

ARTIFICIAL INTELLIGENCE IN THE OPERATIONAL ACTIVITIES OF ENTERPRISES AS A FACTOR FOR INCREASING THEIR COMPETITIVENESS IN REGIONAL AND INTERNATIONAL MARKETS

Vera Guzonova¹, Ivan Yaroshenko², Oleksandra Kanova³, Nadiya Buletsa⁴, Dmytro Itchenko⁵, Oleksandr Orlovskiy⁶

¹ PhD. Ing., DTI University, 533/20 Sládkovičova, Dubnica nad Vahom, Slovakia, E-mail address: guzonova@dupres.sk

² D.Sc. Prof., National Technical University, Kharkiv Polytechnic Institute, 2 Kirpycheva str., Kharkiv, Ukraine, E-mail address: ivan.yaroshenko@gmail.com

³ Assoc. Prof., Simon Kuznets Kharkiv National University of Economics, 9A Nauky av., Kharkiv, Ukraine, E-mail address: oleksandra.kanova@hneu.net

⁴ Assoc. Prof., Uzhhorod National University, 14A Universytetska str., Uzhhorod, Ukraine, E-mail address: nadiya.buletsa@uzhnu.edu.ua

⁵ Assoc. Prof., Chernihiv Polytechnic National University, 95 Shevchenko str., Chernihiv, Ukraine, E-mail address: dimaitchenko@gmail.com

⁶ PhD Student, Chernihiv Polytechnic National University, 95 Shevchenko str., Chernihiv, Ukraine, E-mail address: orlovskij_mt@ukr.net

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Abstract

The use of the artificial intelligence technology is spreading rapidly in all areas of activity, which is due to the impact of technology not only on increasing the level of human activity indicators, but also on increasing the competitiveness level of enterprises when using this technology in their operational activities. The main areas of operational activity of enterprises in which the artificial intelligence technology is used are highlighted, which include automation, organization, transport and logistics and marketing activities, management and personnel activities, quality control and monitoring. The impact of the links between the main areas and types of activities of enterprises on the competitiveness of these enterprises is described and formalized. Positive factors that, if the artificial intelligence technology is integrated into the production activities of the enterprise, increase its competitiveness, are highlighted. Attention is paid to studying the AI impact on increasing competitiveness of enterprises represented in regional and international markets for the sale of manufactured products/services, and implementation of the artificial intelligence technology in operational activities of these enterprises. Current trends in the AI use in operational activities of enterprises are analyzed.

Keywords: Enterprise Operations, Artificial Intelligence, Digital Innovations, Technologies, Production Activities, Competitiveness, Competitive Advantages, Regional Market, International Market.

JEL Codes: O32, M15, L25.

Introduction

The study of the impact of operational activities of enterprises on competitiveness of products in the digital economy is based on application of artificial intelligence technologies. Given globalization of implementation and use of innovative technologies and digital innovations, the need for formalization, scientific substantiation and substantive unification of the term “artificial intelligence” becomes obvious, because a standardized definition of this concept will form the foundation for safe, predictable and effective use of the “artificial intelligence”

technology. This approach, on the one hand, will create an interdisciplinary opportunity for research into this concept, and on the other hand, will avoid creating barriers to effectively resolving legal certainty of “artificial intelligence” and respond to trends of the international digital transformation.

Literature review

Scientific publications and research into the patterns of application of the artificial intelligence technology in development and competitiveness

of enterprises have become widespread in recent years. Banerjee S. et al. (2025) analyzed the nature of AI in retail, investigated transformation of customer-centric business operations, and focused on the role of AI in shaping strategic business operations.

Shingate K. et al. (2025) consider the role of artificial intelligence in modeling, automation, and analysis of business operations, analyze digitalization and the AI impact on activities of business groups, their operations, and effectiveness of subsidiaries. Holshovsen M. (2024) investigate legal responsibility for the AI use in business operations and outline and model the impact of modernization and digitalization as a factor in increasing competitiveness of enterprises in regional and international markets. Liu Cuiping et al. (2024), Ivanova N. et al. (2022) analyze the role of AI in corporate socio-economic development and analyze strategies for adapting enterprises to today's challenges.

Abouzakhar Nasser (2024) analyzed the AI impact on business operations, a model of the AI-based solutions for business was proposed, and the methodology for assessing innovative development of enterprises in the region based on the use of digital technologies was developed. Yasheng Chen et al. (2023), Marhasova V. et al. (2024) investigated the role of AI in effective operation of business and promoting its sustainable development and analyzed institutional measures to manage development of digital technologies in the national security.

Abhinav Priyadarshi Tripathi et al. (2024), Rajeshwari S. et al. (2024) revealed features of the AI-based data analysis using hybrid Fusion Learn software in business operations, investigated the AI impact on activities of small and medium-sized transport enterprises, and outlined features of using AI to improve operations in e-commerce. Desai P. et al. (2022) investigated problems and opportunities of using AI in business operations of enterprises, analyzed the AI role in strengthening business operations.

However, the conceptual framework to study the AI application in economic systems and studying conditions for its application in operational activities in formation of competitive advantages and ensuring competitiveness in

regional and international markets also requires detailing.

The purpose of the article is to study the role of artificial intelligence in operational activities of the enterprise and its impact on formation of competitive advantages.

Methodology

The following scientific methods were used in the study: abstract-logical, systemic, theoretical and retrospective analysis, analysis and synthesis, economic and statistical analysis, generalization, comparison, etc.

To calculate the integral index of digital transformation, it is proposed to use the formula:

$$I = \sum_{i=1}^4 w_i * S_i,$$

where w_i – component weight, sum of weights = 1;

S_i – score on a scale of 0–1 for each component.

The calculation of the integral index is proposed to be carried out using the example of the “Kyivstar” company, which is actively implementing artificial intelligence in its work, in particular through digital assistants and customer service automation.

Results

The issue of studying the specifics of application of AI technologies is extremely relevant. Some scientists note that rapid process of integrating AI technologies into all spheres of social life and activity is due to significant role of these technologies in increasing efficiency of economic activity. The topic of integration of digital and innovative technologies is also actively researched by scientists and highlighted in their works. Thus, the position is highlighted in the works of scientists that implementation of an orderly mechanism that will cover the main key stages of integration of innovations, such as the selection of suitable innovative product and its conceptual differences, conducting, if required, the necessary research and development work, developing a process for organizing production, stages of new product release, as well as assessing the results of new product release, becomes the basis for application of artificial intelligence technologies in operational activities.

Using this mechanism will provide a systemic, highly effective and targeted approach to cyclical implementation of digital artificial intelligence technologies in operational activities of the enterprise, while simultaneously increasing the level of its adaptability to challenges of internal and external environments, increasing the enterprise's productivity and its competitiveness.

The issue of systematization of introducing innovations and digital technologies is relevant for research in the direction of enterprise activities. Scientists have systematized approaches to organizing the processes of introducing innovations and digital technologies, also highlighting the key stages of these processes, namely: selection of necessary innovations, their introduction into operational activities, and collection of analytical data to assess effective implementation. In addition, relevant consideration of internal and external challenges to introducing innovations into the operational system of the enterprise is highlighted, with the subsequent implementation of this process with the obligatory consideration of these components of the enterprise's activity as economic, resource, scientific and technical, and social components. Effective management of introducing innovations into operational activities of the enterprise also depends on the developed and implemented stages of their implementation, which in turn affects economic security and competitiveness of the enterprise itself.

Manufacturing new products is also one of the key components in implementation of artificial intelligence technologies, which determines the interest of scientists in studying this issue. In studies of scientists, special attention is paid to principles of the planned introduction of new products to the market, digital support of the stages of this planning, including collecting analytical data on the dynamics of internal and

external trends in demand and product sales markets, developing the appropriate strategy for production and sale of products, assessing effectiveness of this strategy, finding challenges to its implementation and analyzing their impact on sales.

The stages of planning the processes of bringing new products to the market outlined in the research are supplemented by the mechanism for introducing artificial intelligence technologies into operational activities of the enterprise, which implementation will also have a positive impact on both competitiveness of the enterprise and its further development.

Therefore, the use of artificial intelligence in operational activities of the enterprise is integration of innovative technologies in operational activities, based on integration of a set of methods for business digitalization and the use of computer tools that can simulate corresponding cognitive -analytical and organizational-control functions to influence performance indicators of the enterprise, including increasing its competitiveness. Implementation of the "artificial intelligence" technology can cover both production and organizational components of the enterprise's activities, and simultaneously cover all its levels, to ensure relevance, accuracy and speed of the production management or all production as a whole, including further development of the enterprise.

Businesses are increasingly leveraging AI to improve and enhance their operations. According to a Forbes Advisor survey, businesses are using AI across a wide range of industries. The most popular areas of application are customer service, where 56% of respondents are using AI for this purpose, and cybersecurity and fraud management, where 51% of businesses have implemented it. (Haan K., Watts R., 2023). Other notable uses of the tool are shown in Figure 1.

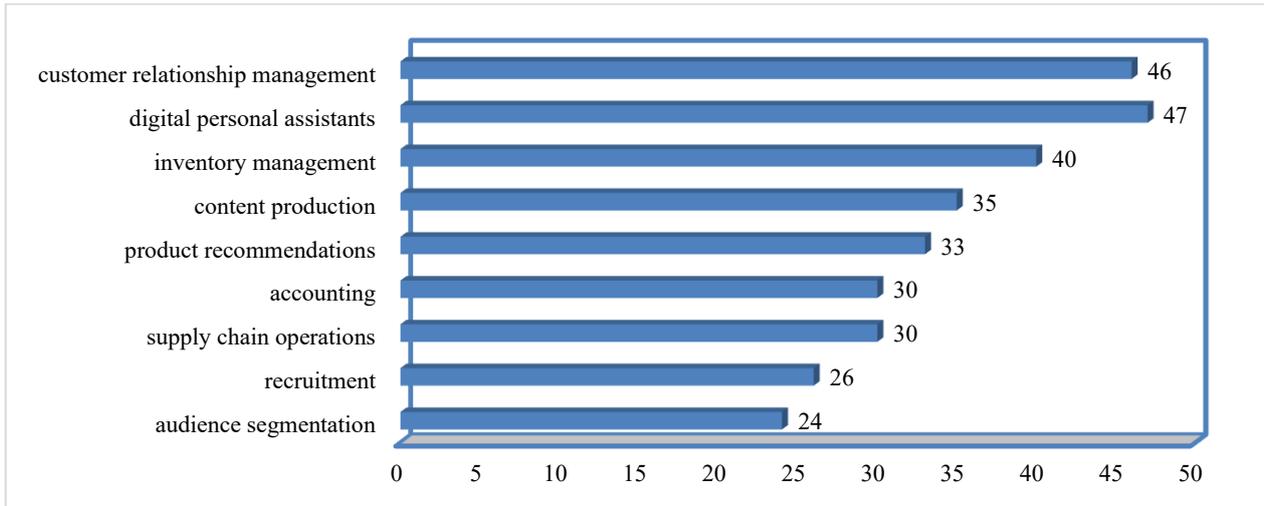


Figure 1. Most common uses of AI in business, %, 2024

**Source: Compiled by the authors based on Haan K., Watts R. (2023).*

The results of this study show that “artificial intelligence” is gradually becoming an integral tool of modern enterprises. Its implementation covers all areas of operational activity, from customer service and cybersecurity to inventory management and content creation.

Artificial intelligence allows enterprises to become more flexible and productive. According to a Forbes Advisor survey, AI is used or planned for use in various aspects of business management. Figure 2 shows the expected positive results of using AI by business owners.

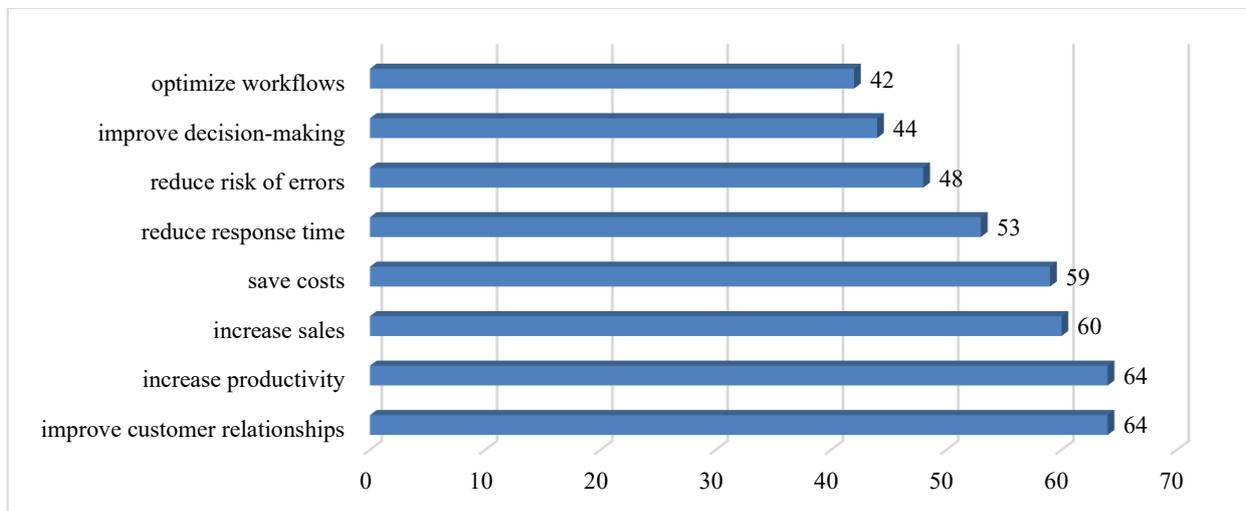


Figure 2. Expected positive impact of AI use for business, %, 2024

**Source: Compiled by the authors based on Haan K., Watts R. (2023).*

Most business owners believe that “artificial intelligence” is an important tool in their operations, helping to increase the number of respondents, help improve customer relationships

and productivity, and contribute to increased sales. Artificial intelligence is perceived as an asset for improving decision-making, reducing response times, and avoiding errors (Fig. 3).

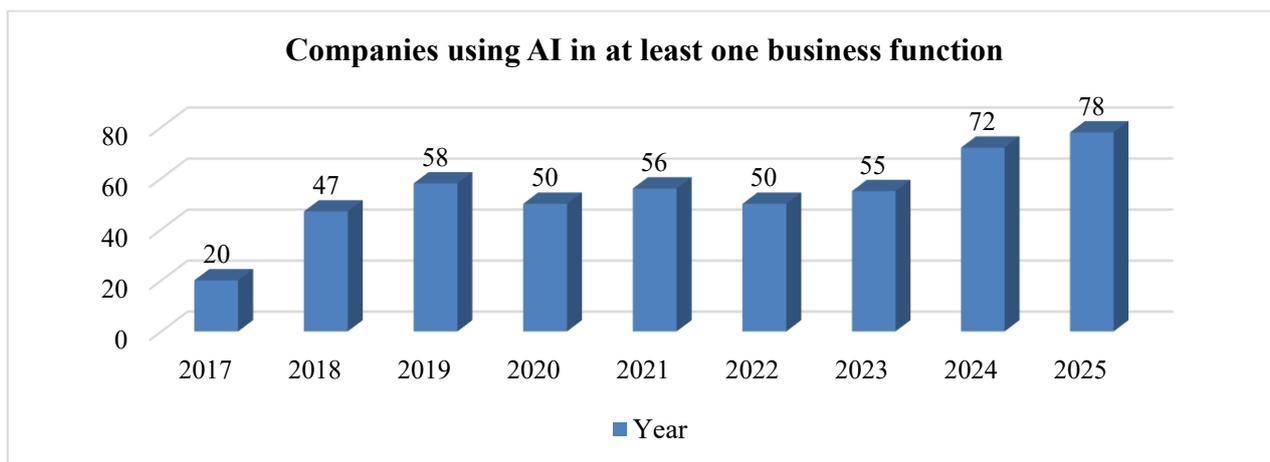


Figure 3. Dynamics of the number of enterprises using AI in at least one business function

*Source: Cardillo A. (2025).

Dynamics of the share of enterprises using AI in operational activities had the following trends: 2017 – 20% of enterprises, 2018 – 47%,

2019 – 58%, 2020 – 50%, 2021 – 56%, 2022 – 50%, 2023 – 55%, 2024 – 72%, 2025 – 78% (Table 1).

Table 1. Dynamics of the share of enterprises that used AI in operational activities

Year	Percentage of Companies, %
2017/	20
2018	47
2019	58
2020	50
2021	56
2022	50
2023	55
2024	72
2025	78

*Source: Cardillo A. (2025).

The main areas of the AI technology use in operational activities of enterprises include features of forecasting demand for products or services, organizing production activities, automation and standardization of production processes, diagnostics of production lines and equipment in the “real-time” mode, management of transport and logistics chains, and quality control of products or services.

The use of the artificial intelligence technology in operational activities is a key factor in digital modernization of the entire enterprise, which in turn will make it possible to improve effectiveness of production activities. Let us describe in detail the impact of the use of artificial intelligence in the indicated areas. Thus, automation of production activities, as a form of digitalization of operational activities of the

enterprise, when implementing artificial intelligence technologies (for example, Internet of Things technologies), makes it possible to significantly reduce the amount of time required for production, as well as significantly reduce the amount of resources required for manufacture of products or provision of services. In addition, the use of artificial intelligence technologies allows ensuring reliability of the information and statistical base, reducing the number of errors when performing standardized production or administrative processes, which also ensures the increase in staff productivity.

Current regional trends in development and use of AI in operational activities of enterprises are presented in Table 2. The average global indicators are 42% and 40%, respectively.

The use of the “artificial intelligence” technology in forecasting demand and further organization of production is also one of the main directions of digitalization of the enterprise's operational activities. Implementation of AI provides an opportunity to identify patterns in the dynamics of changes in demand for products/services, influence of seasonal fluctuations and new trends in the markets, as well as changes in economic factors of the external

environment, which allows for in-depth analysis of the data obtained and will create the basis for further forecasting of demand for the enterprise's products/services. In addition, results of the above analysis actualize the need to adjust current production processes, provide an opportunity to form production programs, justify the volume of production costs to prevent the risks of excess stocks of raw materials or, conversely, its shortage.

Table 2. Regional features of development and use of AI technologies in operational activities of enterprises

<u>Country</u>	<u>AI Deployment Rate</u>	<u>AI Exploration Rate</u>
<u>China</u>	50%	36%
<u>India</u>	59%	27%
<u>Canada</u>	37%	48%
<u>Italy</u>	36%	38%
<u>Singapore</u>	53%	41%
<u>United Arab Emirates</u>	58%	32%
Global	42%	40%
<u>Germany</u>	32%	44%
<u>France</u>	26%	45%
<u>Spain</u>	28%	51%
<u>Latin America (Region)</u>	47%	34%
<u>United Kingdom</u>	37%	41%
<u>United States</u>	33%	38%
<u>Australia</u>	29%	50%
<u>South Korea</u>	40%	48%
<u>Japan</u>	34%	46%

*Source: Cardillo A. (2025) <https://explodingtopics.com/blog/companies-using-ai>.

One of the main areas of the enterprise's operational activities is its transport and logistics activities, integration of the “artificial intelligence” technology in which direction has an impact on the cost of products/services and the time spent on their transportation. The positive impact of introduction of these technologies into transport and logistics activities is possible provided that the enterprise's operational activities form competitive advantages through mechanisms for improving existing transport chains or developing and using new ones that will reduce transport costs and time for transportation itself. Thus, the use of the “artificial intelligence” technology allows not only to identify and/or

predict potential risks in the transport and logistics component of the enterprise's operational activities, but also makes it possible to increase efficiency of transporting products/services, their redistribution for transport purposes and storage in general (Fig. 4).

“Kyivstar” conducted an annual survey among Ukrainian business representatives and focused on technologies. The survey focused on modern tools that help businesses operate and develop in 2024. Attention was focused on artificial intelligence, cloud solutions, big data and cybersecurity, and also found out which technologies are currently the most popular.

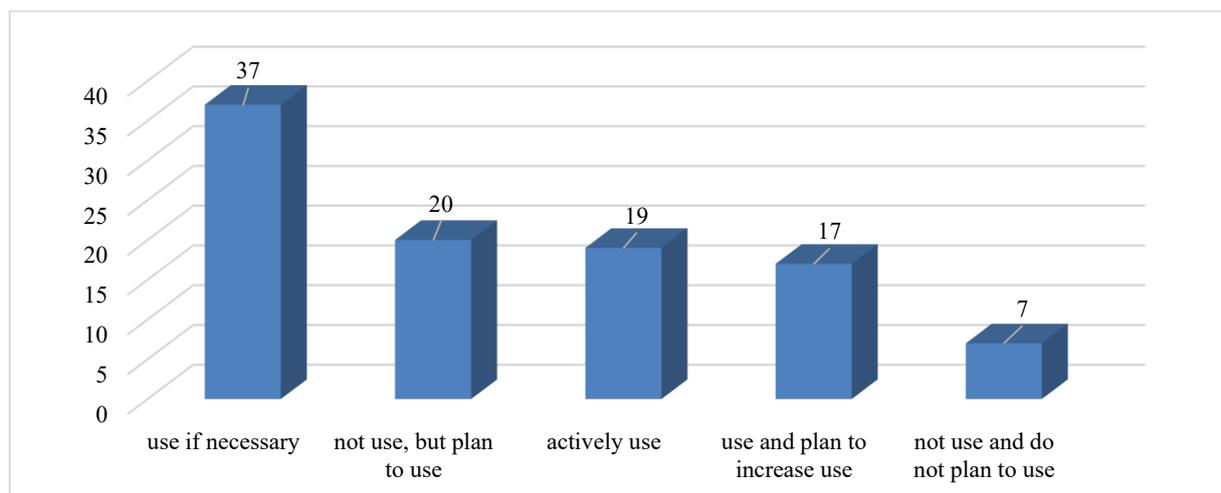


Figure 4. The level of use of “artificial intelligence” technologies in Ukrainian companies in 2024

*Source: compiled by the authors based on Kyivstar Business Hub (2024).

Among the Ukrainian companies, “Kyivstar” is actively implementing artificial intelligence in its work, in particular through digital assistants and customer service automation. AI-based chatbots and voice assistants respond to subscribers' requests in real time. They help to quickly resolve typical subscriber questions regarding tariffs, balance, and technical problems without the participation of company employees. This significantly increases the efficiency of contact centers and reduces the time for processing requests.

According to the company, such technologies allow solving 80% of requests from the first contact (FCR), which indicates a high level of service. At the same time, this means that

a huge number of requests are processed every day. AI saves about 1,667 hours of operator work every day, which is equivalent to approximately 208 working days per month for one employee. “Kyivstar” also launched a localized AI platform in Kyivstar Cloud, which allows businesses and the public sector to deploy AI solutions directly in the Ukrainian cloud environment. The plans include relaunching a support bot based on generative AI that will understand Ukrainian and help customers solve their problems even faster. In addition, the company is actively investing in Big Data, cybersecurity, and cloud services, planning to spend 1 billion USD on the development of telecom technologies in 2023–2027 (Table 3).

Table 3. Analysis of the dynamics of economic indicators of “Kyivstar”, 2021–2024

Indicators	2021	2022	2023	2024	Δ 2024–2023
Net income, thousand USD	714	773	832	932	100
Cost, thousand USD	241	327	361	367	6
Profit, thousand USD	473	446	471	459	-12

*Source: calculated by the author based on Kyivstar.ua.

Analysis of the financial performance of “Kyivstar” for 2021–2024 shows that the introduction of tools using “artificial intelligence” into operational activities has a positive effect on economic efficiency and increases the competitiveness of the company.

After all, there is a stable trend in revenue growth. In particular, net income in 2024 increased by USD 100 thousand compared to 2023, which demonstrates positive development dynamics and efficiency of commercial activities (Table 4).

Table 4. Evaluation of the components of the integrated digital transformation index of “Kyivstar”

Index component	Description of implementation in Kyivstar	Grading scale (Si)	Weight (wi)	Grade (Si)
Infrastructure and cloud technologies	Leveraging Azure and AWS cloud platforms for rapid implementation, security, and cost control.	0 – no cloud infrastructure 0.25 – partial integration 0.5 – basic cloud infrastructure 0.75 – almost complete integration, cost optimization 1 – Seamless integration, high efficiency and security	0.25	0.9
Quality and data management	Emphasis on collecting, structuring, and tracking data quality in compliance with compliance legislation.	0 – data is not structured 0.25 – partially structured, minimal control 0.5 – basic structure, control is limited 0.75 – complete structure, control and compliance with norms 1 – complete structure, ISO/GRI standards, continuous monitoring	0.25	0.8
Staff training	Conducting training programs for employees in order to develop skills in working with AI tools.	0 – lack of curricula 0.25 – individual courses, limited participation 0.5 – regular trainings for individual departments 0.75 – comprehensive programs for most employees 1 – continuous training, certification, full coverage	0.20	0.7
Automation and analytics	Using AI to analyze data, predict business metrics, and automate processes.	0 – lack of automation 0.25 – partial automation, local processes 0.5 – basic automation of key processes 0.75 – full automation, partial use of AI 1 – Seamless integration of AI into processes, forecasting, and analytics	0.30	0.85

*Source: compiled by the authors based on Kyivstar Business Hub.

At the same time, the cost of production continues to grow, which can be explained by the additional implementation of digital tools and innovative technologies, but the pace of this growth has slowed down, which may indicate partial optimization of costs or stabilization of production processes. Despite the increase in revenue, the company's profit in 2024 decreased by USD 12 thousand compared to the previous year. This may be a consequence of an increase in operating expenses and investment activity. Thus, the company demonstrates positive dynamics of revenue growth and controlled cost.

Therefore, the integral index of digital transformation will be:

$$I = (0.25 \cdot 0.9) + (0.25 \cdot 0.8) + (0.2 \cdot 0.7) + (0.3 \cdot 0.85) = 0.82.$$

The level of implementation of digital technologies, data management, personnel

training and process automation is high. The value of the integral index of 0.82 indicates the effective integration of infrastructure, analytics and “artificial intelligence” into the company's management system, which allows for quick decision-making, resource optimization and increased competitiveness.

Therefore, for enterprises which products/services are represented in regional markets, integration of the “artificial intelligence” technology into the key areas of the operational activity directly affects the increase of their competitiveness in the form of acquired corresponding competitive advantages. These competitive advantages include increasing the potential of the enterprise through automation of standardized production processes, creating, filling and analytical work with large databases of all key indicators of production processes and other information about the enterprise, optimizing

logistics operations through management of transport chains, as well as increasing efficiency of management decisions. All these factors act as factors in increasing the potential of the enterprise, reducing the total volume of production costs (production and logistics), optimizing management decision-making at all levels of production processes.

A similar situation arises when implementing the artificial intelligence technology in operational activities for enterprises whose products/services are represented in the international markets, because transportation costs for them are perhaps the most important item of production costs, which affects their long-term competitive advantages. Using this technology in operational activities of these enterprises can be considered as an intangible asset, which serves as the basis of their competitiveness due to reduction of man-hour costs for processing large data sets on production processes both for the central unit and for international divisions of the enterprise, reduction of production costs in terms of implementation of logistics processes, as well as reduction of costs for ensuring communication between all international divisions of the enterprise. In addition, using the artificial intelligence technology in operational activities of international enterprises provides an opportunity to optimize monitoring of demand indicators for

products/services, increase of efficient forecasting for further planning the production of current or new products/services. Therefore, the use of the “artificial intelligence” technology in operational activities, products/services presented in the international markets, doesn't only affects the increase in their competitiveness.

Conclusions

Summarizing the above, it can be stated that one of the main factors in increasing competitiveness of enterprises in regional and international markets is the introduction of the “artificial intelligence” technology in operational activities of enterprises. The use of this technology acts as a mechanism for increasing efficiency of production processes, which will ensure efficient use of enterprise resources, monitoring and planning of production processes, optimization of enterprise management and its assets, reduction of costs and cost of products/services. However, in the context of globalization of digital transformation processes, the issue of using the “artificial intelligence” technology has its own problems, which require the comprehensive approach to its solution, because like all innovative high-tech products, this technology is expensive. All these factors actualize the need for further research into the issue of using the “artificial intelligence” technology in operational activities of enterprises.

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