the mobile app market, the need for constant updates for compatibility with new operating systems. On average, high-quality support and maintenance ranges from USD 1,500 to 2,500 per month.
Chatbots	Software agents for automatic interaction with clients via text or voice.	Improving communication with customers, 24/7 availability, saving resources on user support.	Automation of responses to customer requests, conducting marketing campaigns.	The ability to process complex requests is limited, and there is a necessity for periodic configuration to adapt to new needs. The cost of developing and implementing 1 chatbot is at least USD 300.
CRM system	A tool for managing customer relationships and analysing data about them.	Sales increase, interaction personalisation, customer behaviour analysis.	Tracking purchase history, managing customer requests, and analysing campaign performance. Common systems: Bitrix24, AmoCRM, Zoho CRM, Salesforce, Pipedrive, InSales.	Paid subscription. Complexity of adaptation to business specifics, need for staff training, risks of data loss in case of technical failures.
ERP system	Comprehensive enterprise resource management software.	Centralised data management, process coordination, cost reduction, and improved management efficiency.	Automation of accounting, warehouse management, production planning. Microsoft Dynamics ERP, SAP ERP, DeloPro, Galaktika ERP, Oracle ERP, BAS ERP, Perfectum, Onebox ERP (+CRM), Endnext, and FS Applications are common in Ukraine.	High implementation cost (about USD 7,500), the need for long-term configuration, difficulty in integrating with existing systems.

Source: developed by the authors

the possibility of ensuring a uniform economic recovery without additional measures to train personnel, finance digital initiatives, and build infrastructure.

Small businesses, according to the survey (Fig. 3), mainly use online stores (88% of enterprises), which helps expand sales channels and attract customers via the Internet. In Ukraine, the most popular platforms for online sales are Prom.ua, OLX, and Rozetka. The Prom.ua platform unites thousands of stores and private sellers, offering automation of business processes through CRM systems. OLX is a convenient platform for buying and selling new and used products without intermediaries, with an emphasis on speed and ease of interaction. Rozetka is a marketplace with a wide range of integrated CRM systems to optimise business and improve customer experience.
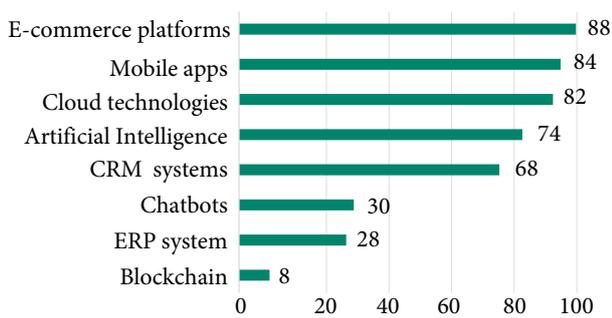
Figure 3. Distribution of digital technologies used by 50 small businesses in the Kyiv region, %
Source: developed by the authors

Most often, businesses use mobile applications of the above-mentioned trading platforms (84% of businesses), which adds convenience to customer interaction. Cloud technologies (Google Drive) are used by 82% of enterprises, storing and processing data with flexible access and without physical infrastructure costs. Artificial intelligence is used by 74% of enterprises, mainly to automate processes and analyse data, in particular, to develop personalised

product recommendations based on customer purchase analysis, automate order processing, and predict demand for inventory management. Artificial intelligence helps create product descriptions with their preferences.

CRM systems are used by 68% of enterprises, which indicates an interest in automating customer relationship management. Popular CRM systems are Bitrix24, which offers a wide range of tools for managing tasks and interacting with customers, and AmoCRM, which is focused on the convenience of working with the customer base. Zoho CRM and Salesforce are popular among companies due to their versatility. Pipedrive focuses on the automation of sales, and "Khoroshop", due to affordable subscription prices is available for small businesses. Chatbots are used in 30% of businesses, reflecting the use of this technology to improve customer service. ERP systems are used by 28% of enterprises, which indicates a growing need for integrated resource management. Blockchain is identified in only 8% of enterprises, which indicates its limited use among small enterprises in the Kyiv region. In the conditions of war, small businesses in the Kyiv region act as an important economic front that ensures not only economic stability but also support for the state budget through taxes.

Analysing the factors that influence the adoption of digital technologies in small businesses allows to understand what motivations guide entrepreneurs in choosing digital technologies to improve their business processes. In particular, these may include factors such as reducing costs, improving efficiency, facilitating business processes, innovation, improving customer service, and expanding the market. In the context of war and a difficult economic situation, enterprises are looking for opportunities to maintain stability, optimise resources and quickly adapt to changing conditions. Figure 4 shows the factors that contributed to the introduction of digital technologies among 50 small businesses in the Kyiv region. The main factors driving this step are lower costs, supplemented efficiency, improved customer service, and increased competitiveness.
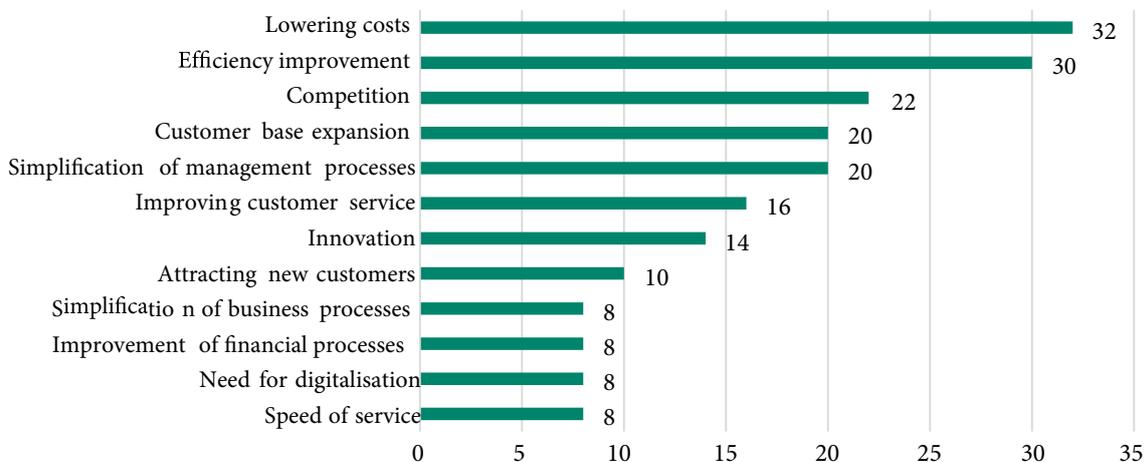
Figure 4. Factors that contributed to the introduction of digital technologies at 50 small businesses in the Kyiv region, %
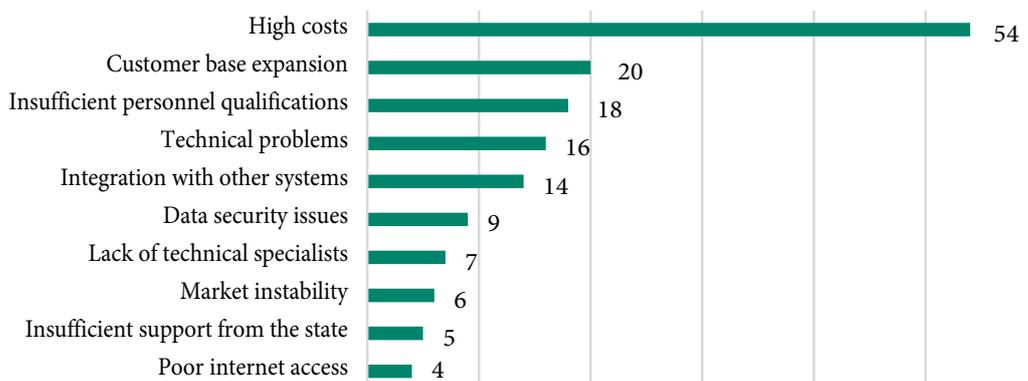**Source:** developed by the authors

Cost reduction – this factor is present in almost half of enterprises, which indicates the desire of businesses to optimise costs, especially in the context of economic instability caused by the war. For small businesses, it is important to reduce the cost of production and administrative processes, which allows maintaining profitability. Improving efficiency is the second most important factor that indicates the desire of businesses to improve their internal processes and reduce the time spent on completing tasks. Competition is important for 22% of enterprises and reflects the need to maintain the occupied market niche.

Every fifth enterprise notes the importance of facilitating its business processes, especially managerial ones, which allows levelling the human factor and reducing the likelihood of mistakes. Digital technologies provide for automating routine operations, which helps to reduce the time and resources spent on their implementation. The expansion of the market and customer base indicates the strategic intentions of enterprises to expand their presence

in the market and attract new customers. In a wartime environment where physical sales channels may be limited, digital tools help find new growth opportunities (Liutak & Baula, 2024). However, only 14% of businesses seek to use digital technologies to offer customers new solutions. This allows them to maintain competitiveness and simultaneously create new business models.

The introduction of digital technologies in small businesses faces many challenges that greatly hinder the process. The main one is the high cost of their integration, which is burdensome for many enterprises in conditions of economic instability (Fig. 5). These costs include both direct financial costs and infrastructure upgrades, which is an additional burden for the business. Another substantial problem is the lack of qualification of personnel, which complicates mastering new tools and using them effectively in the course of activities. Although 3/4 of enterprises train their staff to use digital technologies (through various courses, programmes, and training), the rest consider this unnecessary (Fig. 6).

Figure 5. Problems that hinder the further development of digital technologies for 50 small businesses in the Kyiv region, %
Source: developed by the authors

Figure 6. Distribution of enterprises regarding employee training in digital technologies, %
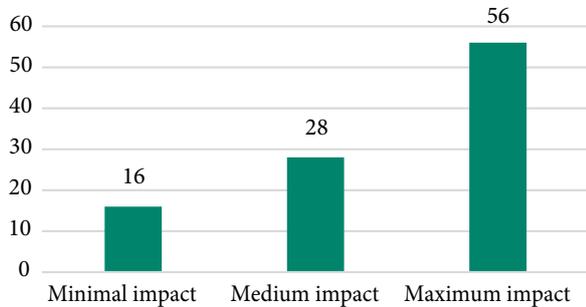**Source:** developed by the authors

An obstacle to digitalisation is the lack of state support, which manifests itself in the form of insufficient investment in the relevant infrastructure. For many enterprises, there is a problem of adapting new technologies to existing business systems, which is complicated by integration problems and the lack of necessary technical resources. Technical difficulties are also an important barrier to implementation because small businesses often do not have the

opportunity to attract a sufficient number of qualified IT specialists, which leads to difficulties in solving technical problems. An important aspect is market instability, which affects the ability of enterprises to make long-term investments in digital technologies. These problems together hinder digitalisation, which requires a systematic approach to solving them at the level of enterprises and the state.

Figure 7 shows an assessment of the impact of the use of digital technologies and artificial intelligence on enterprise efficiency. The results of a survey of 50 small enterprises in the Kyiv region indicate a positive trend in the introduction of digital technologies and artificial intelligence in their activities. Only 16% of enterprises rated their impact as minimal, which may be due to insufficient use of technologies and inexperience of staff.

28% of enterprises consider the impact to be medium, which indicates the gradual integration of digital solutions. The largest share – 56% of enterprises – noted the maximum impact of technology, which indicates the active use of innovations to optimise business processes,

automate, improve customer service, and make managerial decisions. During the survey, almost half of business leaders noted the impact of digital technologies on the recovery of economic activity. 22% of respondents considered the impact to be maximum, and 26% rated it as

medium (Fig. 8). A small number of low-impact opinions (4%) indicate the overall effectiveness of digital solutions in this context. The predominance of high ratings demonstrates the positive contribution of digital technologies to supporting economic activity.

Figure 7. Answers to the question "How do you assess the impact of using digital technologies and artificial intelligence on the efficiency of your enterprise", %
Source: developed by the authors
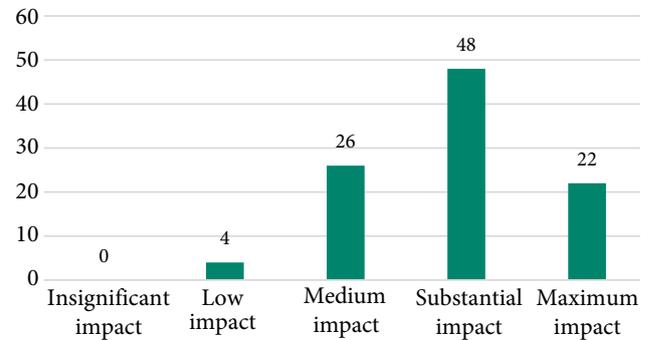
Figure 8. Impact of the use of digital technologies and artificial intelligence on the recovery of economic activity of 50 small businesses in the Kyiv region, %
Source: developed by the authors

This conclusion is supported by a moderate correlation between the use of digital technologies and indicators of economic recovery. The use of the correlation method allows more accurately assessing the degree of influence

of digital technologies on post-war reconstruction, identifying the strengths and weaknesses of their implementation, and pinpointing potential optimisation directions (Tables 4, 5).

Table 4. Results of the analysis of the relationship between digital technology usage and enterprise economic recovery

Enterprise	Use of digital technologies (X)	Recovery rates (Y)	Product (XY)	Digital technology square (X²)	Recovery indicators square (Y²)
1	4	5	20	16	25
2	3	4	12	9	16
3	5	5	25	25	25
...	...	...	...	...	...
50	4	5	20	16	25
Total	177	200	725	671	836

Source: developed by the authors

Table 5. Results of ANOVA correlation-regression and variance analysis

Regression statistics					
Multiple R			0.425116923		
R-Squared			0.180724398		
Adjusted R-Squared			0.163656157		
Standard error			0.870730324		
Number of observations			50		
ANOVA analysis of variance					
-	Df	SS	MS	F.	Significance F
Regression	1	8.027778	8.027778	10.58834	0.002088
Residual	48	36.39222	0.758171	-	-
Total	49	44.42	-	-	-
	Coefficients	Standard error	t-statistic	p-value	-
Y-intercept	1.651111111	0.593404	2.78244	0.007691	-
Coefficient for X1	0.472222222	0.145122	3.253973	0.002088	-

Source: developed by the authors

The results of correlation and regression analysis showed a direct moderate relationship between the level of digital technology use and the recovery of economic activity of enterprises, which indicates the multi-factor nature of this process. The multiple correlation coefficient ($R = 0.425$) indicates the existence of a positive relationship, but its value is not high enough to indicate a strong relationship. This means that with an increase in the level of digitalisation, a partial improvement in the economic performance of enterprises can be anticipated, but this effect is not dominant. The value of the R-square (0.181) indicates that only 18% of changes in the recovery of economic activity can be explained by the impact of the level of use of digital technologies. The remaining 82% depends on other factors, such as the level of managerial competence, the external economic environment, the availability of resources, government support, etc.

The standard error value (0.87) indicates the degree of discrepancy between actual and predicted values, suggesting a certain level of instability in forecasting the relationship. However, the low significance F-value (0.002) and the p-value for the regression coefficient (0.002) confirm the statistical significance of the model. This implies that while the level of digital technology adoption is an important factor, it is not the sole determinant. The coefficient for variable X1 (0.472) indicates that an increase of one unit in the level of digital technology adoption corresponds to an approximate 0.472 increase in the average level of economic recovery. Meanwhile, the Y-intercept (1.651) reflects the baseline level of post-war recovery efficiency for enterprises with minimal digital technology usage. Therefore, the analysis underscores the importance of digital technologies in the economic recovery of enterprises. Nevertheless, their impact should be considered alongside other internal and external factors, as confirmed by the results of the correlation-regression analysis.

DISCUSSION

This study demonstrates that most small enterprises in the retail and wholesale sectors are gradually integrating digital tools, reflecting their efforts to adapt to challenging conditions. This transition enables them to enhance and accelerate economic processes, optimise customer service, and manage resources more effectively. However, a substantial proportion of businesses only partially implement digital solutions, primarily due to resource constraints, insufficient information, or inadequate technical support (Makedon *et al.*, 2024). This highlights the need for further efforts to develop digital culture and infrastructure. The findings indicate that digital transformation in small businesses progressed unevenly, with many enterprises adopting digital technologies only to a limited extent. Similar conclusions were drawn by other researchers, such as I. Khurana *et al.* (2022), who emphasised the importance of developing digital competencies during periods of crisis, as this enhances business adaptability to change. Using a qualitative approach based on case studies of eight Indian entrepreneurs who were forced to radically alter their business models and operations during the COVID-19 pandemic, the authors developed a multi-level resilience model encompassing the micro-level (entrepreneur level), meso-level (organisational level), and macro-level (entrepreneurial ecosystem level). However, the results of this study contradict the findings of B. Lv *et al.* (2024), who argued that digital transformation was widely adopted among small enterprises in the post-pandemic period. This discrepancy may be attributed to differences in regional research contexts, technology accessibility, and levels of government support.

Among small retail and wholesale businesses, the most widely used digital tools are e-commerce platforms, mobile applications, and cloud technologies. Their adoption facilitates the expansion of sales channels, improves data accessibility, and automates business processes. There is also a growing interest in artificial intelligence and CRM systems, which enhance customer relationship management and data analysis. The use of digital tools, such as mobile applications, increased business process efficiency. These findings align with the study by Z. Adiguzel (2024), who also identified digital technologies as a key driver of innovative entrepreneurial ideas.

The study by J.G. Carrasco Ramírez (2023) highlighted those mobile applications can contribute to the development of small businesses by providing new opportunities for consumer engagement, process automation, and market expansion. Through the integration of artificial intelligence and mobile technologies into strategic business operations, the author proposed a comprehensive approach to innovation, adaptation, and growth in an era characterised by rapid technological advancements and evolving consumer expectations. The findings of the present study also confirmed these trends, as enterprises that actively utilised mobile and digital technologies exhibited higher levels of adaptability and innovation, even in the context of war and martial law.

Less widespread but promising technologies, such as blockchain, indicate potential for future development. These findings align with the study by D. Darwish (2023), who noted that blockchain remained in the early stages of integration despite its considerable potential for enhancing business resilience. In addition, L.S. Hanwacker (2024) emphasised that the implementation of blockchain technologies required substantial investment and technical expertise, which often hindered their widespread adoption. The results of the present study similarly demonstrated that small enterprises tended to prioritise more accessible digital tools, which may explain the low level of blockchain adoption.

Furthermore, it was discovered that the use of artificial intelligence remained limited, despite growing interest in this technology. This corresponds with the findings of P. Agarwal *et al.* (2022) and P. Haritha (2024), who highlighted that the integration of artificial intelligence in business was hindered by high costs and insufficient technical expertise among staff. However, Z. Adiguzel (2024)

provided successful examples of AI applications in crisis management, underscoring the long-term potential of such technologies. The present study demonstrated that the rate of adoption of these technologies among small businesses was lower than among medium-sized and large enterprises, partially contradicting the findings of R. AbuShanab (2024), who asserted that, in the new economic conditions, digital technologies were rapidly implemented even by small enterprises.

The findings also reinforced the importance of digital infrastructure for businesses (Synytsina *et al.*, 2022). This corresponds with the conclusions of K. Kraus & N. Kraus (2024), who emphasised the potential of Industry 5.0 technologies to enhance business productivity. The analysis further revealed that the strategic flexibility of small enterprises remained low, consistent with the findings of Z. Ahmad *et al.* (2024), who stressed the importance of artificial intelligence as a key factor in strategic adaptability. The importance of transforming production processes through digital tools was also confirmed by M. Koumas *et al.* (2021).

Digitisation in small businesses influences their ability to adapt to crises or challenges. Enterprises that actively utilise digital technologies have more opportunities compared to those that do not integrate such technologies into their economic activities. However, some barriers slow down this process, including the high costs associated with integrating new solutions, and a lack of skilled personnel and technical resources (Sargiotis, 2024). The war and complex economic situation highlighted the importance of digital technologies for the recovery of economic activity. These technologies help maintain operations even when physical distribution channels are limited, reduce dependence on conventional resources, and open up new growth opportunities. This makes digitisation a strategic priority for small businesses in an environment of constant change. These conclusions align with the findings of the aforementioned authors.

Despite the positive impact of digital technologies, their usage is not the sole determinant of economic stability, as many factors depend on external conditions, managerial competence, and the availability of resources. Successful implementation of digital solutions is only possible in conjunction with other measures, such as staff training, financial support, and infrastructure modernisation, which create opportunities for further growth and development of small businesses while strengthening their role in the overall economy of the country.

CONCLUSIONS

Digitisation is becoming a vital factor for small businesses to adapt to complex challenges, such as military conflicts, high levels of competition, and physical restrictions on customer access. The active use of digital tools such as artificial intelligence, mobile applications, blockchain, cloud services, and others allows businesses to optimise processes, improve customer service, and increase management efficiency. It was established that innovative solutions, particularly ERP systems and blockchain, are less actively implemented, indicating their potential but also highlighting the need for resources and technical support. The barriers to digitisation, such as limited resources, insufficient technical training of personnel, and a lack of knowledge about these technologies, hinder the uniform development of small businesses. However, even in the challenging conditions of war, digital technologies demonstrate their importance in the future recovery of economic activities, as they help small businesses remain competitive, reduce reliance on conventional methods of operation, and open new opportunities for market expansion. The results of regression analysis revealed a direct interdependence between the implementation of digital technologies and the recovery of economic activity in enterprises. Nevertheless, this connection is moderate, indicating the complex and multifactorial nature of the process. A limitation of this study is that it primarily focuses on small businesses in the Kyiv region, which may restrict the generalisation of the findings to other regions of Ukraine. The study also considers only specific types of digitisations, without encompassing all possible technological innovations that could impact business operations. In addition, the analysis was conducted under martial law conditions, which affected economic activity and business behaviour, potentially distorting the assessment of the impact of digital technologies under ordinary circumstances. Finally, the study is based on available data and surveys, which may have limited the depth of the analysis due to the subjectivity of respondents' answers and the absence of data on certain indicators. Future research could focus on exploring the impact of digitisation on other aspects of economic activity, particularly the enhancement of innovation potential and business resilience. It would also be beneficial to examine regional differences in the digitisation of business and the effectiveness of government initiatives in supporting this process.

REFERENCES

[1] AbuShanab, R. (2024). Advancing economic recovery with artificial intelligence, quantum computing technologies, and strategic management in small businesses. *Journal of Artificial Intelligence General Science*, 5(1), 327-338. doi: 10.60087/jaigs.v5i1.201.

[2] Adiguzel, Z. (2024). Effects of digital applications and artificial intelligence technologies in businesses. In F. Özsungur (Ed.), *Generating entrepreneurial ideas with AI* (pp. 41-69). Hershey: IGI Global. doi: 10.4018/979-8-3693-3498-0.ch003.

[3] Agarwal, P., Swami, S., & Malhotra, S.K. (2022). Artificial intelligence adoption in the post COVID-19 new-normal and role of smart technologies in transforming business: A review. *Journal of Science and Technology Policy Management*, 15(3), 506-529. doi: 10.1108/JSTPM-08-2021-0122.

[4] Ahmad, Z., Alwadi, B.M., Kumar, H., Ng, B.-K., & Nguyen, D.N. (2024). Digital transformation of family-owned small businesses: A nexus of Internet entrepreneurial self-efficacy, artificial intelligence usage, and strategic agility. *Kybernetes*. doi: 10.1108/K-10-2023-2205.

[5] Carrasco Ramírez, J.G. (2023). How mobile applications can improve small business development. *Eigenpub Review of Science and Technology*, 7(1), 291-305.

[6] Chen, J., Lim, C.P., Tan, K.H., Govindan, K., & Kumar, A. (2021). Artificial intelligence-based human-centric decision support framework: An application to predictive maintenance in asset management under pandemic environments. *Annals of Operations Research*. doi: 10.1007/s10479-021-04373-w.

[7] Chorna, O. (2022). Regulatory support and institutions for the transformation of enterprises to the digital economy. *Management of Economy: Theory and Practice, Chumachenko's Annals,* 2022, 51-82. doi: 10.37405/2221-1187.2022.51-82.

[8] Darwish, D. (2023). Blockchain and artificial intelligence for business transformation toward sustainability. In S. Namasudra & K. Akkaya (Eds.), *Blockchain and its applications in Industry 4.0* (pp. 211-255). doi: 10.1007/978-981-19-8730-4_8.

[9] De Winter, J., & Dodou, D. (2010). Five-point Likert items: T-test versus Mann-Whitney-Wilcoxon. *Practical Assessment, Research, and Evaluation*, 15(1), article number 11. doi: 10.7275/bj1p-ts64.

[10] European Commission. (2021). *Ethics and data protection*. Retrieved from https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ethics-and-data-protection_he_en.pdf.

[11] Eurostat. (2025). *Use of artificial intelligence in enterprises*. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises&gt.

[12] Hanwacker, L.S. (2024). The role of artificial intelligence in disaster recovery. *Journal of Business Continuity & Emergency Planning*, 18(2), 167-179. doi: 10.69554/CYWN4471.

[13] Haritha, P. (2024). Digital transformation of business and influence of artificial intelligence. *ANVESHAK – International Journal of Management*, 13(1), 51-70. doi: 10.15410/aijm/2024/v13i1/173205.

[14] International Business Machines Corporation. (2022). *IBM global AI adoption index 2022: New research commissioned by IBM in partnership with morning consult*. Retrieved from https://www.ibm.com/downloads/documents/us-en/107a02e94a48f5c1.

[15] Kholiavko, N., Olyfirenko, I., & Kononenko, S. (2024). The impact of innovative digital technologies on the post-war recovery of Ukrainian universities. *Business Inform*, 8, 141-150. doi: 10.32983/2222-4459-2024-8-141-150.

[16] Khurana, I., Dutta, D.K., & Ghura, A.S. (2022). SMEs and digital transformation during a crisis: The emergence of resilience as a second-order dynamic capability in an entrepreneurial ecosystem. *Journal of Business Research*, 150, 623-641. doi: 10.1016/j.jbusres.2022.06.048.

[17] Koumas, M., Dossou, P.-E., & Didier, J.-Y. (2021). Digital transformation of small and medium-sized enterprises production manufacturing. *Journal of Software Engineering and Applications*, 14(12), 607-630. doi: 10.4236/jsea.2021.1412036.

[18] Kraus, K., & Kraus, N. (2024). Search of opportunities for digitalization of infrastructure and establishment of industry 5.0 based on the application of artificial intelligence: Regional aspect of digital transformation. *Economics. Finances. Law*, 6, 63-68. doi: 10.37634/efp.2024.6.13.

[19] Li, C., & Wang, Y. (2024). Digital transformation and enterprise resilience: Enabling or burdening? *PLoS ONE,* 19(7), article number e0305615. doi: 10.1371/journal.pone.0305615.

[20] Liutak, O., & Baula, O. (2024). Optimising the focus of digital technologies in the context of implementing a sustainable development strategy for the international business environment. *Economic Forum*, 14(3), 8-20. doi: 10.62763/cb/3.2024.08.

[21] Lv, B., Deng, Y., Meng, W., Wang, Z., & Tang, T. (2024). Research on digital intelligence business model based on artificial intelligence in the post-epidemic era. *Management Decision*, 62(9), 2937-2957. doi: 10.1108/MD-11-2022-1548.

[22] Makedon, V., Kostyshyna, T., Tuzhylkina, O., Stepanova, L., & Filippov, V. (2019). Ensuring the efficiency of integration processes in the international corporate sector on the basis of strategic management. *Academy of Strategic Management Journal*, 18(1).

[23] Makedon, V., Myachin, V., Plakhotnik, O., Fisunenko, N., & Mykhailenko, O. (2024). Construction of a model for evaluating the efficiency of technology transfer process based on a fuzzy logic approach. *Eastern-European Journal of Enterprise Technologies*, 2(13(128)), 47-57. doi: 10.15587/1729-4061.2024.300796.

[24] Martín-Rojas, R., Garrido-Moreno, A., & García-Morales, V.J. (2023). Social media use, corporate entrepreneurship and organizational resilience: A recipe for SMEs success in a post-Covid scenario. *Technological Forecasting and Social Change*, 190, article number 122421. doi: 10.1016/j.techfore.2023.122421.

[25] Mykhalchenko, H., Zhuravlova, I., Zhalinska, I., Saienko, V., & Ovander, N. (2023). Digital tools for anti-crisis management of enterprises: The Ukrainian case. *Amazonia Investiga*, 12(64), 291-299. doi: 10.34069/AI/2023.64.04.30.

[26] Sargiotis, D. (2024). Integrating digital transformation and AI in civil engineering: A multidisciplinary approach to disaster management and sustainable urban development. *SSRN Electronic Journal*. doi: 10.2139/ssrn.4789752.

[27] Sherif, A. (2024) *Spending on digital transformation technologies and services worldwide from 2017 to 2027*. Retrieved from https://www.statista.com/statistics/870924/worldwide-digital-transformation-market-size/.

[28] Ståhle, L., & Wold, S. (1989). Analysis of variance (ANOVA). *Chemometrics and Intelligent Laboratory Systems, 6*(4), 259-272. doi: 10.1016/0169-7439(89)80095-4.

[29] Stepanenko, R. (2024). Priorities and risks of digital transformation in forming the needs of management of modern ecosystems. *Actual Problems of Innovative Economy and Law*, 5, 16-20. doi: 10.36887/2524-0455-2024-5-3.

[30] Synytsina, Y., Abramov, S., & Manole, A. (2022). Improving the information system of the enterprise through the use of neural networks. *Philosophy, Economics and Law Review*, 2(1), 127-138.

[31] Tyshchenko, V., Bielousov, Ya., Yemets, V., Borodenko, T., & Beder, D. (2024). The impact of digital transformation on the development of post-war regions of Ukraine. *Amazonia Investiga*, 13(81), 86-97. doi: 10.34069/AI/2024.81.09.6.

[32] Voronkova, V., Cherep, O., & Bexhter, L. (2024). Conceptual foundations for the formation of personnel strategy at industrial enterprises in the context of digitalisation. *Baltic Journal of Economic Studies*, 10(2), 60-67. doi: 10.30525/2256-0742/2024-10-2-60-67.

[33] White, G., & Liptak, S. (2024). Small business continuity and disaster recovery plans using AI and ChatGPT. *Issues in Information Systems*, 25(4), 118-126. doi: 10.48009/4_iis_2024_109.

[34] Yevtushenko, N., & Stetsenko, D. (2024). Digital transformation of business in the context of war in Ukraine: Challenges and opportunities. *Economic Scope*, 191, 211-216. doi: 10.32782/2224-6282/191-34.

Вячеслав Македон

Доктор економічних наук, доцент
Дніпровський національний університет імені Олеся Гончара
49010, просп. Науки, 72, м. Дніпро, Україна
https://orcid.org/0000-0001-8131-0235

Дмитро Коптілий

Кандидат економічних наук, заступник директора
Товариство з обмеженою відповідальністю «Флайт Контроль»
49170, просп. Науки, 115, м. Дніпро, Україна
https://orcid.org/0009-0004-7390-8746

Цифрова трансформація та штучний інтелект як фактори відновлення економічної діяльності підприємств після військових конфліктів

Анотація. Цифрова трансформація та впровадження штучного інтелекту відкривають нові перспективи для відновлення й поступового розвитку економічної діяльності малих підприємств, забезпечуючи їхню здатність реагувати на післявоєнні виклики і більш ефективно використовувати інноваційні технологічні рішення. Дослідження було спрямоване на визначення впливу використання цифрових інструментів та штучного інтелекту на відновлення економічної діяльності малих підприємств в постконфліктний період. Для збору даних було розроблено структуровану онлайн-анкету з шести блоків питань, які охоплювали різні аспекти цифрової трансформації малих підприємств. Питання стосувалися рівня впровадження цифрових технологій, типів використовуваних інструментів, основних бар'єрів для цифровізації, впливу цифрової трансформації на економічне відновлення економічної діяльності підприємств тощо. Кореляційно-регресійний аналіз відповідей дозволив оцінити статистичну взаємозалежність між впровадженням цифрових технологій та відновленням економічної діяльності підприємств. Більшість з 50 торгових підприємств малого бізнесу у Київській області, що взяли участь в опитуванні, активно використовують цифрові інструменти, зокрема онлайн-магазини, мобільні додатки, штучний інтелект, хмарні технології, що свідчить про високий рівень адаптації до сучасних бізнес-умов. Виявлено, що інноваційні рішення, зокрема ERP-системи та блокчейн, впроваджують менш активно, що вказує на потребу у значних ресурсах і технічній підтримці. Кореляційний аналіз підтвердив прямий помірний зв'язок між рівнем використання цифрових технологій і відновленням економічної діяльності підприємств, що підтверджує важливість інноваційних рішень у забезпеченні стабільності та розвитку бізнесу в умовах економічних викликів. Результати дослідження можуть бути корисними для органів влади та державних установ, що розробляють політику підтримки цифровізації малого бізнесу, а також для підприємств у процесі прийняття рішень щодо інвестицій у нові технології

Ключові слова: хмарні технології; блокчейн-технології; мобільні додатки; чат-боти; інформаційні технології