

Use of Digital Technologies in Strategic Business Management

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Abstract

In the article, the features of using digital technologies in the strategic management of enterprises are analyzed. The features of digitalization are identified using the example of industrial enterprises, considering the security and economic situation in the country. The main directions of implementing digital solutions in the strategic management of industrial enterprises are identified. The methodological support for implementing digital solutions in the activities of enterprises is expanded. The integral digital maturity index of PrJSC "Myronivskiy Hliboproduct" is calculated. It is argued that the application of the methodology on the example of a large industrial enterprise demonstrates that the integral digital maturity index reflects both available digital technologies, and their real impact on management, labor productivity and financial stability. This allows us to consider the proposed index as a practical analytical tool for diagnosing the current level of digital transformation, monitoring its dynamics over time and substantiating management decisions regarding digital development priorities. It is proven that the integral digital maturity index can be used as a universal indicator for inter-company and inter-industry comparisons, strategic planning of digitalization and assessment of its effectiveness, which makes the proposed methodology appropriate for wide practical application in analytical and scientific research. A toolkit for the development of digital technologies has been formed, which made it possible to determine the advantages and disadvantages of using these technologies for business.

Keywords: digital technologies, digitalization, strategy, strategic management, enterprises, digital development, business processes, innovative development, decision-making.

Introduction

Modern conditions of globalization are accompanied by the expansion of the information society, which requires appropriate measures in matters of qualitative changes in the modern paradigm of economic development. In this case, attention should be paid to the transformation

and improvement of production processes using information technologies, since the effective production and economic activity largely depends on the use of digital technologies. Innovative development contributes to the improvement of the technological base, which requires the further development of organizational conditions that contribute to the transformation of industrial enterprises into modern information business entities that can form competitive advantages on this basis.

The introduction of digital technologies in the management of industrial enterprises today includes measures for anti-crisis management, innovative development, and digital planning, which in the strategic perspective will contribute to ensuring the high level of competitiveness. The mechanism for introducing digital technologies into the production and economic processes of the enterprise should be carried out at all levels of management.

Literature review

Many publications by domestic and foreign scientists are devoted to the issue of introducing digital technologies into the activities of enterprises. Peña, J. et al. (2024), Jakubek P. et al. (2023) investigated the impact of digitalization on the formalization of informal business, analyzed and compared strategic management in China and Peru, and substantiated the importance of managerial control. Putra B. W. et al. (2025), Popelo O. et al. (2025) analyzed the improvement of business efficiency through digital transformation, investigated the strategic role of supply chain integration and operational activities in the management of business entities, and outlined global trends in the development of innovative business ecosystems under the influence of digitalization processes.

Allur N. S. et al. (2025), Marhasova V. et al. (2024) substantiated the role of knowledge management in developing effective strategic business planning for organizations, and investigated the features of the development of digital technologies in the context of ensuring economic security. Anwar U.A.A. et al. (2025), Nikiforov P. (2022) analyzed the integration of supply chains and the role of strategic management in ensuring

business efficiency, and substantiated the feasibility of public-private partnerships in the strategic development of enterprises. Kanan T. M. (2025), Abramova A. et al. (2021) the features of international business management in the context of a strategic perspective were investigated, and the development of e-commerce enterprises under the influence of digital technologies was analyzed.

In the papers of Cornejo-Aparicio V. et al. (2025), Alwidyan M. F. (2025), the possibilities of strategic business units for outsourcing as a basis for corporate governance are revealed, strategic tools in intercultural business communication and management are analyzed. Rawat P. S. et al. (2025), Malewska K. et al. (2025) investigated the strategic integration of artificial intelligence in stimulating innovation in business, revealed the features of managing digital technology infrastructure and aligning business strategy as a means of ensuring digital capabilities in enterprises.

Fastovets N. et al. (2025), Dahake P. S. et al. (2025). (10,11) outlines the strategic financial management of innovatively adaptive enterprises in startup business in the context of globalization, investigates the integration of business process management and marketing, and proposes a strategic approach to improving customer-oriented processes. Kozlovskyy D. et al. (2025), Palmié M. et al. (2025) considered tools for business leadership and strategic crisis management in enterprises, and analyzed digital business models as a strategic management priority.

Khaddam A. A. et al. (2025), Lim A.-F. et al. (2025) analyzed the role of business analytics based on artificial intelligence in the strategic management of business entities, analyzed the relationship between supply chain quality management, knowledge sharing, organizational innovation and strategic business effectiveness. Shamim S. et al. (2025), Roy S. K. et al. (2025) investigated the ability to rapidly manage innovations and the effectiveness of business model innovations, analyzed the role of strategic IT alignment and operational IT efficiency, and outlined the role of strategic human resource management under the influence of artificial intelligence technologies.

Al-Abbadi, L. H. et al. (2025), Vassolo, R. et al. (2025), Kouloukoui, D. et al. (2025) focuses on business analytics and strategic entrepreneurship to achieve the SDGs, analyzes the importance of business cycles for strategic management, and explores international perspectives and strategic determinants of business risk management. In the works of Koval V. et al. (2025), Kasorn K. et al. (2025), the features of sustainable behavior management in the strategic development of enterprises are analyzed, modern possibilities of strategic management of impact accounting in sustainable construction organizations are presented. Pietsch W. (2025), Al-Tarawneh A. et al. (2024) revealed the ways of balancing the sustainability of digital product management from a strategic business perspective, analyzed the impact of strategic and innovative entrepreneurship and social capital on overall business performance.

Considering the significant achievements of scientists in this field, it is appropriate to note that this article focuses on the specifics of the implementation of digital technologies in industrial enterprises, which is certainly an extremely important aspect in today's turbulent business conditions. The article identifies the directions for implementing digital solutions in the strategic management of enterprises, which is an aspect not sufficiently covered in other studies. The proposed methodological support for the implementation of digital solutions is a certain contribution to the literature, as it offers new approaches and practical recommendations for enterprises. The formation of a toolkit for the development of digital technologies proposed by the authors allows for a detailed analysis of the advantages and disadvantages of using digital technologies for business, which can become the basis for making informed decisions.

The purpose of the article is to study current trends in the use of digital technologies in the strategic management of industrial enterprises.

Methodology

The study proposes to assess the digital maturity level of an enterprise based on an integrated approach, which involves

summarizing key financial, economic and managerial characteristics that reflect the depth and effectiveness of digital transformation. The methodology is based on the assumption that digitalization is not a separate technological process, but manifests itself through changes in the structure of assets, the efficiency of operational processes, the quality of management decisions, labor productivity and economic return on investment.

At the first stage, the basic components of digital maturity are identified for assessment, which include digital infrastructure, digitalization of business processes, data-driven management, staffing for digital changes, and the economic effect of implemented digital solutions. For each of the components, quantitative indicators available in the financial and statistical reporting of the enterprise are used, in particular indicators of the structure of assets, financial results, income, investments, and labor productivity. This ensures the reproducibility of the assessment and makes it impossible to use subjective expert judgments.

The calculation of the values of individual components is carried out by bringing the corresponding indicators to a comparable form using normalization or relative coefficients, which allows assessing the heterogeneous aspects of digital transformation on a single scale. The obtained values are interpreted as partial indicators of the digital maturity level in each direction, with higher values indicating a deeper integration of digital technologies into the activities of the enterprise and a greater managerial and economic effect from their use.

At the final stage, an integral digital maturity index is formed as the arithmetic mean of the values of all components. This approach allows obtaining a generalized quantitative characteristic of the digital maturity level of the enterprise, which reflects not only the presence of digital solutions, but also their real impact on the efficiency of the functioning and sustainability of the business. The resulting index is used for analytical conclusions regarding the level of digital transformation of the enterprise, comparing dynamics over time and substantiating further management decisions in the digital development.

Table 1. Methodology for calculating the integral index of digital maturity of an enterprise

Digital maturity component	Analytical indicators	Component evaluation formula	Economic interpretation
Digital infrastructure	Share of non-current assets	$C_1 = NA/A$	Reflects the investment level in long-term infrastructure, including digital infrastructure
Digitalization of business processes	Gross profit; cost price	$C_2 = GP/R$	Characterizes the efficiency of operational processes and the result of automation
Management analytics (data-driven management)	Income stability	$C_3 = 1 - \frac{R_{max} - R_{min}}{R_{avg}}$	Less variation in income indicates quality data-driven management decisions
Human resources for digitalization	Labor productivity	$C_4 = \frac{R/N}{LP_{ref}}$	Shows the effect of digital competencies and labor automation
Economic effect of digital solutions	Investments; financial result	$C_5 = \frac{GP/I}{EI_{ref}}$	Reflects the return on investment in digital transformation
Integral Digital Maturity Index	Generalization of components	$I^{dz} = \frac{C_1 + C_2 + C_3 + C_4 + C_5}{5}$	Comprehensive assessment of the enterprise's digital maturity level

Source: proposed by the authors

Note: NA – non-current assets;
A – total assets;
R – net income;
GP – gross profit;
N – average number of personnel;
I – investment volume;
LP ref , EI ref – reference (base) values for normalizing indicators.

Results

The peculiarity of the digital economy is the replacement of the emphasis from material production to the use of information resources. In this aspect, the key factor of production is data that has a digital form, and they can have the form of added value, a new asset that is able to ensure the successful functioning of the business and ensure the competitiveness of the enterprise.

If we examine modern approaches to digitalization , today the concept of Industry 4.0 and Industry 5.0 is no longer considered only as a tool for process automation, but is the basis for the transformation of business models, value chains, and strategic management systems. For Ukrainian industrial enterprises, the implementation of digital

solutions is a rather complex and long-term process, since the economic crisis, and subsequently the full-scale invasion, affected the ability of enterprises to actively implement such solutions. Most industrial enterprises are rather slow to implement digitalization and innovative development strategies, since this scale of projects requires significant financial resources that enterprises do not have at their own disposal. In the current conditions, attracting investors is also a difficult process, since there are quite high risks due to security and economic instability in Ukraine.

In general, the issue of using digital technologies in the activities of industrial enterprises depends on certain factors, namely:

- available gap between business strategies and directions of digital transformation, which arises as a result of the lack of unity of goals of the corporate strategy and programs for digitalization of production. In most industrial enterprises, the implementation of digital solutions is more local in nature, implemented within separate modules or platforms without long-term implementation into the system of enterprise goals. This implementation of digital

technologies does not ensure production efficiency and business competitiveness;

- low level of digital maturity, which is explained by the use of outdated technologies, equipment and information systems, which in the long term does not ensure the development of strategic management based on digitalization . Low integration activity between management, technological preparation, monitoring and automation systems significantly reduces the possibility of reliable analytics for making strategic decisions, thereby restraining the development of the enterprise;

- industry specifics affect the effectiveness of the implementation of digital technologies, taking into account the heterogeneity of the economy, the increase in resource-intensive industries, the impact of war, have led to an increase in the risks of investment projects and the implementation of new innovative solutions. The implementation of Industry 4.0 principles in the activities of industrial enterprises is characterized by an insufficient level of digital transformation of business processes due to their fragmentation;

- lack of digital competencies and organizational resistance to change is one of the main problems in the development of digitalization , since these processes require appropriate staffing, which will combine knowledge of production and industry processes with knowledge in the field of data analytics, the use of artificial intelligence technologies, cybersecurity , and digital platform management. If we analyze the staffing of industrial enterprises, the level of training and attraction of specialists with digital competencies is quite low. This trend leads to organizational resistance, since personnel perceive digitalization as an element of the threat of job loss, which slows down the implementation of such processes;

-low level of cybersecurity , which negatively affects the security of not only information technology and personal data, but can also have technological consequences. The use of cloud technologies, software products for computing large data sets, requires an appropriate level of mastery of skills and competencies in data protection. This system requires appropriate software and specialists in this profile,

which requires certain capital investments and training of specialists.

Thus, according to the World Economic Forum, the Digital Readiness Index of Industrial Enterprises indicates greater efficiency among manufacturers of electronics, pharmaceutical products, etc., but even in these industries, digitalization is not a large-scale solution, but rather has a project format. According to the European Investment Bank, the share of enterprises using effective digital solutions is growing significantly, but large enterprises are doing so at a faster pace than small and medium-sized businesses, which creates structural imbalances (World Economic Forum, 2022).

Today, artificial intelligence-based technologies are being actively implemented all over the world, which is characterized by the growth of this market. These technologies allow to significantly reducing the risks and inaccuracy of data calculations, to accelerate the processing of large data sets, which in turn effectively affects the adaptability and flexibility of the enterprise. In this aspect, the current course of digitalization development can be characterized as a “hybrid phase”, since some industrial enterprises are quite actively implementing digital technologies, while others are limited to the automation of the operational level of production processes.

If we consider the strategic prospects for introducing digital technologies into the activities of industrial enterprises, we should identify certain vectors for the development of these improvements, namely:

1. Shifting the emphasis from implementing "point" projects to implementing digital solutions in the strategic development of enterprises. These systems cover not only the areas of process automation, but also include improving production systems, management, and strategic formation of business development scenarios from their development to monitoring of results.
2. The implementation of the technology of "digital twins" and business simulations in strategic management processes is being carried out more actively. For industrial enterprises, these innovations allow, without

real implementation, to explore various business development scenarios in a safe virtual environment: from technological innovations to a new business model. These technologies allow making management decisions not only based on expert assessments, but also on complex digital models that are more accurate and informative.

3. Expanding the implementation of the concepts of Industry 4.0 and Industry 5.0. which, within the framework of sustainable development, are aimed at activating the circular economy and improving the quality of life of the population. At the same time, digital tools should be considered as a direction for the development of socially-oriented business in the long term.
4. Focus of changes on training personnel to master skills and competencies in digitalization issues . Industrial enterprises need to implement programs for training, personnel training, and building a corporate culture in digital solutions, which will further contribute to reducing resistance to change.
5. The development of technologies will contribute to the institutionalization of data and analytics into the overall structure of enterprise management. Today, most of these functions are concentrated in IT departments, which reduces the possibilities of their effective use. In the future, we should focus on the formation of effective strategic analytics units that are able to integrate various data for decision-making at the management level.

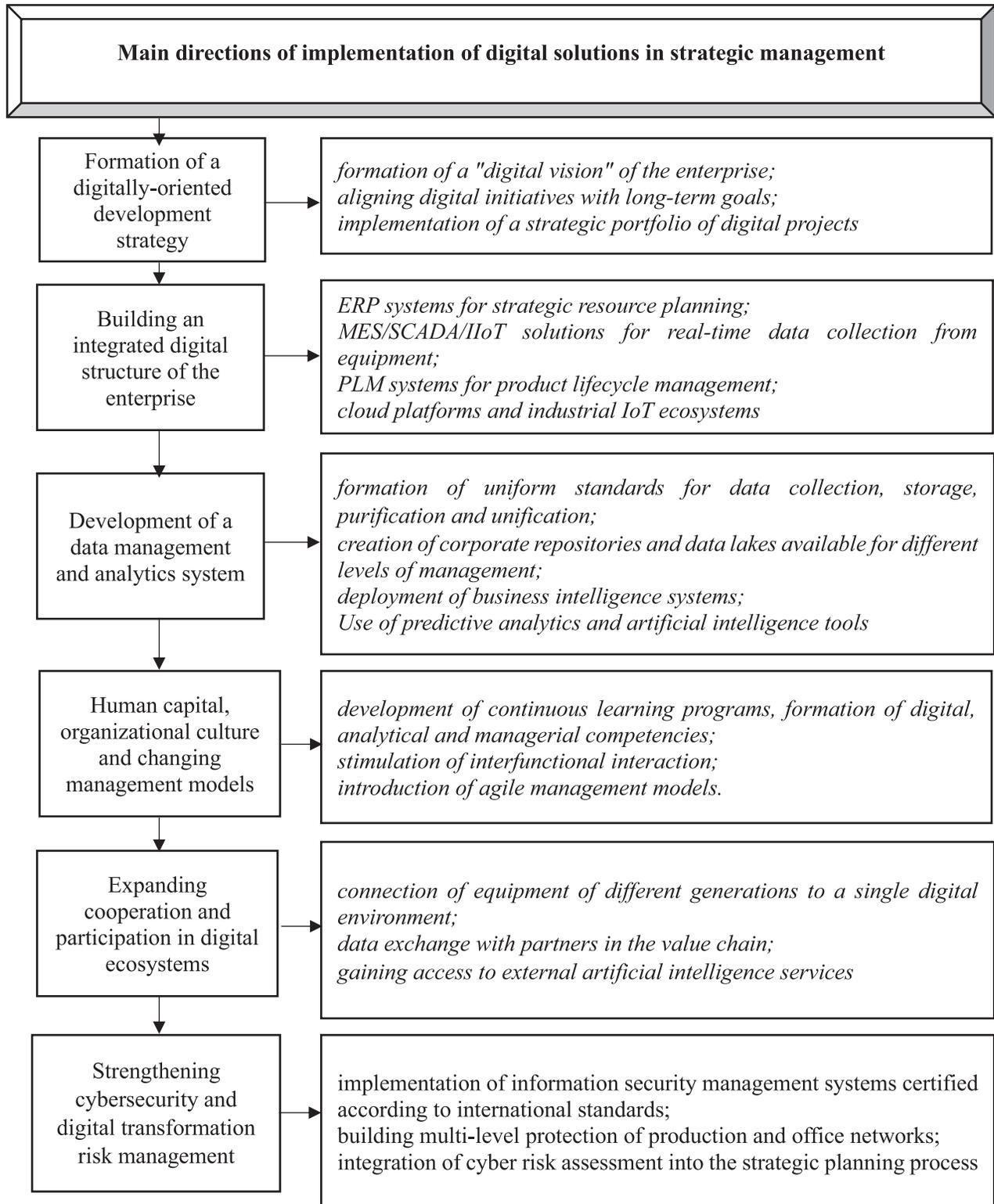
These changes occur gradually, taking into account the complexity of implementing these processes, the need to ensure resource capacity, and the formation of personnel training. For each enterprise, these measures have their own specific characteristics, taking into account the state of development and flexibility of the business. The main directions for the implementation of digital technologies in strategic management should be aimed at the following aspects (Fig. 1). One of the main vectors is the formation of

a strategy for the digitalization of industrial enterprises, which involves the use of digital technologies in all business processes in the long term. Orientation to the goals of Industry 4.0 and Industry 5.0. requires the coordination of digital solutions with the long-term development goals of the enterprise in the areas of its market position, environmental friendliness and energy efficiency of the business. To monitor the effectiveness of the implementation of selected measures, it is necessary to develop indicators and a scale for their measurement, which will allow the monitoring process to track their quantitative and qualitative changes. Development of an integrated digital architecture of the enterprise, which combines all areas of its functioning for the systematic implementation and integration of digital solutions across all structural components. These processes include the implementation of ERP systems, which are used for the enterprise resource planning.

Using a digital twin system based on MES solutions, which allows for real-time data processing and the generation of models for a more rational selection of options, taking into account the influence of factors.

Most enterprises today can use digital solutions for data analysis and analytics, since these measures are implemented more quickly and require significantly fewer resources, both financial and human. The main areas include the formation of an array of analytical bases, its unification for the possibility of further use in software products. Creation of corporate repositories and databases that are accessible to different levels of managers for their use in making management decisions. It is at this stage that the forecast and simulation of various business development scenarios is carried out, and not just the assessment of past data.

Figure 1. Main directions of implementing digital solutions in the strategic management of industrial enterprises



Source: summarized by the authors

It should be noted that the implementation of the indicated areas is carried out by professionals who have the appropriate skills and competences in matters of digital literacy. In most industrial enterprises, the issue of staffing is an urgent task in terms of training and mastering the necessary knowledge. To do this, it is necessary to purposefully develop training programs aimed at the formation of digital and analytical skills, management competencies. To activate a systemic approach to the digitalization of management decisions, it is advisable to form teams for the implementation of digital projects that are able to stimulate cross-functional interaction between all participants in the process.

In conditions of variability and instability of the external environment, an important direction is the formation of business flexibility, which can be expressed in the speed of decision-making, adaptation to new operating conditions, adjustment of strategy to new conditions. These directions must be consistent with the principles of Industry 4.0 and Industry 5.0. as well as the goals of sustainable development.

For domestic enterprises, participation in digital ecosystems is an important measure, as it significantly expands the possibilities of entering and operating in international markets. This can be implemented using the industry platforms that allow enterprises to find partners for further cooperation in attracting investments in the

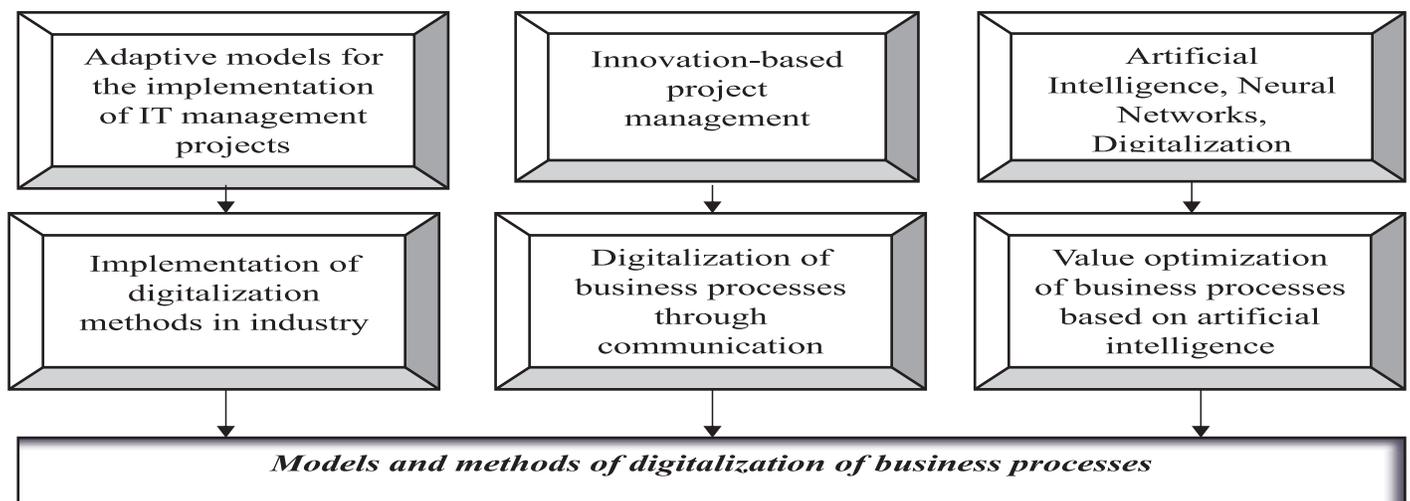
development of business processes. Establishing this cooperation allows for the formation of new value-added chains, which simplifies access to foreign markets.

It is the entry of domestic enterprises into network digital structures that allows for the formation of competitive advantages in the long term. In this regard, enterprises are faced with the task of reliable data protection from cyber threats, which includes the use of appropriate software at enterprises that is capable of implementing these goals. At the same time, it is advisable to develop risk management programs in business processes that take into account the current state of digitalization not only of the enterprise itself, but also of competitors.

The implementation of these technologies requires appropriate methodological support, which varies depending on the needs, the profile of digital technologies, and the stages of digitalization. The most generalized methods include the following (Fig. 2).

Most Ukrainian industrial enterprises use digital solutions that automate business processes using AI-based technologies and accelerate the processing of large data sets. Digital solutions significantly expand the ability to interact between customers and manufacturers, which is a rational solution in an unfavorable security situation. This format also allows you to personalize customer needs to better meet these needs.

Figure 2. Main methods and models of implementing digital technologies in business processes



Source: summarized by the authors

In the context of economic development and digitalization, it is more appropriate to use practical methods aimed at adapting the technologies of an individual enterprise, taking into account its ability to change. These measures may include personalization of data processing software, improvement of the enterprise development strategy subject to the implementation of digital solutions and transformation of production processes. Improving digital innovations in the field of marketing, training, and communication in modern business is a key factor in success.

The object of analysis was chosen as PrJSC "Myronivskiy Hliboproduct", which is one of the largest and system-forming companies in the agri-food sector of Ukraine, which since its foundation in 1998 has gone from a separate enterprise to an international holding in the field of food and agro-technologies. The company unites tens of thousands of employees, has significant production, agricultural and logistical potential and plays a key role in ensuring the country's food security, especially in conditions of full-scale war. The significant contribution of PrJSC "Myronivskiy Hliboproduct" to Ukraine's GDP, stable tax revenues and active investment activities indicate a high level of financial stability and strategic adaptability of the business.

Digital technologies in the activities of PrJSC "Myronivskiy Hliboproduct" are considered not as an

auxiliary tool, but as a basic element of the long-term transformation of the business model. The company is implementing a structural transformation of the business from the dominance of raw agricultural production to the development of an integrated model of creating products with high added value within the food ecosystem, combining production, processing, food brands, its own sales channels and digitally supported management processes. Implementation of comprehensive ERP solutions based on SAP, use of the Microsoft ecosystem, development of its own digital products and active use of Big Data creates the foundation for data-driven management and improved operational efficiency.

A feature of the digitalization of PrJSC "Myronivskiy Hliboproduct" is its practical orientation to a measurable economic effect, when each digital project is evaluated from the standpoint of impact on costs, productivity, quality of management decisions and business sustainability. At the same time, the company actively invests in the development of internal competencies, the formation of centers of expertise and digital culture, which allows combining industry knowledge with modern technological solutions. Thanks to this, the digital transformation of PrJSC "Myronivskiy Hliboproduct" acts not only as a tool for adapting to crisis conditions, but also as a source of long-term competitive advantages and sustainable development of the enterprise (Table 2).

Table 2. Dynamics of financial results of PrJSC "Myronivskiy Hliboproduct", 2021–2024, thousand USD

Indicator	2021	2022	2023	2024	Change 2024/2023	Rate of change, %
Net sales revenue	1642750	1588699	1424947	1169832	– 255115	91.23
Cost	1391295	1348137	1208334	855187	– 353147	78.64
Gross profit	251455	240562	216685	314645	+ 97960	161.34
Operating profit (loss),	– 29791	– 7672	– 17440	– 21577	– 4137	137.47
Net profit (loss)	– 58077	– 14591	– 20753	– 45546	– 24793	243.85

Source: calculated by the authors based on <https://mhp.com.ua/uk/informaciya-dlya-akcioneriv-ta-stejkholderiv>

The indicators in Table 2 demonstrate the economic effects of digitalization in the context of military instability and structural business transformations. Despite fluctuations in net sales revenue and its reduction in 2024 compared to 2023, the dynamics of key indicators indicate the increase

in the internal efficiency of operating activities. The most significant in this context is the significant decrease in the cost of sales in 2024, which formed a sharp increase in gross profit and ensured its growth by more than one and a half times. This trend is an economic confirmation of the

effective digital solutions aimed at optimizing production processes, managing resources, logistics and energy costs, as well as reducing the share of manual and inefficient operations.

The growth of gross profit against the backdrop of military risks, supply disruptions and a general decline in economic activity in the country indicates that digitalization in PrJSC "Myronivskyi Hliboproduct" plays the role of a stabilizing factor, compensating for the negative impact of the external

environment at the expense of internal efficiency reserves. At the same time, the preservation of negative values of the operating and net financial result reflects a significant burden associated with logistical restrictions, security costs, investments in transformation and adaptation to new market conditions. However, even under these conditions, digital tools allow to restrain the growth of costs and form the basis for restoring profitability in the medium term (Table 3).

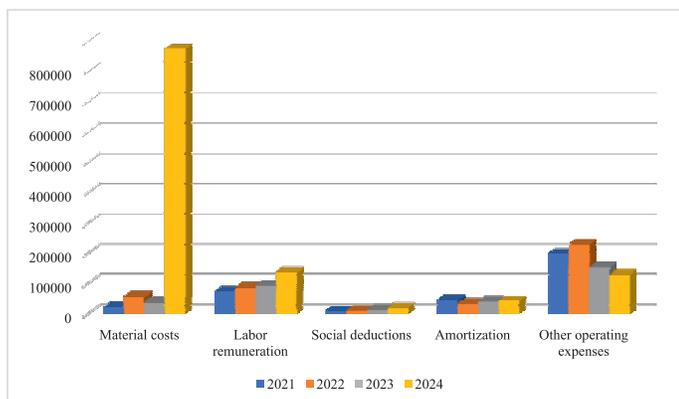
Table 3. Structure and dynamics of operating expenses of PrJSC PrJSC "Myronivskyi Hliboproduct" , 2021–2024, thousand USD

Expense item	2021	2022	2023	2024	Share in 2024, %
Material costs	21192	56104	37031	873984	72.64
Labor remuneration	72688	85825	95285	137112	11.40
Social deductions	10890	13309	14708	19790	1.64
Amortization	45155	33327	38777	43065	3.58
Other operating expenses	198805	229576	153340	129322	10.74
Total operating expenses	348730	418141	339141	1203273	100.0

Source: calculated by the authors based on <https://mhp.com.ua/uk/informaciya-dlya-akcioneriv-ta-stejkholderiv>

The digital transformation of PrJSC "Myronivskyi Hliboproduct" not only supports the continuity of the enterprise's activities during the crisis period, but also ensures increased operational efficiency, which is manifested in the growth of gross profit even with a decrease in sales volumes. This confirms the feasibility of considering digitalization as a key tool for strengthening the financial stability and adaptability of the enterprise in conditions of prolonged uncertainty (Figure 3).

Figure 3. Dynamics of operating expenses of PrJSC "Myronivskyi Hliboproduct", 2021-2024,



Source: calculated by the authors based on <https://mhp.com.ua/uk/informaciya-dlya-akcioneriv-ta-stejkholderiv>

The indicators in Table 3 indicate the efficiency of resource use in a large agri-food company in a wartime economy. The most significant is the sharp increase in the absolute volume of operating expenses in 2024, which reflects the scale of the company's activities, inflationary pressure, changes in logistics chains and rising resource prices. At the same time, the structure of expenses indicates not only quantitative changes, but also qualitative shifts in their management.

The dominance of material costs, the share of which in 2024 exceeds 70%, is typical for a vertically integrated agro-industrial business, however, it is this element of the cost structure that is the key object of digital management in PrJSC "Myronivskyi Hliboproduct". Use of ERP solutions, resource planning systems, Big analytics Data and digital tools for controlling production processes allow reducing raw material losses, optimizing recipes, increasing the accuracy of forecasting needs, and reducing unproductive costs. Thus, even with the growth of absolute volumes of material costs, their structural concentration reflects the manageability of this segment and the company's focus on increasing efficiency precisely through digital tools.

The growth in labor costs and social contributions over the years does not indicate a decrease in efficiency, but rather reflects the transformation of labor functions and the increasing role of qualified personnel in a digitally oriented management model. Digitalization in PrJSC "Myronivskiy Hliboproduct" is not aimed at a mechanical reduction in personnel, but at reducing the share of routine manual labor and redistributing labor resources towards more intellectual and managerial functions. This is consistent with the relatively moderate share of personnel costs in the overall structure of operating costs, which indicates an increase in labor productivity due to automation and digital solutions.

The increase in depreciation charges in 2023–2024 reflects the company's active investments in the modernization of fixed assets, in particular digital infrastructure, automated equipment and IT solutions. In this context, depreciation acts as an indirect indicator of the scale of digital transformation, since the implementation of ERP systems, digital production management platforms and analytics

requires significant capital investments, the effect of which is realized gradually through increased operational efficiency.

The reduction in the share of other operating expenses in the overall structure is additional evidence of the effectiveness of digitalization, since these expenses usually include opaque and poorly controlled items. Their relative stabilization or reduction in the context of increasing activity scale indicates increased management control, standardization of processes, and increased transparency of financial flows thanks to digital accounting and analytics tools.

Therefore, digitalization at PrJSC "Myronivskiy Hliboproduct" is a key factor in increasing the efficiency of operating costs not by formally reducing them, but by improving manageability, productivity, and economic return on resources, which allows the company to maintain stability, scale its business, and play a systemic role in the country's economy even in conditions of prolonged instability (Table 4).

Table 4. Dynamics and structure of assets as an indicator of investment and digital activity of PrJSC "Myronivskiy Hliboproduct"

Indicator	2021	2022	2023	2024
Total assets, thousand USD	1230432	1122392	1295159	1115169
Non-current assets, thousand USD	503336	607843	601116	637915
Share of non-current assets, %	40.91	54.16	46.41	57.20
Current assets, thousand USD	727096	514549	694043	477254
Accounts receivable, % of current accounts receivable	74.26	76.56	77.49	53.27
Cash, % of current assets	7.64	8.71	14.12	10.23

Source: calculated by the authors based on <https://mhp.com.ua/uk/informaciya-dlya-akcioneriv-ta-stejkholderiv>

The indicators in Table 4 show that the total value of assets fluctuated during the period under review, reflecting the impact of war risks, changing logistical conditions and macroeconomic instability, but structural shifts in assets indicate a focused long-term development strategy. Particularly significant is the steady growth of non-current assets both in absolute terms and in their share in total assets, which exceeded 57% in 2024. These dynamics are consistent with the active investments of PrJSC "Myronivskiy Hliboproduct" in the modernization of production facilities, digital infrastructure, automated management systems and IT solutions, which form the basis of the digital transformation of business.

The increase in the share of non-current assets in the balance sheet structure indicates not only the renewal of the material and technical base, but also the accumulation of intangible and technological resources that ensure increased operational efficiency, process manageability and company stability in conditions of instability. In this context, digitalization appears as a capital-intensive, but strategically justified direction of development, the results of which are not always instantly reflected in financial results, but form long-term competitive advantages.

The dynamics of current assets and their structure also reflect the effect of the introduction of digital management tools. A high share of receivables in 2021–2023 is typical

for large-scale businesses with extensive supply chains, but its significant reduction in 2024 to just over half of current assets may indicate an increase in the efficiency of managing settlements with counterparties. This is consistent with the introduction of digital financial and accounting systems, CRM solutions and analytical platforms that allow accelerating capital turnover, increasing transparency of settlements and reducing financial risks.

The growth of the share of cash in the structure of current assets in 2023–2024 further confirms the positive effect of

digitalization from the standpoint of liquidity and financial flexibility. Digital systems for planning, forecasting and managing cash flows allow the company to more effectively balance investment needs and current solvency, which is critically important in wartime. Taken together, these trends allow us to assert that the digital transformation of PrJSC "Myronivskyi Hliboproduct" contributes not only to technological renewal, but also to increasing the overall efficiency of asset use, financial stability and adaptability of the company to external challenges (Table 5).

Table 5. Labor productivity as a result of digital transformation of PrJSC "Myronivskyi Hliboproduct"

Year	Labor productivity, thousand USD /employee	Absolute change	Rate of change, %
2021	45.72	–	–
2022	50.00	+4.28	109.4
2023	46.39	-3.61	92.8
2024	47.00	+0.61	101.4

Source: calculated by the authors based on <https://mhp.com.ua/uk/informaciya-dlya-akcioneriv-ta-stejkholderiv>

The indicators in Table 5 reflect the change in the effectiveness of human capital use in the context of large-scale digital transformation and military challenges. The steady growth in labor productivity throughout the study period, from 45.72 thousand USD per employee in 2021 to 47.00 thousand USD in 2024, indicates that digital technologies in PrJSC "Myronivskyi Hliboproduct" do not formally replace labor, but increase its economic return. It is especially indicative that productivity growth occurs without sharp jumps, but is consistent and systemic in nature, which corresponds to the logic of the phased implementation of ERP solutions, automation of production and management processes, the development of analytics and data-driven management.

The absolute increase in the indicator in each year demonstrates the cumulative effect of digitalization, when each subsequent stage of transformation reinforces the results of the previous one. The highest growth rates were recorded in 2022–2023, that is, during the period of the greatest turbulence for the Ukrainian economy, which allows us to interpret digital solutions as a tool for increasing business sustainability. In the conditions of resource shortages, logistical constraints, and increasing operational risks, it was digitalization that made it possible

to maintain process control, reduce the share of routine manual labor, accelerate the adoption of management decisions, and ensure a more effective distribution of functions among employees.

Labor productivity growth rates reflect qualitative changes in the organization of work, rather than an extensive increase in the workload on personnel. This is consistent with the approach of PrJSC "Myronivskyi Hliboproduct" to digital transformation, focused on increasing the intellectual component of work, developing digital competencies of personnel and transitioning from performing operations to managing processes. Thus, digitalization in PrJSC "Myronivskyi Hliboproduct" is transformed into a measurable economic effect, which is manifested in the growth of labor productivity as one of the key integral indicators of the efficiency of the enterprise's digital maturity.

For PrJSC "Myronivskyi Hliboproduct", the digital maturity index is formed according to five functional components: digital infrastructure, digitalization of business processes, management analytics, human resources for digitalization, and the economic effect of digital solutions. Each component is evaluated on a scale from 0 to 1, after which the arithmetic mean value is calculated as an integral index (Table 6).

Table 6. Calculation of the integral digital maturity index of PrJSC "Myronivskiy Hliboproduct"

Digital maturity component	Indicator for calculation	Value	Normalized value (0–1)
Digital infrastructure	Share of investments in digitalization in total investments	Digitalization is one of the key investment areas (2022–2024)	0.80
Digitalization of business processes	Share of key processes covered by ERP and BI	SAP ERP, Microsoft stack , Big Data , Power BI	0.85
Data-driven management	Using data-driven management	management solutions are based on BI, Big Data , KPI	0.90
Human capital and digital competencies	Labor productivity	About 38 thousand employees, stable growth in returns	0.75
Economic effect of digitalization	Share of EBITDA directed to IT and transformation	2–3% EBITDA (active transformation phase)	0.80
Integral Digital Maturity Index	$I_{dz} = \frac{C_1 + C_2 + C_3 + C_4 + C_5}{5} = \frac{0,80 + 0,85 + 0,90 + 0,75 + 0,80}{5}$		0.82

Source: calculated by the authors

The obtained value of the integral digital maturity index of PrJSC "Myronivskiy Hliboproduct" at 0.82 indicates a high level of digital maturity of the enterprise , typical for companies in the active phase of digital transformation. This level means that digital technologies in PrJSC "Myronivskiy Hliboproduct" are not limited to the automation of individual operations, but are integrated into management, production, financial planning and data work, providing a measurable economic effect and increased labor productivity. The index is consistent with the scale of investments, the implementation of SAP and Big Data , moving to data-driven management and confirms the effectiveness of digitalization as a factor in business sustainability in a war economy.

The obtained results of calculating the integral digital maturity index confirm the universal nature of the proposed methodology and justify its application for assessing the digitalization level of industrial enterprises regardless of industry specialization, scale of activity or form of ownership. The methodology is based on the use of generalized functional components of digital maturity, including analytical and automated management support, digitalization of key business processes, data-driven management, efficiency of human capital use and economic return on digital investments, which are inherent in any modern industrial enterprise.

The advantage of the approach is its flexibility and

adaptability, since the calculation of the integral index is not tied to specific technological solutions or individual IT products, but is based on the results of their actual use, which allows the methodology to be correctly applied both for high-tech industries and for enterprises with a traditional production structure. The use of relative and normalized indicators provides the opportunity to compare results between enterprises of different scales and minimizes the impact of price, inflation and macroeconomic factors, which is especially important in an unstable external environment.

The application of the methodology on the example of a large industrial enterprise demonstrates that the integrated digital maturity index reflects not only the presence of digital technologies, but also their real impact on management processes, labor productivity, and financial sustainability. This allows us to consider the proposed index as a practical analytical tool for diagnosing the current level of digital transformation, monitoring its dynamics over time, and substantiating management decisions regarding digital development priorities.

The integral digital maturity index can be used as a universal indicator for inter-firm and inter-industry comparisons, strategic planning of digitalization , and assessment of its effectiveness in the industrial sector, which makes the proposed methodology appropriate for wide practical application in analytical and scientific research.

The use of digital technologies allows enterprises to ensure increased competitiveness through adaptability to changes in the external environment, risks and threats. The effectiveness of decisions is achieved by optimizing and accelerating work processes, improving communication, information processing efficiency, etc. The use of these digital tools helps to reduce costs at enterprises, increase labor productivity and allow the formation of new competitive advantages in foreign and domestic markets. The implementation of these areas is carried out using various digital tools, which are implemented at different levels of management.

Thus, in Ukraine, digital solutions in the direction of administrative services were implemented through the formation of the Diya portal and various digital applications that allow optimizing interaction between authorities at various levels and citizens and businesses in obtaining these services.

Using this system greatly simplifies obtaining the necessary services, allows you to personalize requests, which increases the efficiency of their implementation. The implementation of CRM / CRM -systems by businesses and their interaction with various aspects of business activities allows you to automate the system of interaction with customers, reduce errors associated with the human factor.

The main disadvantages of using all digital solutions include: low level of cyber data protection, level of digital literacy both among the population and among employees of industrial enterprises.

The use of open data tools ensures transparency and efficiency of the functioning of authorities at various levels, which contributes to the effectiveness of management decision-making and economic development of the enterprise. Modern specialists in the field of AI management must not only have competence in the technical support of such operations, but also have the basics of analytical and management basis for their interpretation and determination of cause-and-effect relationships. Possible risks include a low level of cyber security , the lack of qualified specialists in digitalization and data analytics.

Using the above technologies not only at the enterprise level, but also in the social sector requires some adjustment, given the uneven ability to implement such technologies. This depends on many factors - the competence of personnel, the digital literacy of the population, the financial capacity of businesses to use these technologies, the level of data protection security and commercial secrets.

Ensuring the stable functioning of systems, which may include attracting additional generation in conditions of its absence, which is especially important for industry. An important criterion for expanding the use of digital technologies by enterprises at the state level is trust in these tools, especially in matters of honesty, transparency and reliable data security.

Conclusions

The study of current trends in the use of digital technologies by industrial enterprises proves the diversity of tools for their implementation, both at the business level and at the level of public services. The main directions for the implementation of digital solutions in the strategic management of industrial enterprises are the improvement of data analytics, participation in international digital ecosystems, the formation of human resources aimed at the transformation of digital solutions, and the strengthening of the cyber defense system.

Most enterprises are implementing process automation technologies, AI-based software products that allow processing large data sets for further management decision-making. The practical implementation of these measures at industrial enterprises depends on the financial capacity of the business to implement the above technologies not only at the level of individual operations, but also in the business process improvement system itself.

Today's trends in the use of digital technologies in the strategic development of industrial enterprises are aimed at adapting to modern requirements, taking into account the needs and state of an individual entity. They include the use of digital platforms, the development of specialized programs, the use of technologies based on artificial intelligence, which is implemented not only in individual areas of production and management processes, but also integrated into the business process adaptation system itself.

References

- Abramova, A., Shaposhnykov, K., Zhavoronok, A., Liutikov, P., Skvirskiy, I., & Lukashev, O. (2021). Ecosystem of VAT Administration in E-Commerce: Case of the Eastern Europe Countries. *Estudios de economía aplicada*, 39(5). <http://dx.doi.org/10.25115/eea.v39i5.4909>
- Al-Abbadi, L. H., Alshawabkeh, R., Alkhazali, Z., Al-Aqrabawi, R., & Rumman, A. A. (2025). Business intelligence and strategic entrepreneurship for sustainable development goals (SDGs) through green technology innovation and green knowledge management. *Economics – Innovative and Economics Research Journal*. <https://doi.org/10.2478/eoik-2025-0013>
- Allur, N. S., Kodadi, S., Deevi, D. P., & Dondapati, K. (2025). Role of knowledge management in the development of effective strategic business planning for organizations. *Computational and Mathematical Organization Theory*, 31, 344–369 <https://doi.org/10.1007/s10588-025-09397-2>
- Al-Tarawneh, A., Haddad, E., Al-Dwairi, R. M., Al-Frejhat, S. Y., & Mansour, A. (2024). The impact of strategic and innovativeness entrepreneurship and social capital on business overall performance through building a sustainable supply chain management at Jordan private universities. *Uncertain Supply Chain Management*. <https://doi.org/10.5267/j.uscm.2023.10.017>
- Alwidy, M. F. (2025). Translation as a strategic tool in cross-cultural business communication and management. *Journal of Cultural Analysis and Social Change*, 10(3), Article 2442. <https://doi.org/10.64753/jcasc.v10i3.2442>
- Anwar, U.A.A., Rahayu, A., Wibowo, L. A. et al. (2025). Supply chain integration as the implementation of strategic management in improving business performance. *Discov Sustain*, 6, 101 <https://doi.org/10.1007/s43621-025-00867-w>.
- Dahake, P. S., Dahake, N. S., & Mahalle, A. (2025). Integrating business process management and marketing: A strategic approach to enhancing customer-centric processes. In *Navigating Digital Transformation Through Business Process Management* (Chap. 6). IGI Global. <https://doi.org/10.4018/979-8-3373-3336-6.ch006>
- Fastovets, N., Kharchuk, T., Podolska, O., Lutkovska, S., & Voronko-Nevidnycha, T. (2025). Strategic financial management of innovatively adaptive enterprises in startup business in glocalised markets. *Financial and Credit Activity: Problems of Theory and Practice*, 4(63), Article 4916. <https://doi.org/10.55643/fcapt.4.63.2025.4916>
- Jakubek P., Guzonova V., Rudenko O., Zahurska-Antoniuk V., Filipova N. (2023). Management control in the system of ensuring the economic security of private companies and public institutions. *Journal of interdisciplinary research*, 13(02), XXXV, 160-167. <https://doi.org/10.33543/j.130235.160167>.
- Kanan, T. M. (2025). The role of translation in international business management: A strategic perspective. *Journal of Cultural Analysis and Social Change*, 10(3), Article 2441. <https://doi.org/10.64753/jcasc.v10i3.2441>
- Kasorn, K., Wongchai, W., Boonyarasai, P., Sriwichai, P., & Jedaman, P. (2025). Impact accounting strategic management in sustainable construction business organizations, Thailand. *SAGE Open*. <https://doi.org/10.1177/21582440251368465>
- Khaddam, A. A., & Alzghoul, A. (2025). Artificial intelligence-driven business intelligence for strategic energy and ESG management: A systematic review of economic and policy implications. *International Journal of Energy Economics and Policy*. <https://doi.org/10.32479/ijee.19820>
- Kouloukoui, D., da Silva Gomes, S. M., Torres, F. A., & Torres, E. A. (2025). Business climate risk management: International perspectives and strategic determinants. *Environment, Development and Sustainability*, 27, 4683–4724. <https://doi.org/10.1007/s10668-023-04094-z>

- Koval, V., Kichuk, Y., Kornieieva, T., Metil, T., Udovychenko, V., et al. (2025). Sustainable behaviour management in the strategic development of circular economy businesses. *International Journal of Mathematical, Engineering and Management Sciences*, 10(1), Article 007. <https://doi.org/10.33889/IJMEMS.2025.10.1.007>
- Kozlovskyy, D., & Garafonova, O. (2025). Application of bankruptcy models as a tool for business leadership and strategic crisis management in agricultural enterprises. *Business Ethics and Leadership*, 9(2), 160–173. [https://doi.org/10.61093/bel.9\(2\).160-173.2025](https://doi.org/10.61093/bel.9(2).160-173.2025)
- Lim, A.-F., Ooi, K.-B., Lee, V.-H., Tan, G. W.-H., & Sohal, A. (2025). Examining the nexus: Supply chain quality management, knowledge sharing, organizational innovation and strategic business performance. *Industrial Management and Data Systems*. <https://doi.org/10.1108/IMDS-05-2024-0441>
- Malewska, K., Chwiłkowska-Kubala, A., & Szumowski, W. (2025). Digital technology infrastructure management and business strategic alignment as enablers of digital capabilities in energy SMEs. *Economics and Environment*, 94(3), Article 1026. <https://doi.org/10.34659/eis.2025.94.3.1026>
- Marhasova, V., Rudenko, O., Popelo, O., Kosach, I., Sakun, O., Klymenko, T. (2024). Mechanisms of State Management of the Development of Digital Technologies in the National Security System. *Journal of the University of Zulia*, 15(42), 389-406. <https://doi.org/10.46925/rdluz.42.22>
- Nikiforov, P., Zhavoronok, A., Marych, M., Bak, N., Marusiak, N. (2022). State policy regulation conceptual principles of public-private partnership development. *Cuestiones Políticas*, 40(73), 417-434. <https://doi.org/10.46398/cuestpol.4073.22>
- Palmié, M., Aebersold, A., Oghazi, P., Pashkevich, N., & Gassmann, O. (2025). Digital-sustainable business models: Definition, systematic literature review, integrative framework and research agenda from a strategic management perspective. *International Journal of Management Reviews*. <https://doi.org/10.1111/ijmr.12380>
- Peña, J., Flores, A., & Heredia, J. (2024). Exploring the influence of digitalisation on the formalisation process of informal businesses: A comparative strategic management in China and Peru. *International Journal of Business Environment* (pp. 408-428). <https://doi.org/10.1504/IJBE.2024.139705>
- Pietsch, W. (2025). Balancing the sustainability of digital product management from a strategic business perspective. In *Lecture Notes in Business Information Processing*. Springer. https://doi.org/10.1007/978-3-031-71515-0_2
- Popelo, O., Ivanova, N., Ivanets, S., Perepeliukova, O., Vasyuchenko, P. (2025). Global Trends in Formation of Regional Innovative Entrepreneurial Ecosystems in the Context of Rapid Development of Artificial Intelligence Technologies. *Pacific Business Review (International)*, 18(1), 12-38. https://www.pbr.co.in/2025/2025_month/July/2.pdf
- Putra, B. W., Andrina, A. A. A. P., Sembiring, M. J., Dewi, L., & Primantara, A. (2025). Enhancing business performance through digital transformation: The strategic role of supply chain integration and operational in port management. *Sustainability*, 17(24), Article 10898. <https://doi.org/10.3390/su172410898>
- Rawat, P. S., & Singh, S. (2025). Strategic integration of artificial intelligence in disease management: Driving business and healthcare innovation. In *AI in Business Management: Bridging the Gap between Technology and Strategy* (Chap. 9). Routledge. <https://doi.org/10.4324/9781003614074-9>.
- Roy, S. K., Dey, B. L., Brown, D. M., Abid, A., Apostolidis, C., et al. (2025). Business model innovation through AI adaptation: The role of strategic human resources management. *British Journal of Management*. <https://doi.org/10.1111/1467-8551.12894>
- Shamim, S., Acikgoz, F., Akhtar, P., Sarala, R., Zahoor, N., et al. (2025). Rapid innovation management capability, and crisis-driven business model innovation

- performance: Roles of strategic IT-alignment, and operational IT-effectiveness. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2025.115358>
- The Global Smart Industry Readiness Index Initiative: Manufacturing Transformation Insights Report 2022. URL: https://www3.weforum.org/docs/WEF_The_Global_Smart_Industry_Readiness_Index_Initiative_2022.pdf
 - Vassolo, R., & Forstner, F. F. (2025). Business cycles and their implications for strategic management. *RAE Revista de Administração de Empresas*. <https://doi.org/10.1590/S0034-759020250406x>
 - Cornejo-Aparicio, V., Flores-Silva, S. X., & Romero-Carazas, R. X. (2025). Empowerment in strategic business units for outsourcing as a basis for corporate management. *Journal of Cultural Analysis and Social Change*, 10(2), Article 1605. <https://doi.org/10.64753/jcasc.v10i2.1605>