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## MANAGING INNOVATIVE BUSINESS DEVELOPMENT IN THE CONTEXT OF DIGITAL TRANSFORMATION AND A RISK-ORIENTED ENVIRONMENT

Shi Guangming, Wang Fei, Wu Qian

## УПРАВЛІННЯ ІННОВАЦІЙНИМ РОЗВИТКОМ ПІДПРИЄМСТВ В УМОВАХ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ ТА РИЗИК-ОРІЄНТОВАНОГО СЕРЕДОВИЩА

Shi Guangming, Wang Fei, Wu Qian

*The article focuses on modern approaches to managing the innovative development of enterprises in the context of digital transformation and a risk-oriented business environment. The relevance of the study is driven by the growing role of digital technologies, increasing environmental uncertainty, and the need for enterprises to enhance their adaptability to continuous changes. It is argued that traditional approaches to enterprise development management do not fully account for the interconnection between innovation processes, digitalization, and risk management, which limits the effectiveness of managerial decisions. The study emphasizes the formation of an integrated approach to managing innovative development, which involves the coordination of strategic, technological, and analytical aspects of enterprise activity. It is determined that digital transformation acts not only as a tool for improving efficiency but also as a driver of structural changes in management systems, while a risk-oriented approach ensures stability and predictability of performance outcomes. Special attention is paid to the interaction of key management components, including innovation potential, digital technologies, and risk management mechanisms. It is demonstrated that their combination creates the conditions for a new quality of enterprise management, focused on flexibility, speed of decision-making, and efficient resource utilization. The article proposes conceptual provisions for integrated management of innovative development based on a systemic approach, which involves aligning strategic objectives with digital capabilities and risk constraints. The importance of information and analytical support as a basis for informed decision-making in uncertain environments is highlighted. In addition, the study substantiates the need for a comprehensive approach to evaluating management effectiveness, taking into account the multidimensional nature of enterprise*

*development. It is shown that performance is determined not only by economic indicators but also by the level of innovation activity, digital maturity, and the ability to manage risks. It is concluded that the integration of innovation, digital, and risk-oriented approaches enables the formation of a more effective enterprise development management system, capable of ensuring competitiveness and sustainability in a dynamic economic environment.*

**Keywords:** innovative development of enterprise; strategic management; digital transformation; risk-oriented management; innovation potential; digitalization; enterprise management; management efficiency; competitiveness

**Introduction.** The current stage of economic development is characterised by profound transformative processes driven by digitalisation, globalisation and the transition to new technological paradigms, in particular the concept of Industry 5.0. In these conditions, enterprises operate in an environment of heightened dynamism, uncertainty and increasing risk, which requires a rethinking of traditional approaches to managing their development. The innovative development of enterprises is of particular importance, as it is a key factor in ensuring their competitiveness, resilience and long-term effectiveness. Innovation is increasingly being integrated into all areas of enterprise activity, encompassing not only technological processes but also management practices, business models and mechanisms for interacting with the external environment. At the same time, in today's context, innovative

development cannot be viewed in isolation from digital transformation, which acts as a catalyst for change and a tool for enhancing the efficiency of management processes. The digital transformation of enterprises involves the introduction of digital technologies, platforms and tools that ensure faster information processing, transparency of business processes and well-founded management decisions. It creates new opportunities for developing the innovative potential of enterprises, in particular through the use of big data, artificial intelligence, automation and digital ecosystems. At the same time, digitalisation creates new challenges related to cyber risks, technological dependence and the need to adapt organisational structures to new operating conditions. An equally important factor in the modern development of enterprises is the growing role of risks arising in the course of their activities. Business risks are becoming more complex, multidimensional and interrelated, necessitating a shift towards a risk-oriented approach to management. Such an approach involves the identification, assessment and management of risks as an integral component of strategic enterprise management, enabling the minimisation of negative consequences and the enhancement of sustainable development.

In contemporary academic research, the issues of innovative development, digital transformation and risk management are predominantly considered in isolation, which prevents the formation of a holistic view of the enterprise development management process in a complex and dynamic environment. The absence of an integrated approach to combining these components limits the potential for developing effective management mechanisms and reduces the effectiveness of decisions made.

In view of this, there is an objective need to develop a comprehensive approach to managing the innovative development of enterprises, combining strategic management of innovative potential, digital transformation tools and risk-oriented management. Such an approach will ensure the coherence of management interventions, enhance enterprises' adaptability to changes in the external environment, and create the conditions for their sustainable development.

#### **Analysis of basic research and publications.**

The issue of managing the innovative development of enterprises in the context of digital transformation and increasing risks is one of the key topics in contemporary economic science [1-10]. A significant body of research is devoted to specific aspects of this process, in particular innovative development, digitalisation and risk-oriented

management. In the international scientific literature, the innovative development of enterprises is viewed as the foundation for building their competitive advantages and long-term growth. Researchers emphasise the role of innovative potential, strategic management and the adaptability of enterprises to technological change. In the context of the transition to Industry 5.0, the focus is on integrating human capital, digital technologies and innovative processes into a unified development management system. A significant area of research relates to the digital transformation of enterprises, which is viewed as a process of profound restructuring of business models, organisational structures and management practices based on the use of digital technologies. Scientific works demonstrate that digitalisation contributes to improved management efficiency, provides access to new data sources and creates the conditions for the innovative development of enterprises. A separate area of research is devoted to the management of business risks. In today's environment, risks have become complex in nature, due to the dynamism of the external environment, technological changes and globalisation processes. In this context, a risk-oriented approach to management is gaining ground, which involves integrating the processes of risk identification, assessment and minimisation into the enterprise's strategic management system. In domestic academic literature, research is focused on adapting these approaches to the operating conditions of Ukrainian enterprises. Considerable attention is paid to issues concerning the development of innovative potential, the introduction of digital technologies into the activities of business entities, and the formation of effective risk management systems. At the same time, the need for a comprehensive approach to managing enterprise development is emphasised, one that takes into account the interconnection of economic, technological and managerial factors. At the same time, an analysis of academic sources indicates a lack of a holistic approach to integrating innovative development, digital transformation and risk-oriented management into a unified system of strategic enterprise management, which highlights the relevance of further research in this area.

**The aim and purpose of this article is to** establish the theoretical and methodological foundations and to develop an integrated approach to the strategic management of innovation in enterprises in the context of digital transformation and a risk-oriented environment.

**Materials and results of the study.** In today's business environment, the management of innovative development within enterprises is becoming increasingly systematic and multidimensional, driven by the impact of digital transformation and growing uncertainty in the external environment. Traditional approaches to managing enterprise development, which are based primarily on resource-based or functional approaches, are gradually evolving into more comprehensive models that take into account the interplay of innovative, digital and risk factors [2].

It is advisable to view an enterprise's innovative development as a process of targeted changes aimed at building and realising innovative potential in order to enhance competitiveness and ensure long-term operational effectiveness. In the context of Industry 5.0, this process is characterised by the integration of technological innovations, human capital and digital platforms, which ensure a new quality of management decisions.

Digital transformation, in turn, acts not only as a technological process but also as a strategic tool for enterprise development, enabling changes to business models, the optimisation of business processes and an increase in organisations' adaptability to changes in the external environment. It creates the conditions for effective management of information flows, which is critical for making timely and well-founded management decisions [8].

At the same time, the increasing complexity and dynamism of the business environment necessitates the consideration of risks as an integral element of development management. Risk-oriented management involves integrating the processes of risk identification, assessment and mitigation into the strategic management system, thereby ensuring the enterprise's resilience and mitigating the impact of negative factors.

Thus, modern management of enterprises' innovative development requires an integrated approach that combines innovative, digital and risk-oriented components into a single system.

Integrated management of an enterprise's innovative development is a systematically organised process of strategically influencing the formation and realisation of an enterprise's innovative potential, based on a combination of digital transformation tools and risk-based management principles, with the aim of ensuring its sustainable, adaptive and effective development in a dynamic environment [3].

A key feature of the proposed approach is the integration of three key components – innovative development, digital transformation and risk-based management – which ensures consistency in

management decisions, enhances the organisation's adaptability and lays the foundations for its long-term competitiveness.

In order to put this approach into practice, there is a need to establish an integrated system for managing the innovative development of enterprises, which involves identifying its key elements, supporting tools and mechanisms for interaction (tab. 1).

The proposed integrated system for managing the innovative development of enterprises differs from traditional approaches in its emphasis on the interaction between key components—the innovative, digital and risk-oriented components. Each component performs a distinct function, whilst their integration ensures the formation of a comprehensive mechanism for managing the enterprise's development.

A distinctive feature of the system is the identification of an integrative (synergistic) component, which ensures the coordination of managerial influences and the creation of an additional effect arising from the interaction of innovation, digital technologies and risk management tools [6].

The proposed approach enables the enterprise to enhance its adaptability to changes in the external environment, ensure the efficient use of resources and establish sustainable competitive advantages in the digital economy.

An integrated system for managing the innovative development of enterprises should be viewed as a multi-level dynamic model that combines strategic, technological and analytical components into a single, interconnected structure. A distinctive feature of the proposed model is its focus on ensuring synergy between innovative development, digital transformation and risk-oriented management.

The model is based on the strategic level, which defines the objectives, priorities and directions of the enterprise's innovative development. At this level, long-term guidelines are formulated, taking into account both the enterprise's internal potential and the influence of the external environment, including technological trends and risk factors.

The second level is the functional-management level, which ensures the implementation of strategic goals through a system of management functions. It is at this level that the processes of planning, organisation, motivation and control are integrated with innovation and risk management mechanisms. An important feature is that management functions are implemented using digital tools, which enhances their effectiveness and flexibility.

Table 1

**Components of an integrated system for managing the innovative development of enterprises in the context of digital transformation and a risk-oriented environment**

System component	Content	Key tools	Expected effect
Innovation and strategy	Formulation and implementation of an enterprise innovation strategy	Strategic planning, innovation portfolio management, R&D	Increased competitiveness, development of innovation potential
Digital and technological	Integration of digital technologies into the enterprise's business processes	Big Data, AI, ERP systems, digital platforms	Improved management efficiency, faster decision-making
Risk-oriented	Identification, assessment and management of risks in the development process	Risk management systems, SWOT analysis, scenario modelling	Reducing uncertainty, enhancing enterprise resilience
Organisational and managerial	Ensuring alignment of management processes and structures	Business process re-engineering, agile management, KPIs	Increasing organisational flexibility and adaptability
Information and analytical	Building an information base for decision-making	Analytical systems, BI tools, digital data	Improving the soundness of management decisions
Investment and resource	Ensuring resource support for innovative development	Investment programmes, financial planning	Optimising resource utilisation
Integration (synergy)	Coordinating the interaction of all system components	Platform solutions, digital ecosystems	Synergy effect, comprehensive development
Performance	Achieving the enterprise's innovation development goals	Performance metrics, effectiveness assessment	Growth in enterprise value, sustainable development

A key element of the model is the digital-technological loop, which provides information and technological support for management processes. It includes digital platforms, analytical systems, big data processing tools and business process automation. This loop acts as the connecting link between all elements of the system, ensuring their integration and the efficiency of their interaction.

Operating in parallel is the risk-oriented management loop, which permeates all levels of the model and ensures that risks are taken into account at every stage of management decision-making. Its operation is based on the continuous monitoring of risks, their assessment, and the development of measures to minimise their impact. This approach enhances the enterprise's resilience to external and internal threats [5].

An important component of the model is the information and analytical unit, which ensures the collection, processing and interpretation of data regarding the state of the enterprise and the external environment. Based on this unit, an analytical foundation is formed for management decision-making, thereby enhancing the soundness and timeliness of such decisions.

The result of the model's operation is the achievement of a synergistic effect, which manifests itself in increased efficiency of innovation activities, optimised resource utilisation, reduced risks and enhanced competitiveness of the

enterprise. An important characteristic of the model is its adaptability, which is ensured by the presence of a feedback mechanism.

Feedback in the model is implemented through a system for evaluating the results of innovation development and analysing deviations from planned indicators. This allows for the timely adjustment of management decisions, the adaptation of the enterprise's development strategy, and the assurance of its sustainable operation in a dynamic environment.

The proposed model differs from existing approaches in that it comprehensively integrates digital, innovative and risk-oriented management frameworks, thereby establishing a holistic system for managerial decision-making and enhancing the effectiveness of enterprise development management in conditions of uncertainty.

The effectiveness of managing innovative development in enterprises in the context of digital transformation and a risk-oriented environment is a complex, multidimensional characteristic that reflects the effectiveness of the integration of innovative, technological and managerial processes. Given the integrated nature of the proposed model, the assessment of effectiveness should be carried out on the basis of a comprehensive approach that takes into account the interrelationship between the key components of enterprise development.

It is advisable to identify several interrelated types of effectiveness, which together form a holistic picture of the effectiveness of managing an enterprise's innovative development.

Innovative effectiveness characterises an enterprise's ability to generate, implement and commercialise innovations. It reflects the effectiveness of utilising innovative potential and is determined by the level of implementation of new products, technologies and management decisions. A high level of innovation efficiency ensures the formation of competitive advantages and the creation of added value.

Digital efficiency reflects the degree of implementation of digital technologies in the enterprise's activities and their impact on the effectiveness of business processes. It is characterised by the level of automation, integration of information systems, and the use of analytical tools and digital platforms. Increased digital efficiency contributes to faster information processing, reduced operational costs and improved quality of management decisions.

Risk efficiency determines an enterprise's ability to manage risks effectively, mitigate their negative impact, and capitalise on opportunities arising during business operations. It is characterised by the level of risk identification, the effectiveness of measures to minimise risks, and the enterprise's ability to adapt to changes in the external environment. High risk efficiency is a key prerequisite for ensuring the sustainable development of an enterprise.

Organisational efficiency reflects the level of coordination of internal management processes, the flexibility of the organisational structure, and the enterprise's ability to respond quickly to changes. It manifests itself in the effectiveness of interaction between departments, the optimisation of business processes, and the implementation of modern management approaches, in particular agile methodologies.

Economic efficiency characterises the financial results of the enterprise's activities and reflects the extent to which economic objectives are achieved. It is determined by indicators of profitability, return on investment, resource utilisation efficiency, and the enterprise's investment attractiveness.

An important feature of the proposed approach is that these types of efficiency do not exist in isolation, but form a single system in which changes in one component affect the others. Thus, improving digital efficiency contributes to increased innovation activity, whilst effective risk

management ensures the stability of economic results.

Taking these types of efficiency into account in a comprehensive manner allows for the formation of a holistic view of the effectiveness of managing an enterprise's innovative development and enhances the soundness of strategic management decisions in the context of digital transformation and uncertainty.

**Conclusions and proposals.** This article examines the theoretical and methodological foundations of managing the innovative development of enterprises in the context of digital transformation and a risk-oriented environment. It has been established that the current stage of economic development is characterised by the increasing influence of digital technologies, rising levels of uncertainty and a more complex risk environment, which necessitates a transformation in approaches to managing enterprise development.

The study demonstrates that, in the current environment, an enterprise's innovative development should be viewed as a comprehensive process combining technological, organisational and managerial changes, and that its effectiveness depends to a significant extent on the level of integration of digital tools and risk management mechanisms. It has been established that traditional approaches to enterprise development management are insufficient in the digital economy, necessitating the formation of new, integrated management models.

The key result of the study is the formulation of a theoretical and methodological approach to the integrated management of enterprises' innovative development, based on a combination of innovative, digital and risk-oriented components. An original definition of integrated management of innovative development is proposed, which characterises it as a systemic process of strategic influence on the formation and realisation of an enterprise's innovative potential.

A structure of an integrated system for managing the innovative development of enterprises has been developed, comprising innovation-strategic, digital-technological, risk-oriented, organisational-managerial, information-analytical, investment-resource and integration components. It is demonstrated that their coordinated interaction ensures the creation of a synergistic effect and enhances the effectiveness of enterprise development management.

The paper proposes a model of integrated management of enterprise innovation development, which combines strategic, functional-management,

digital-technological and risk-oriented components. It is determined that the key feature of the model is its adaptability and the presence of a feedback mechanism, which allows for a rapid response to changes in the external environment and the adjustment of management decisions.

The methodological approach to assessing the effectiveness of managing an enterprise's innovative development has been refined, based on distinguishing between innovative, digital, risk-related, organisational and economic effectiveness. It has been demonstrated that taking these into account comprehensively enables a more objective assessment of management performance and enhances the soundness of strategic decisions.

The scientific novelty of the results lies in the development of an integrated approach to managing the innovative development of enterprises, combining digital transformation, risk-oriented management and innovative processes into a single system. The practical significance of the study lies in the possibility of enterprises utilising the proposed provisions to improve management efficiency, ensure sustainable development and strengthen their competitive positions in the modern economic environment.

Prospects for further research should be linked to the development of applied tools for assessing the effectiveness of integrated management, the adaptation of the proposed model to the sector-specific characteristics of enterprises' activities, and its testing in real-world business practice.

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#### Shi Guangming, Wang Fei, Wu Qian. Управління інноваційним розвитком підприємств в умовах цифрової трансформації та ризик-орієнтованого середовища.

Статтю присвячено дослідженню сучасних підходів до управління інноваційним розвитком підприємств в умовах цифрової трансформації та формування ризик-орієнтованого середовища господарювання. Актуальність теми зумовлена зростанням ролі цифрових технологій, ускладненням зовнішнього середовища та необхідністю забезпечення адаптивності підприємств до постійних змін. Обґрунтовано, що традиційні підходи до управління розвитком підприємств не повною мірою враховують взаємозв'язок інноваційних процесів, цифровізації та управління ризиками, що обмежує ефективність управлінських рішень. У дослідженні акцентовано увагу на формуванні інтегрованого підходу до управління інноваційним розвитком, який передбачає узгодження стратегічних, технологічних та аналітичних аспектів діяльності підприємства. Визначено, що цифрова трансформація виступає не лише інструментом підвищення ефективності, а й фактором структурних змін у системі управління, тоді як ризик-орієнтований підхід забезпечує

стійкість та передбачуваність результатів діяльності. Особливу увагу приділено взаємодії ключових компонентів управління, серед яких інноваційний потенціал, цифрові технології та механізми управління ризиками. Доведено, що їх поєднання створює передумови для формування нової якості управління підприємством, орієнтованої на гнучкість, швидкість прийняття рішень та ефективне використання ресурсів. Запропоновано концептуальні положення інтегрованого управління інноваційним розвитком підприємств, що базуються на системному підході та передбачають узгодження стратегічних цілей із цифровими можливостями та ризиковими обмеженнями. Розкрито значення інформаційно-аналітичного забезпечення як основи для прийняття обґрунтованих управлінських рішень в умовах невизначеності. Окремо обґрунтовано доцільність комплексного підходу до оцінювання ефективності управління, що враховує багатовимірний характер розвитку підприємства. Показано, що результативність управління визначається не лише економічними показниками, але й рівнем інноваційної активності, цифрової зрілості та здатністю до управління ризиками. Зроблено висновок, що

інтеграція інноваційного, цифрового та ризик-орієнтованого підходів дозволяє сформувати більш ефективну систему управління розвитком підприємств, здатну забезпечити їх конкурентоспроможність і стійкість у сучасному економічному середовищі.

**Ключові слова:** інноваційний розвиток підприємства; стратегічне управління; цифрова трансформація; ризик-орієнтоване управління; інноваційний потенціал; цифровізація; управління підприємством; ефективність управління; конкурентоспроможність

**Shi Guangming** – аспірант СНУ ім. В. Даля;

<https://orcid.org/0009-0000-9156-911X>

**Wang Fei** – аспірант СНУ ім. В. Даля;

<https://orcid.org/0009-0006-2558-4462>

**Wu Qian** – аспірант СНУ ім. В. Даля.

<https://orcid.org/0009-0009-8201-5735>

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