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The impact of digitalisation on business efficiency and competitiveness

Abstract. The study aimed to determine the role of digitalisation in enhancing business competitiveness by analysing implemented digital solutions and assessing their impact on business process efficiency. The research covered the period from 2018 to 2024, allowing for consideration of contemporary digital transformation trends. The primary materials included official reports and publications from Ukrainian companies Obolon, Nova Post, and Ukrzaliznytsia, which have actively adopted digital tools, as well as analytical data from open sources. The findings indicate that the implementation of digital technologies has had a significant impact on key business performance indicators. In particular, a substantial improvement in operational efficiency, service quality, and customer satisfaction levels was observed. For instance, Nova Post reduced parcel processing time by 40%, while Obolon decreased resource losses by 20% through the introduction of a Manufacturing Execution System. The implementation of digital solutions has contributed to greater transparency

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in internal business processes, which was particularly evident in Ukrzaliznytsia through the introduction of electronic platforms for transport management. Moreover, digital technologies have accelerated decision-making by enabling the use of automated data analysis systems. The long-term effects of digital solutions were projected, particularly their impact on the development of new business models, allowing companies to adapt to changes in the market environment. The study's findings confirmed that digitalisation is a key factor in ensuring business competitiveness. The adoption of innovative solutions has led to improved service quality, optimised business processes, and strengthened market positions. However, achieving maximum impact required a strategic approach, investment in staff training, and adaptation of organisational culture to new technologies

Keywords: innovative products; process automation; management processes; market trends; e-commerce; strategies

INTRODUCTION

In the context of rapid technological development, digitalisation is becoming a key factor influencing business development. The introduction of new technologies and the improvement of digital tools are changing the business environment, leading to improved efficiency of business processes, reduced costs, and the creation of new opportunities for competitive advantage. This is especially important for companies seeking to maintain their position in globalised markets, where success depends on the ability to quickly adapt to technological changes and utilise digital resources. Digitalisation also facilitates the analysis of consumer behaviour and better resource management. Despite this, scientific research into this issue is extremely important due to unequal access to digital infrastructures, limited financial resources in small and medium-sized enterprises, and a high level of uncertainty regarding the best methods for integrating digital solutions.

Digitalisation significantly changes business models, so its impact on organisational efficiency and business competitiveness is substantial. S. Ohinok & V. Hunka (2023) studied how digitalisation improves operational processes, increases organisational flexibility, and stimulates innovation. They also addressed issues related to cybersecurity and employee adaptation. To assess the effectiveness of digitalisation, further research is needed into its impact on various industries and tools. The impact of digitalisation on business competitiveness is linked to the need to adapt business strategies to the conditions of the modern market (Khilukha, 2024). The problem under investigation concerns the impact of digitalisation on the competitiveness of businesses in the trade sector. O. Siruk (2024) established that digitalisation is a key factor in building competitive advantages, and the level of business competitiveness depends on the degree of their digital maturity. The study identified tools for managing competitiveness, technological trends that create advantages, and principles for creating cross-functional teams. The main gaps concern the insufficient study of the impact of digitalisation on organisational processes in different types of business, as well as the lack of specific mechanisms for assessing the effectiveness of digital transformations.

In the area under investigation, the problem lies in determining the impact of digitalisation on business competitiveness, especially considering the specifics of the functioning of small and medium-sized enterprises. This topic was studied by A. Atanasova (2024). In her research, the author explored the role of digital technologies in building competitive advantages, focusing on the link between innovation and increased business efficiency. The research results indicate that digitalisation contributes to increased productivity, product quality, and the efficiency of internal processes, but at the same time, a significant proportion of enterprises do not adequately implement modern technologies. The main gaps that require further study include the study of the practical aspects of digitalisation for small businesses, the analysis of its impact on international markets, and the development of strategies for optimising digital transformation.

The necessity to adapt business models to technological changes is a problem concerning the impact of digital transformation on company competitiveness. In their study, K. Agustian *et al*. (2023) analysed the impact of digital transformation on business models and competitive advantages. The authors found that digital transformation changes the foundations of organisational functioning, increases efficiency, reduces costs, and promotes personalised customer interaction. At the same time, gaps requiring further research were identified, including the development of effective strategies for small businesses, the analysis of cybersecurity challenges, and the assessment of the long-term economic consequences of digital transformation.

The problem of digitalisation's impact on sustainable business competitiveness lies in the insufficient understanding of its role in ensuring economic, social, and environmental sustainability. A. Dabbous *et al*. (2023) found that digitalisation promotes entrepreneurial activity and increases sustainable competitiveness through the use of the Internet, the integration of digital technologies, and the provision of connectivity. Gaps concern the impact of digitalisation on environmental sustainability and the complex interrelationships between its components. Digitalisation significantly changes traditional business models, requiring adaptation to technological changes (Llazo *et al*., 2024). O.S. Joel *et al*. (2024) explored the trends, challenges, and opportunities of digital transformation. They found that digital technologies increase efficiency, reduce costs, and contribute to the creation of innovative business models. At the same time, issues regarding longterm stability, the integration of modern technologies with legacy systems, and cybersecurity remain unresolved.

Digitalisation has become a key factor in improving organisational efficiency, but the impact of social aspects in this process has not been sufficiently studied. V. Barba-Sánchez *et al*. (2024) explored the role of digital orientation and digital transformation in enhancing enterprise efficiency. The authors found that IT capabilities positively affect company results through the development of digital orientation and digital transformation. Gaps in the

research include the analysis of the long-term impact of digital transformation and the interaction of social and technological factors in management processes. Digital transformation is a key element for enhancing the innovative capacity of enterprises, but research on this topic needs further expansion. A.A. Vărzaru & C.G. Bocean (2024) studied the impact of digital technologies such as artificial intelligence (AI), big data, cloud computing, and the Internet of Things (IoT) on innovation revenue in EU countries. The authors found that the integration of digital technologies significantly increases efficiency and promotes innovation in various aspects of business.

However, the impact of digitalisation on types of social innovation has not been sufficiently studied, and there is a lack of detailed analysis of the implementation of digital technologies in less developed regions. This study aimed to assess the impact of digital technologies on enhancing the competitive advantages of enterprises through the improvement of innovation processes and the transformation of business models. To achieve this aim, the following objectives have been identified: analysis of the relationship between the implementation of digital technologies and the growth of enterprise competitiveness; study of the impact of digitalisation on various aspects of innovation, including product development, processes, and management strategies.

MATERIALS AND METHODS

The research materials include official reports and publications from Ukrainian enterprises such as Ukrzaliznytsia (Ukrzaliznytsia's annual report, 2020), Obolon (Obolon's annual reports, 2023), and Nova Post (Nova Post's sustainability report…, 2023), all of which are actively implementing digital technologies, as well as analytical data from open sources. These companies were chosen because of their significant contribution to the Ukrainian economy, their leadership positions in their respective industries, and their active implementation of digital technologies. Their experience formed the basis for identifying effective practices and developing recommendations that can be applied by other enterprises to enhance competitiveness. The main focus was on practical case studies and the results of digitalisation implementation at the level of specific companies.

Additionally, open sources containing analytical data on digitalisation trends in the global economy and global experience in this area were used (Pelser & Gaffley, 2020). The main focus was on practical case studies demonstrating the impact of digital technologies on increasing efficiency, reducing costs, and improving customer interaction (Attaran & Woods, 2018; Moghrabi *et al.*, 2023). The use of such materials allowed for consideration of not only local specifics but also a comparison of Ukrainian experience with international practices. The collected data enabled a comparative analysis, synthesis of practical results, and forecasting, which are important components for achieving the research objectives.

This research employed qualitative analysis methods to thoroughly assess the impact of digitalisation on the competitiveness of enterprises across various sectors. The primary tool was a comparative case study analysis, within which the digital strategies and technological tools implemented by three leading Ukrainian companies – Obolon, Nova Post, and Ukrzaliznytsia – were examined. Additionally, a statistical analysis of digitalisation implementation at these enterprises was conducted. For Obolon, key indicators were evaluated, including product sales volume, the share of exports in the total volume, the number of automated production lines, the level of production losses, and the level of energy efficiency. For Nova Post, the number of shipments, the number of branches, the number of parcel lockers, delivery speed (in hours), and the number of shipments through parcel lockers were analysed. Statistical indicators allowed for the assessment of the impact of the mobile application, automated sorting centres, and big data analytics on improving the efficiency of logistics processes and customer experience. For Ukrzaliznytsia, indicators such as the number of tickets purchased online, transportation revenue, passenger turnover, and other revenues and additional services were studied. These data illustrate the effectiveness of implementing electronic tickets, automated train traffic management systems, and online platforms for freight transportation.

The study of these case studies allowed for the identification of key practices in the application of digital technologies in the manufacturing, logistics, and transportation sectors, as well as determining how digital solutions contribute to the optimisation of business processes in various areas. In particular, the analysis helped to identify specific tools that companies use to reduce costs, increase productivity, and improve customer service. Based on the synthesis of practical results, the impact of digitalisation on operational efficiency, the quality of services provided, and the level of customer satisfaction were evaluated. The analysis concluded that the integration of digital technologies significantly increases the efficiency of company operations and contributes to the formation of competitive advantages. During the research, using forecasting methods, the potential long-term impact of digital solutions on the competitiveness of enterprises was evaluated, including their adaptation to digital technologies, increased efficiency of business processes, and the development of competitive advantages in a dynamic market environment. Taking into account current trends in technology development, the prospects for further implementation of innovations and their impact on the economic performance of companies were assessed.

RESULTS

Theoretical foundations of digitalisation's impact on business competitiveness

Enterprises can collect, store, process, and analyse data, automate processes, and improve customer interaction through digital technologies, which consist of a variety of methods, software, and tools. Digital technologies in the business environment are the foundation for creating new business models, increasing productivity, and enhancing market competitiveness. Cloud computing, AI, IoT, blockchain, big data, 3D printing, virtual and augmented reality technologies, and business process automation are just some of the numerous innovative solutions known as digital technologies. While each of these technologies has its specific area of application, their overall goal is to improve management processes, increase operational productivity, and create new competitive advantages (Cherep *et al.*, 2024).

Cloud computing has significantly transformed business models, allowing enterprises to optimise infrastructure costs, increase data management flexibility, provide access to real-time analytical tools, and expand business scaling capabilities according to market needs. It enables companies to utilise resources over the Internet, reducing the costs of their own IT infrastructure and ensuring data availability anytime and from anywhere. This is particularly relevant for small and medium-sized enterprises, as limited financial resources often prevent them from investing in the purchase and maintenance of their own servers and expensive equipment. For example, companies can run applications, process data, and scale their operations without significant capital investment using platforms such as Google Cloud, Microsoft Azure, and Amazon Web Services (Attaran & Woods, 2018).

Businesses are actively using digital technologies, including AI. AI can predict market trends, analyse large amounts of data, and even communicate with consumers through chatbots and virtual assistants. For example, in the financial sector, AI algorithms are widely used to assess risks, detect fraud, and create personalised offers for customers. The IoT is also an important part of business digital transformation. This technology allows physical devices, such as vehicles, cameras, and sensors, to connect to the internet so they can analyse and manage the data they generate. For example, in the field of logistics, IoT allows for the reduction of transportation costs, optimisation of routes, and real-time monitoring of cargo. IoT is used in manufacturing to automate processes, reduce equipment downtime, and increase productivity. Financial transactions, supply chain management, and business process transparency are examples of the use of blockchain technologies. With this technology, secure and immutable records can be created, ensuring data authenticity. For example, blockchain in the trade sector reduces the risks of fraud and counterfeiting, ensuring transparency of the origin of goods. Business digitalisation depends on big data. Companies can make informed decisions, better understand consumer needs, and predict customer behaviour through the processing and analysis of large volumes of data. Marketing uses big data to personalise its advertising campaigns, and manufacturing uses it to optimise processes and manage inventory.

Digital technologies play a vital role in automating business processes, reducing the frequency with which people have to perform routine tasks. Companies can focus resources on strategic goals, reduce costs, and increase the speed and accuracy of operations through the use of automation systems. For example, Customer Relationship Management (CRM) systems automate customer interactions, leading to better service and higher levels of customer satisfaction. Additionally, digital technologies foster the development of e-commerce, enabling companies to enter new markets and expand their customer base (Hadasik & Kubiczek, 2022). Online stores, mobile apps for ordering services, and electronic marketing platforms create new opportunities for businesses. Despite all the advantages of digital technologies, there are certain obstacles associated with their use. The main obstacles are the high cost of implementation, cybersecurity issues, and insufficient digital literacy among employees. Companies must invest in staff training, develop data protection plans, and gradually integrate digital technologies into their business processes to overcome these challenges.

Thus, digital technologies are not only a tool for increasing productivity but also a strategic resource that allows companies to remain competitive in the long term and adapt to changes in the external environment. Successful digital transformation depends on their effective implementation. The term “competitiveness” is a multifaceted economic concept that describes how well a company can meet the demands of its consumers better than its competitors. Financial stability, innovation, brand reputation, operational efficiency, and the ability to adapt to changes in the environment are part of this definition, which encompasses both short-term and long-term elements of company success. A company’s ability to maintain or increase its market share by offering higher-quality products or services, at a competitive price, with better service or other unique advantages is a key indicator of competitiveness. For example, in traditional sectors such as manufacturing, the priority is to reduce costs and increase efficiency, whereas high-tech industries such as IT or e-commerce rely heavily on product innovation.

The approach to ensuring competitiveness has significantly changed due to digitalisation. Digital technologies allow for the optimisation of internal business processes, automation of routine tasks, and an increase in data processing speed, which reduces product time to market. For example, automated inventory management systems optimise logistics costs and prevent overproduction and shortages. Digital tools such as analytics and big data allow companies to better understand their customers, anticipate their needs, and provide personalised solutions. In particular, CRM systems allow for the storage and analysis of customer information, as well as the creation of strategies to increase customer loyalty. This is especially important in highly competitive environments, where retaining a customer becomes more cost-effective than acquiring a new one.

Furthermore, digitalisation allows companies to enter global markets. Even small and medium-sized enterprises can reduce their dependence on the local market by offering their goods to international customers through e-commerce. For example, companies like Alibaba and Amazon minimise infrastructure costs while providing access to a multi-million-strong audience. Despite all the advantages of digitalisation, ensuring competitiveness has several challenges. The main challenges are the rapid obsolescence of software and hardware, high costs, and cybersecurity risks. Enterprises with outdated business models and inefficient processes risk losing their market position if they fail to adapt to digital changes (Pelser & Gaffley, 2020; Ievsieieva *et al.*, 2024). Thus, competitiveness is an important indicator of enterprise success, and digitalisation acts as a powerful catalyst for its enhancement. However, enterprises need to develop strategic approaches to overcome challenges and ensure the effective use of digital tools.

Digital technologies are not simply implemented separately but are integrated into the overall strategy of an enterprise, creating a synergistic effect. For example, Enterprise Resource Planning (ERP) systems provide centralised management of enterprise resources, but their effectiveness significantly increases when integrated with CRM systems, which focus on customer relationship

management. This integration allows for the alignment of internal operations with customer needs, enhancing service quality and consumer loyalty. Another example is the use of IoT and AI, which in interaction provide deeper data analysis and automation of operations. IoT applications generate huge amounts of data in real time, which AI analyses to identify trends, predict demand, and optimise production processes. For example, in the field of logistics, this allows for the optimisation of delivery routes, reducing costs and transportation time.

Cloud technologies, in turn, provide a platform for data storage and processing, allowing enterprises to use analytics and automation tools without the need for significant capital investment in their own infrastructure. For example, ERP and CRM hosted in the cloud allow for access to operational data from anywhere, which increases business flexibility (Hasan, 2018). The interaction of technologies in the field of business process automation is particularly important. For example, the use of blockchain technologies in supply chains ensures transaction transparency and minimises fraud risks, while the integration of this technology with IoT allows companies to automate the tracking of goods' movement in real time. This integration forms innovative business models that allow enterprises to reduce costs, increase productivity, and offer customers unique products or services. For example, e-commerce actively uses cloud services, big data analytics, and CRM to create personalised offers, which increases sales and expands the audience. As a result, digital technologies not only automate individual processes but also create new opportunities for business development, which significantly increases the competitiveness of enterprises in a dynamic market environment.

The task of assessing the impact of digitalisation on the innovative development of enterprises is complex and requires the use of a wide range of theories and methods. Resource-based theory is an important approach that views digital technologies as a strategic resource that allows for the achievement of a competitive advantage by creating innovative activity. This theory argues that enterprises that invest resources in digital tools can create unique products, improve business processes, and open up new markets. The process approach is also an important approach, focusing on how digitalisation changes a company's internal processes, making them more efficient and innovative. For example, the introduction of automation systems increases labour productivity and creates conditions for the generation of new ideas through rapid access to data and tools for their analysis. An econometric approach involves the use of statistical models to analyse the impact of digitalisation on enterprise innovation activity indicators. These may include indicators such as the number of registered patents, the share of revenue from new products, and the volume of investment in research and development. For example, studies show that companies that actively invest in digitalisation have a higher level of innovation revenue compared to those that ignore modern technologies (Moghrabi *et al.*, 2023).

A network approach is also used, which focuses on analysing how digital technologies change the interaction of enterprises with partners, customers, and suppliers. For example, IoT allows for the creation of integrated supply management systems that reduce the time and cost of coordination between supply chain participants. A systems approach views digitalisation as an element of the overall enterprise ecosystem, which includes not only technologies but also human capital, organisational culture, and the external environment. This approach allows for the assessment of how the interaction between these elements affects the company's innovative capacity. In summary, theoretical approaches to assessing the impact of digitalisation on innovative development help to better understand the relationship between the use of modern technologies and the growth of enterprise competitiveness. This creates a basis for developing strategies that allow companies to maximise the opportunities of digital transformation.

Comparative analysis of the use of digital technologies for building competitive advantages

Digitalisation is a key tool for business transformation. It allows companies to improve production processes, increase resource efficiency, reduce costs, and provide a high level of customer service. Through the implementation of innovative solutions such as automation, big data analytics, and digital platforms, enterprises are able to adapt to market demands, enhance their competitiveness, and meet customer expectations. To understand the real impact of digital technologies, three specific examples of companies that have successfully implemented digitalisation were considered: the private joint-stock company (PrJSC) Obolon, the limited liability company (LLC) Nova Post, and the public joint-stock company (PJSC) Ukrzaliznytsia.

The brewing company Obolon is one of the largest in its segment on the Ukrainian market. In response to the challenges of the modern business environment, the enterprise actively implements digital technologies to optimise production processes and ensure high product quality. The main direction of Obolon's digitalisation has been the implementation of a Manufacturing Execution System. This system allows for the monitoring of all stages of the production process in real time, from the supply of raw materials to the finished product (Digitalisation in finance…, 2024). As a result, the company was able to significantly reduce the level of production losses and optimise the use of resources. Obolon implemented digital product quality control systems. Using modern technologies, the enterprise ensures that its products meet international standards, which allows it to maintain a competitive position in both domestic and foreign markets. A separate aspect of digitalisation was the improvement of logistics. The Warehouse Management System optimises the placement and dispatch of products, which reduces transportation costs and shortens order fulfilment times.

Table 1 provides a comparative analysis of the company's key indicators before and after digitalisation (2022-2023). As can be seen from the table, the implementation of digital technologies allowed Obolon to significantly improve its key indicators. In particular, product sales volume increased by 1.5 million daL, the share of exports increased by 7%, and the number of automated lines increased by two units. At the same time, the production loss rate decreased by 3%, and energy efficiency improved by 0.5 kWh per unit of product. These changes confirm that digitalisation has become an important step in ensuring the company's competitiveness in both domestic and international markets.

Table 1. Changes in key indicators of Obolon after digitalisation (2022-2023)

Indicator	2022 (before digitalisation)	2023 (after digitalisation)	Change
Product sales volume, million daL	12.5	14.0	+1.5 million daL
Export share in total sales, %	35	42	+7%
Number of automated production lines	3	5	+2 lines
Production loss rate, %	8	5	−3%
Energy efficiency, kWh per unit of product	2.5	2.0	−0.5 kWh

Source: compiled by the authors based on Obolon's annual reports (2023)

Nova Post is a leader in the field of logistics services in Ukraine. Thanks to active digital transformation, the company has managed to create convenient services for customers and optimise its own business processes. The main achievement of Nova Post's digitalisation has been the implementation of a mobile application that allows customers to conveniently receive information about shipments, pay for services, track parcels in real time, and receive delivery status notifications. This has significantly improved the customer experience and increased consumer loyalty. Another important step was the use of automated sorting centres equipped with modern technologies such as barcode scanners and conveyor systems. This allowed for a significant reduction in shipment processing time and increased delivery accuracy. In addition, Nova Post actively uses big data analytics to forecast demand for services and optimise delivery routes. This ensures more efficient use of resources and reduced costs.

The results of the company's digitalisation include a 40% reduction in parcel processing time, an increase in delivery accuracy to 98%, and a growth in the number of mobile app users to over 5 million as of 2022 (Nova Post's sustainability report..., 2023). Thanks to the mobile app, automated sorting centres, and the use of big data analytics, the company has been able to significantly optimise its business processes. Table 2 presents the key performance indicators of Nova Post, illustrating the impact of these changes. The implementation of digital technologies has allowed Nova Post to significantly reduce delivery times, expand the number of parcel lockers, and reduce the number of branches. The growth in the number of mobile app users to over 5 million indicates high customer adaptation to new services. This underscores the strategic importance of digitalisation for maintaining the company's leading position in the logistics market, even in difficult economic conditions.

Table 2. Key performance indicators of Nova Post digitalisation for 2021-2022

Indicator	2021	2022
Number of shipments, millions	372	315
Number of branches	9,990	9,300
Number of parcel lockers	8,700	14,000
Delivery speed (average), hours	24	23
Number of shipments via parcel lockers	-	4,353 new parcel lockers

Source: compiled by the authors based on Nova Post's sustainability report 2022 (2023)

Ukrzaliznytsia, as a state-owned railway transport company, is also implementing digital technologies to improve operational efficiency and enhance customer service quality. One of the key directions of digitalisation has been the introduction of electronic tickets (Ukrzaliznytsia app has..., 2024). This has enabled customers to quickly and conveniently purchase tickets online, significantly reducing queues at ticket offices and facilitating access to railway services. Additionally, electronic tickets help to avoid duplicate bookings and improve operational transparency. Another important step has been the creation of an automated train traffic management system. This system allows for real-time tracking of train locations, coordination of their schedules, and reduction of accident risks. Ukrzaliznytsia has also implemented digital solutions for freight transport management. In particular, an online platform for ordering freight transport has been created, which simplifies the process of cooperation with customers and reduces order processing time. In the process of implementing digital technologies, Ukrzaliznytsia demonstrates positive changes in its key indicators. Table 3 below compares the company's main performance results for 2018 and 2019 to illustrate the impact of digitalisation on operational efficiency.

Table 3. Changes in key indicators of PJSC Ukrzaliznytsia (2018-2019)

Indicator	2018	2019	Change
Number of tickets purchased online, millions of seats	27.7	30.4	+2.7
Revenue from transport services, billion UAH	76.0	82.4	+6.4
Passenger turnover, million passengers per km	28,614.9	28,413.5	−201.4
Other income and additional services, billion UAH	7.4	8.0	+0.6

Source: compiled by the authors based on Ukrzaliznytsia's annual report (2020)

As can be seen from the table, the implementation of digital technologies, such as online ticket sales, process automation, and new online services, contributed to a significant increase in revenue and improved customer service. The analysis of the three enterprises – Obolon, Nova Post, and Ukrzaliznytsia – demonstrates that digitalisation is a powerful tool for enhancing competitiveness. The implementation of digital solutions has allowed these companies to significantly improve the quality of their services, optimise business processes, and increase customer satisfaction. The successes of these enterprises can serve as an example for other companies seeking to improve their efficiency and maintain leading positions in the market.

Digitalisation is a key factor in enhancing the competitiveness of enterprises in various sectors of the economy. Its implementation contributes to the optimisation of operational processes, improvement of customer experience, and creation of new opportunities for business development. Table 4 presents a comparative analysis of the implementation of digital technologies by three leading Ukrainian enterprises: PrJSC Obolon, LLC Nova Post, and PJSC Ukrzaliznytsia. This analysis highlights the technologies used, the specifics of their implementation, and the results achieved by the companies, demonstrating the positive impact of digital solutions on their operations.

Table 4. Comparative analysis of digital technology implementation across different sectors

Enterprise	Sector	Technologies used	Implementation features	Results
PrJSC Obolon	Manufacturing (brewing)	Manufacturing Execution System, quality control, Warehouse Management System	Integration with production lines, resource usage optimisation	20% reduction in losses, 30% decrease in order fulfilment time, stable product quality
LLC Nova Post	Logistics	Mobile app, automated sorting centres, big data analytics	Development of user-friendly customer solutions, integration with route management systems	40% reduction in parcel processing time, delivery accuracy of 98%, 5 million active mobile app users
PJSC Ukrzaliznytsia	Transportation services	E-tickets, automated train movement system, online platform for freight transportation	Modernisation of passenger and freight services, increased operational transparency	80% of ticket sales online, 25% improvement in movement accuracy, 50% reduction in freight processing time

Source: compiled based on Nova Post's sustainability report 2022 (2023), Digitalisation in finance: How Obolon's strategy has changed given digital transformation (2024), Ukrzaliznytsia app has already attracted 2 million authorised users (2024)

As the analysis of these enterprises has shown, the implementation of digital technologies is an important means by which companies can remain competitive. Companies have been able to significantly optimise business processes, reduce costs, and improve service quality through automation, data analytics, and innovative customer solutions. PJSC Ukrzaliznytsia has modernised transportation services to meet customer needs, PrJSC Obolon has improved operational efficiency and ensured consistent product quality, and LLC Nova Post has ensured the speed and accuracy of logistics operations. Positive conclusions confirm the view that digitalisation is not only a necessary part of modern business but also a powerful stimulus for creating competitive advantages in many industries.

The digitalisation of business processes is becoming a necessary condition for ensuring the competitiveness of enterprises in the modern economic environment. Developing recommendations for optimising the use of digital technologies is an important step in achieving maximum efficiency in transformation processes. This requires a systematic approach that encompasses both improving the efficiency of digital transformation and developing strategies to strengthen competitive advantages, taking into account socio-economic and technological aspects.

Optimising digital technologies begins with identifying areas for improving the efficiency of digital transformation. A key aspect is the need for a comprehensive analysis of existing business processes to identify points where digital technologies can provide the greatest effect. For example, automating routine operations reduces labour costs, increases productivity, and decreases human error. The implementation of ERP systems helps integrate all business processes into a single platform, ensuring more efficient resource and financial flow management. Additionally, big data and analytical tools enable in-depth analysis of consumer behaviour, allowing for a better understanding of customer needs and the adaptation of products or services to their requirements.

Another important direction for improving the efficiency of digital transformation is staff training. One of the main obstacles to successful digitalisation is the insufficient level of digital literacy among employees. Enterprises must invest in training programs that not only familiarise employees with new technologies but also explain their practical value for everyday work. For example, companies that actively implement CRM systems should train their employees to effectively use these tools for customer interaction. Furthermore, it is important to foster an innovation-oriented culture where employees not only know how to work with digital tools but are also ready for their continuous improvement.

Developing strategies to enhance the competitive advantages of enterprises in the digital environment should include several key elements. Enterprises must clearly define their goals and priorities in digital transformation. This avoids the chaotic implementation of technologies that may not align with the company's strategic objectives. For example, if the enterprise's goal is to reduce costs, the main focus should be on process automation and supply chain optimisation. If the company aims to improve the customer experience, it should focus on implementing analytical tools and personalising interactions. Table 5 visually illustrates the key directions of digital transformation optimisation and their results.

Table 5. Directions for optimising digital transformation and expected results

Optimisation direction	Expected results
Automation of routine operations	Reduction in labour costs, improved task accuracy
Staff training	Increased productivity, readiness for the adoption of new technologies
Technology integration	Reduced adaptation costs, increased transformation speed
Cyber risk management	Data protection, reduction of financial losses due to cyber threats
Use of innovative solutions	Enhanced competitive advantages, expanded development opportunities
Development of key performance indicators for monitoring effectiveness	Timely identification of weaknesses, prompt adjustment of strategy

Source: compiled by the author

It is important that new technologies are integrated with existing systems. The incompatibility of new solutions with existing infrastructure is a major issue in digital transformation. This can lead to additional costs and project delays. To prevent such situations, companies should conduct a preliminary audit of their technology base and collaborate with suppliers who offer flexible and adaptable solutions. For example, cloud technologies allow for the rapid scaling of IT resources without significant investment in the modernisation of physical infrastructure. Thus, the recommendations and actions proposed are aimed at achieving sustainable competitive advantages for enterprises in various industries through the effective use of digital technologies.

DISCUSSION

Digitalisation is a major force in business transformation, driving increased efficiency, process automation, cost optimisation, and the creation of competitive advantages. The use of modern digital technologies, such as ERP, CRM, IoT, and AI, allows businesses to integrate various functions, improve customer interactions, develop innovative products, and enter new markets. However, despite the clear benefits of digital transformation, there are challenges associated with technology implementation: high costs, the need for staff training, and cybersecurity.

This study has established that digitalisation is a key factor in increasing business efficiency, promoting process automation, optimising costs, and creating new competitive advantages. In particular, digital technologies such as ERP, CRM, AI, and IoT enable businesses to integrate various functions, improve customer interactions, develop innovative products, and enter new markets. In addition, digitalisation facilitates business globalisation through e-commerce, expanding opportunities for small and medium-sized enterprises (Gulaliyev *et al.*, 2023; Azam & Ansari, 2024). At the same time, the research highlights the problems associated with the implementation of digital technologies, including high costs, the need for staff training, and cybersecurity risks.

The findings of N. Chakrouni & M. Cherkaoui (2023) confirmed the positive impact of digitalisation on the financial performance of companies, highlighting the increase in staff productivity, process optimisation, and cost reduction. At the same time, their research indicated the ambiguity of the impact of digitalisation in different contexts due to differences in measurement variables. For example, in some sectors, digitalisation has a negative impact due to high operating costs, the complexity of technology integration, and the adaptation of organisational culture. Thus, the results of both studies indicate the importance of digitalisation as a tool for improving competitiveness and financial efficiency of business, but at the same time emphasise the need to take into account the context of the implementation of digital technologies and the associated challenges.

The study by B. Abazi Chaushi *et al*. (2024) viewed digitalisation as a transformational process encompassing all aspects of organisational activity, including communications, decision-making, innovation, and customer orientation. The main drivers of digitalisation are technological progress, market competition, and changing customer expectations. Digital technologies, such as AI, cloud computing, and IoT, contribute to increasing the efficiency and competitiveness of organisations while creating new opportunities for innovation (Spytska, 2023). The research also highlights the challenges of digitalisation: resistance to change, cybersecurity, the digital divide, and problems integrating legacy and new systems. The article by B. Abazi Chaushi *et al*. (2024) emphasised the importance of fostering a digital culture and adapting organisational structures to the demands of the digital age. Strategic initiatives aimed at developing digital skills, creating cross-functional teams, and using technologies to enhance efficiency and innovation are crucial. The study also addressed future trends, including the integration of AI, blockchain, and sustainable digital practices. Thus, the research by B. Abazi Chaushi *et al*. (2024) summarised the key aspects of digitalisation, focusing on an interdisciplinary approach, analysis of challenges, and the prospects of digital strategies that form the basis for future transformations.

The study by E. Calderon-Monge & D. Ribeiro-Soriano (2024) focused on analysing the impact of digitalisation on key aspects of business, such as marketing, finance, accounting, and management. The research emphasised that digitalisation is a driving force in the transformation of business models, consumer behaviour, and organisational processes. The main focus is on the use of modern digital technologies, such as SMAC, blockchain, and big data analytics, which contribute to increasing efficiency, competitiveness, and creating innovative business solutions. The article also highlighted the role of business ecosystems and the challenges faced by organisations, including the integration of new technologies and adaptation to a rapidly changing environment. Compared to this research, both studies emphasised the importance of digitalisation as a tool for business transformation. Similar aspects include the analysis of the impact of digital technologies on value creation, business adaptation to consumer demands,

and the use of innovative approaches to optimise business processes. Differences lie in the fact that the research by E. Calderon-Monge & D. Ribeiro-Soriano (2024) paid more attention to the systematic analysis of business ecosystems and the integration of digital technologies into strategic management, while this study focused on the practical aspects of implementing digital solutions and the challenges of their implementation.

The research by K. Agustian *et al*. (2023) focused on the impact of digital transformation on business models, competitiveness, and enterprise efficiency. The main conclusions highlighted those digital technologies, including AI, IoT, and data analytics, allow for cost reduction, business process automation, personalised customer experiences, and the implementation of innovations that meet modern market needs. Particular attention is paid to the practical aspects of digital transformation, particularly its ability to adapt business models to a rapidly changing environment. Compared to this study, both agreed on key aspects of digitalisation, such as process automation, increased efficiency, and the creation of competitive advantages through innovation. There is also a shared focus on the use of modern technologies to optimise business operations and improve customer interaction. Differences lie in the focus of the research: the article by K. Agustian *et al*. (2023) placed more emphasis on the practical implementation of digital solutions and the analysis of specific impacts on business processes. The current study focused more on the systematic analysis of digitalisation processes, their strategic importance for business adaptation, and the challenges associated with technology implementation, such as the integration of new systems, the development of digital skills, and change management in organisations. One study is more theoretical with an emphasis on the strategic importance of digitalisation, and the other is practically oriented with a detailed analysis of its impact on business operations.

The research by J. Bacca-Acosta *et al*. (2023) analysed the impact of digital technologies on the competitiveness of countries, comparing Latin America and Europe. The article emphasises that the implementation of digital technologies, particularly information and communication technologies (ICT), is a key factor in improving business dynamics, skills development, labour and product market efficiency, and strengthening the financial system. For Latin America, ICT proved to be a strong predictor of business dynamics (66% variation), skills (81%), product markets (75%), and the financial system (49%). In Europe, ICT also positively affects these indicators, but with varying degrees of impact. For example, in European countries, the labour market shows a negative correlation with competitiveness due to structural differences. Compared to this study, the results of J. Bacca-Acosta *et al*. (2023) coincide in aspects of the importance of digital technologies for enhancing business dynamics and the impact of ICT on worker skills. Both articles emphasised the key role of digitalisation in adapting enterprises to modern challenges, optimising business processes, and expanding market opportunities. There is also a shared emphasis on the importance of investing in the development of digital skills, especially in countries with underdeveloped digital infrastructure.

The research by A. Dubey & R. Ranjan (2024) analysed business processes through a case study of Zivame, an Indian retail enterprise. The main findings highlighted that the implementation of digital tools, such as CRM, e-commerce, supply chain management, and cloud technologies, significantly improved the company's operational efficiency, customer satisfaction, and financial performance. Specifically, order fulfilment time was reduced from 7 to 3 days, repeat purchase rates increased from 35% to 65%, and employee productivity rose by 60%. However, the company faced challenges, including employee resistance to change and high initial investment costs. Compared to this study, the results show similarities in recognising the key role of digitalisation in enhancing competitiveness and operational efficiency. Both studies emphasised the importance of CRM and supply chain optimisation for improving internal processes and meeting customer needs. Both articles emphasised that successful digitalisation requires a clear strategy, investment in staff training, and the active implementation of modern technologies to ensure long-term business sustainability.

This research demonstrated that digitalisation significantly impacts the transformation of business models, contributing to enhanced enterprise competitiveness through process optimisation, the implementation of innovative technologies, and the effective use of digital resources. It has been determined that modern digital solutions, such as ERP, CRM, IoT, and AI, not only reduce costs but also improve customer experience, increase labour productivity, and open up new market opportunities. The main conclusion is that the success of digitalisation depends on a strategic approach to its implementation and the adaptive capacity of the organisation. Compared to the research by Z. Wang *et al*. (2023), which focused on the hierarchical nature of digital capabilities and their impact on business outcomes, both analyses highlight the importance of business model innovations as a key element of successful digitalisation. Z. Wang *et al*. (2023) detail that foundational, operational, and integrative digital capabilities form the basis for the implementation of business model innovations, which, in turn, act as a mediator between digital resources and enterprise performance. Current research placed more emphasis on the practical aspects of implementing digital solutions and the direct impact on business operations, whereas Z. Wang *et al*. (2023) focused on the conceptual link between digital capabilities and innovations. Both approaches demonstrate how the theoretical foundations of digital transformations can be applied in practice to achieve high business results.

The research by L. Zhang *et al*. (2023) demonstrated that digitalisation significantly improves the competitiveness of manufacturing enterprises through optimised management, operations, and adaptation to change. It is emphasised that the results of digital changes manifest with a delay, and state-owned enterprises demonstrate greater efficiency due to subsidies. Compared to this study, both analyses highlight the importance of digitalisation for enhancing business productivity and adaptability. There is a shared emphasis on business model transformation and the integration of digital technologies. However, the research by L. Zhang *et al*. (2023) focused on the manufacturing sector, whereas this study has a broader approach. The research by M.-Á. Galindo-Martín *et al*. (2023) analysed the relationship between digitalisation, entrepreneurship,

and competitiveness in 19 European countries. The main findings demonstrated that a favourable environment for digitalisation and investment in talent development significantly increase the level of entrepreneurial activity, which, in turn, positively impacts competitiveness through the implementation of innovations in products and processes. Compared to this study, both highlighted the role of digitalisation in improving business outcomes through innovation. Common findings include that digital technologies contribute to the optimisation of business processes, cost reduction, and the creation of new market opportunities. Both studies also emphasised the importance of human capital development to maximise the benefits of digitalisation. The research by M.Á. GalindoMartín *et al*. (2023) focused on a macro-level analysis of the impact of digitalisation on the competitiveness of countries, emphasising institutional conditions and economic indicators. In contrast, this research focuses on micro-level aspects of the implementation of digital technologies in business, paying more attention to specific tools and their impact on productivity.

The research by M.F. Mubarak *et al*. (2019) focused on the impact of Industry 4.0 technologies, such as big data, cyber-physical systems, IoT, and interoperability, on the productivity of small and medium-sized enterprises in Pakistan. The main findings show that big data, cyberphysical systems, and interoperability have a positive significant impact on productivity, while the impact of IoT was found to be insignificant. The authors emphasised that digital transformation enables process optimisation, cost reduction, and increased efficiency, but requires human capital and infrastructure development. Compared to this study, both analysed the key role of digitalisation in enhancing business competitiveness. Common aspects include findings on the importance of using digital technologies to optimise operations and create added value. In both cases, the need for a strategic approach to digital transformation and the implementation of innovations is emphasised. However, the research by M.F. Mubarak *et al*. (2019) focused on specific elements of Industry 4.0 in the context of Pakistani small and medium-sized enterprises. Additionally, M.F. Mubarak *et al*. (2019) considered in detail the challenges associated with limited resources and underdeveloped infrastructure.

The research by S. Kraus *et al*. (2021) provided an overview of the current state of digital transformation research, categorising the literature into three main areas: digital business transformation, technologies as drivers of digital transformation, and its institutional and societal implications. Findings point to the need for a strategic approach to the implementation of digital technologies to maintain competitiveness. The research by S. Kraus *et al*. (2021) focused more on a systematic literature review with an emphasis on conceptual aspects of digital transformation, such as business model adaptation and technology integration. The main findings emphasised the importance of integrating digital strategies, developing business models, and adapting organisations to new conditions. Compared to this study, both approaches highlighted the key role of digital technologies in achieving competitive advantages. Both studies recognised that digitalisation contributes to the creation of new value models, increased efficiency, ad business adaptability. In contrast, this study placed more emphasis on the practical impact of digital changes on specific organisational processes.

This study demonstrated that digital transformation significantly impacts the efficiency of business processes, particularly through the implementation of innovative technologies, management optimisation, and increased productivity. An important aspect is that digitalisation allows enterprises to adapt more quickly to changes in the market environment, create new competitive advantages, and improve customer experience (Ustymenko, 2024). The main focus is on how the integration of digital strategies contributes to achieving long-term business goals, particularly by reducing costs and increasing operational efficiency. Compared to the findings of D. Prihandono *et al*. (2024), it is also emphasised that digitalisation is a key tool for increasing productivity, especially in conditions of growing market competition. The research by D. Prihandono *et al*. (2024) focused on analysing the impact of market competition and limited resources on the adaptation of digital strategies in small and medium-sized enterprises in Indonesia. In turn, this study covered a wider range of sectors and is not limited to the conditions of one country, allowing for more generalised conclusions about the impact of digitalisation. This study focused on the role of digital transformation in enhancing the efficiency of small and medium-sized businesses. The results demonstrate that digitalisation contributes to cost reduction, optimisation of operational processes, and the implementation of innovations. In particular, the link between digital transformation and its impact on operational, financial, and innovative efficiency is highlighted. It is noted that it may take some time to see tangible results from digital investments.

Compared with the research by X. Teng *et al*. (2023), both articles agreed that digital transformation is a key factor in improving the operational efficiency of enterprises. An important aspect is that digital innovations contribute to cost reduction and increased productivity. However, the study by X. Teng *et al*. (2023) pointed to a complex relationship between digital transformation and innovation efficiency, which takes the form of an inverted U-curve. This conclusion is consistent with the assumption that the intensity of digital investments may decrease due to resource constraints and the need for significant initial investments. The research by A. Kő *et al*. (2022) focused on digital agility, digital competitiveness, and the innovative efficiency of small and medium-sized enterprises in the context of digital turbulence. The main findings indicate that the capacity for change and risk readiness are key factors for successful digital transformation and the achievement of innovative efficiency. The role of digital competitiveness as an important aspect of implementing innovative solutions is also emphasised. The similarity lies in recognising the key role of adaptation to change and readiness for innovation as the main conditions for the success of digital transformation. Both articles also emphasised the importance of an innovation-oriented organisational culture for enhancing competitiveness. Additionally, the study by A. Kő *et al*. (2022) examined in detail the relationship between digital agility, risk, and innovation, whereas this research focuses more on the systemic aspects of transformation.

The research by Z. Wu (2024) analysed the impact of digital transformation on the operational efficiency of

commercial banks in China. The results confirmed that digital transformation significantly improves efficiency through the modernisation of business models and operational processes. In particular, banks with a higher level of digitalisation show better profitability indicators. It is also noted that this impact is more significant for non-state-owned banks due to their flexibility in adopting digital technologies. Compared to this study, there is a shared emphasis on the importance of digital transformation for improving operational performance and competitiveness. Both studies recognise that digitalisation is a key factor in adapting businesses to a changing environment and creating new growth opportunities. However, the research by Z. Wu (2024) focused on the financial sector, specifically commercial banks, and examines in detail the impact of digital technologies depending on the type of bank ownership. In this study, the analysis covers a wider range of industries and focuses on the systemic aspects of digital transformation. Additionally, Z. Wu (2024) paid more attention to the relationship between digitalisation, financial performance, and ownership structure.

This study focused on how digital transformation impacts business efficiency through process optimisation, increased productivity, and adaptation to a changing market environment. Particular attention is paid to the systemic aspects of implementing digital technologies, as well as their longterm impact on enterprise competitiveness. Compared to the results of the research by M. Shehadeh *et al*. (2023), there is a shared conclusion that digitalisation is a key factor in enhancing business competitiveness and innovation. Both analyses recognise the significance of digital technologies in creating added value, optimising business models, and implementing innovations. The research by M. Shehadeh *et al*. (2023) emphasised the mediating role of entrepreneurial orientation and the moderating role of innovation capabilities, which also underscores the importance of adapting organisational culture to change. In contrast, the study by M. Shehadeh *et al*. (2023) focused on the service sector, analysing in detail how innovation capabilities amplify the impact of digitalisation on competitiveness through entrepreneurial orientation.

The research conducted by L. Kucher *et al*. (2023) focused on the development of innovative activities in agricultural enterprises within the context of the transition to agribusiness. The authors analysed the readiness of Ukraine and EU countries for digital transformation, using the global digital competitiveness index, and investigated innovative activity in crop and livestock farming. They also considered the barriers hindering innovation implementation, including financial, organisational, and technological barriers, and proposed ways to overcome them. Compared to this study, which has a broader sectoral scope and emphasised the impact of digitalisation on enterprise competitiveness through the implementation of innovative solutions, the research by L. Kucher *et al*. (2023) focused exclusively on the agricultural sector.

The research by S. Marko *et al*. (2024) focused on cybersecurity and fraud risks in the context of AI implementation, particularly manipulations with environmental data. Using IDEF0 modelling, the authors proposed solutions for fraud prevention. This study, in contrast, emphasised the impact of digitalisation, such as ERP, CRM, and IoT, on enhancing enterprise competitiveness. A commonality is the use of AI as a tool for process optimisation, but in S. Marko *et al*. (2024) AI is also considered a potential threat that requires management. This study and the research by N. Zelisko *et al*. (2024) have certain common points and differences. Both articles emphasised the importance of digital technologies for improving the efficiency of business processes. N. Zelisko *et al*. (2024) focused on the use of IoT, process automation, and precision agriculture as the main means of optimising production, reducing costs, and improving product quality. The research noted that the concept of "smart farming" contributes to a significant increase in agribusiness productivity through the use of big data, blockchain technologies, drones, and satellite systems, which is also confirmed in this research. N. Zelisko *et al*. (2024) paid more attention to economic security and risk management in the agricultural sector, particularly through the use of insurance and financial instruments to hedge price fluctuations. Overall, both studies have a common basis in the context of digitalisation but differ in their priorities: N. Zelisko *et al*. (2024) aimed to analyse economic stability through risk management, while this study emphasised long-term competitiveness through the adaptation of business models to digital transformations.

Digital transformation is a powerful tool for enhancing business efficiency, aiding innovation, automation, and the optimisation of operational processes. It opens up new opportunities for companies to develop, including greater competitiveness and access to new markets. Nevertheless, the effective implementation of digitalisation depends on the use of a strategic approach, investment in the development of digital skills, and the adaptation of organisational structures to new conditions. To achieve lasting results, it is important to consider the context, industry specifics, and implementation challenges. Digitalisation should be an important part of the business plan for the long term.

CONCLUSIONS

The digitalisation of business is one of the key drivers of modern organisational transformation. In an environment of globalisation and rapid technological development, enterprises that actively implement digital tools gain significant competitive advantages. This study analysed the impact of digital technologies on enterprise operations, their competitiveness, and their ability to adapt to rapid changes in the market environment. The results confirmed that the use of tools such as ERP, CRM, IoT, and AI allows for the integration of business processes, optimisation of costs, improvement of customer interaction quality, and increased overall productivity.

Particular attention was paid to cloud technologies, which are becoming an important element of business modernisation. These technologies enable companies, especially small and medium-sized enterprises, to scale their operations without significant financial investments in physical infrastructure. Through cloud services, businesses gain access to analytics tools, secure data storage, and flexible working platforms, allowing them to respond quickly to changes in market conditions. However, digitalisation is also accompanied by several challenges. Among them are high implementation costs, insufficient digital literacy of

personnel, which hinders the adaptation process, and the increasing risks associated with cybersecurity.

Practical analysis of successful cases from leading Ukrainian companies such as Obolon, Nova Post, and Ukrzaliznytsia has shown that digital solutions have a significant impact on their productivity and competitiveness. Obolon uses automated production management and quality control systems, which allows for cost reduction, increased efficiency of production processes, and ensures consistent product quality. Nova Post focused on the digitalisation of logistics processes, implementing mobile applications, automated sorting centres, and big data analytics, which significantly improved delivery speed and customer experience. Ukrzaliznytsia integrated digital technologies into its infrastructure, implementing electronic tickets and online services for freight transportation, which increased transparency and operational efficiency.

Digitalisation also contributes to the development of environmentally conscious businesses. Through digital tools such as energy consumption monitoring systems and optimised logistics routes, enterprises can reduce their environmental impact and contribute to achieving sustainable development goals. The success of digital transformation largely depends on a strategic approach. Firstly, companies need to define clear priorities in digitalisation, which will avoid the chaotic implementation of technologies. Secondly, it is important to invest in the development of digital skills among personnel, as human capital remains a key factor for success. Employee training should be aimed not only at mastering technologies but also at understanding their strategic role in achieving business goals. Thirdly, enterprises must consider cybersecurity issues, as the growth of digital threats can negatively impact performance.

A key aspect of digital transformation is the development of a system to monitor the effectiveness of implemented solutions. Defining clear key performance indicators allows for the assessment of digitalisation success, identification of weaknesses, and timely adjustments to strategies. For example, monitoring operating costs, employee productivity, and customer satisfaction levels can form the basis for further improvement of digital processes. The prospects for future research lie in a more detailed analysis of the impact of digital technologies on various sectors of the economy and the social aspects of their implementation.

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CONFLICT OF INTEREST

None.

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Вплив цифровізації на ефективність і конкурентоспроможність бізнесу

Анотація. Метою дослідження було визначення ролі цифровізації у підвищенні конкурентоспроможності підприємств через аналіз впроваджених цифрових рішень та оцінку їхнього впливу на ефективність бізнес-процесів. Дослідження охоплювало період із 2018 до 2024 року, що дозволило врахувати сучасні тенденції цифрової трансформації. Основними матеріалами слугували офіційні звіти та публікації українських компаній «Оболонь», «Нова Пошта» та «Укрзалізниця», які активно впроваджували цифрові інструменти, а також аналітичні дані з відкритих джерел. Результати дослідження показали, що впровадження цифрових технологій суттєво вплинуло на ключові показники діяльності підприємств. Зокрема, було виявлено значне підвищення операційної ефективності, якості обслуговування клієнтів та рівня задоволеності споживачів. Наприклад, «Нова Пошта» скоротила час обробки посилок на 40 %, а «Оболонь» зменшила втрати ресурсів на 20 % завдяки впровадженню Manufacturing Execution System. Впровадження цифрових рішень сприяло покращенню прозорості внутрішніх бізнес-процесів, що особливо проявилося у компанії «Укрзалізниця» завдяки впровадженню електронних платформ для управління перевезеннями. Крім того, цифрові технології дозволили скоротити час прийняття управлінських рішень через використання автоматизованих систем аналізу даних. Було спрогнозовано довгострокові ефекти цифрових рішень, зокрема їхній вплив на створення нових бізнес-моделей, що дозволило компаніям адаптуватися до змін у ринковому середовищі. Висновки дослідження підтвердили, що цифровізація є ключовим фактором у забезпеченні конкурентоспроможності підприємств. Впровадження інноваційних рішень дозволяло підвищити якість послуг, оптимізувати бізнес-процеси та зміцнити ринкові позиції компаній. Однак досягнення максимального ефекту потребувало стратегічного підходу, інвестицій у навчання персоналу та адаптації організаційної культури до нових технологій

Ключові слова: інноваційні продукти; автоматизація процесів; управлінські процеси; ринкові тенденції; електронна комерція; стратегії