DOI: https://doi.org/10.58253/2078-1628-2026-1-1(35)-022

УДК 005.591.6:005.71:004
JEL M11, M15, O31, O32, Q56

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BUSINESS PROCESS TRANSFORMATION IN INNOVATION MANAGEMENT UNDER CONDITIONS OF DIGITALIZATION AND SUSTAINABLE DEVELOPMENT

This article examines the theoretical foundations and practical aspects of business process transformation within an enterprise's innovation management system in the context of digitalization and sustainable development. It is argued that modern digital transformation processes are significantly changing approaches to innovation

management, facilitating the transition from traditional hierarchical management models to open, platform-based, and data-driven systems.

Based on an analysis of contemporary scientific approaches, the role of business process transformation within the innovation management system is clarified, and its function as a strategic tool for enterprises to adapt to dynamic external changes is defined. A four-level hierarchy of concepts of digital change is considered, which includes digitization, digitalization, digital transformation, and digital business transformation. An integrative three-level model of business process transformation within the innovation management system is proposed, covering the strategic, operational, and value levels.

It is determined that at the strategic level, transformation is linked to business model re-engineering, the transformation of operational processes, and the rethinking of customer experience. At the operational level, the key areas are automation, the intellectualization of business processes, the development of process flexibility, and the implementation of responsible automation principles. At the value level, transformation ensures the alignment of the economic, social, and environmental outcomes of the enterprise's activities.

A mechanism has been developed to transform business processes within the innovation management system, encompassing assessment of the current state, strategic planning, operational implementation, and monitoring of results. The practical significance of the proposed provisions lies in their potential to establish a digitally oriented innovation management system that enhances the enterprise's competitiveness and advances sustainable development goals.

***Keywords**: innovation, innovation management, business processes, business process transformation, digitalization, digital transformation, sustainable development.*

Problem statement and its connection with important scientific and practical tasks. Current realities call for an in-depth examination of innovation management systems, particularly in the context of business process transformation amid digitalization and sustainable development. The digital transformation of business processes is no longer just a matter of course but the main driver of socio-economic development. And innovation and innovation management are becoming key elements of a company's development strategy.

In the face of rapid technological progress, companies are forced to adapt their business processes to new operating conditions. In this context, the integration of digital technologies and innovative management approaches is particularly significant.

Such an approach contributes to the development of new value-creation models and to sustainable development.

Despite a significant body of scientific research, issues related to transforming business processes within the innovation management system warrant further scholarly examination. In particular, the specifics of adapting the innovation management system to new digital conditions remain under-researched. It is also advisable to assess the impact of business process transformation on innovation activities and on the achievement of sustainable development goals. This underscores the relevance of the chosen research topic and its significant theoretical and practical importance for contemporary management science.

Analysis of recent publications on the problem. It should be noted that scholars hold differing views on the nature and essence of each individual element - innovation, business processes, sustainable development, and digital transformation. However, they all agree that enterprise development is possible only through the synthesis of these elements. For instance, V. Alkem and V. Didenko [1] focused on substantiating the role of information and analytical support for innovation management. The authors point out that innovation management should be carried out within the framework of an electronic office, a requirement that requires specialized software.

Authors L. Lazebnik and V. Voitenko [2] add that the information infrastructure has transformed from a simple auxiliary “technological environment” into a key factor in business viability. Innovation management is impossible without tools such as ERP systems.

L. Fedulova [3] notes that the digital transformation of business processes is presented not as an end, but as a foundation for adaptation. Digitalization is a tool that enables a company to remain flexible amid rapid market changes. In other words, innovation management is subordinate to a global goal -maintaining a sustainable competitive advantage.

While P. C. Verhoef [8] emphasizes strategic and organizational disruption (business model change), Ahmad and Van Looy point out that many companies still use digital innovations only for incremental improvements (process mining), failing to achieve a full-scale transformation [8].

George, Merrill, and Schoenbeck [5] examine the intersection of two imperatives: sustainable development and the digital revolution. Innovation is viewed through the lens of digital sustainability. The authors argue that digital innovations eliminate the classic trade-off, meaning that companies no longer need to choose between profitability and environmental sustainability. A digital business model allows for their integration.

Thus, the transformation of business processes within the innovation management system is a complex, multi-level phenomenon. It requires a reliable information and analytical foundation, organizational flexibility, and adherence to the principles of sustainable development. It is precisely this integrated management model that can ensure a modern enterprise's long-term competitiveness.

Highlighting previously unresolved parts of the overall problem. Highlighting previously unresolved parts of the overall problem. An analysis of scientific sources indicates that existing research has established a solid theoretical foundation for understanding digital transformation, innovation management, and the sustainable development of enterprises. However, the issue of business process transformation within the innovation management system is largely studied in a fragmented manner, without adequately considering the interrelationship between the strategic, operational, and value-based aspects of digital change. Conceptual approaches to integrating digital technologies, innovative management practices, and sustainable development principles within a unified enterprise management system remain underdeveloped. This necessitates developing an integrated model for business process transformation to ensure alignment among digital, innovation, and ESG-focused development goals.

The purpose of the research. The purpose of this article is to identify the characteristics of adapting the innovation management system to the conditions of digitalization and to substantiate the theoretical and practical foundations for transforming a company’s business processes to ensure its competitiveness and achieve sustainable development goals.

Presentation of the main results and their justification. Research into the transformation of business processes within the innovation management system requires, first and foremost, a clear distinction between key categories. According to the international standard Oslo Manual [7], business process innovations constitute a separate category within the overall innovation system and encompass changes in a company’s production, logistics, marketing, management, and IT processes. This distinction is fundamental because the transformation of business processes within the innovation management system is not a technical but a strategic phenomenon.

Verhoef et al. [8] proposed a four-level hierarchy of concepts that eliminates categorical ambiguity (Fig. 1).

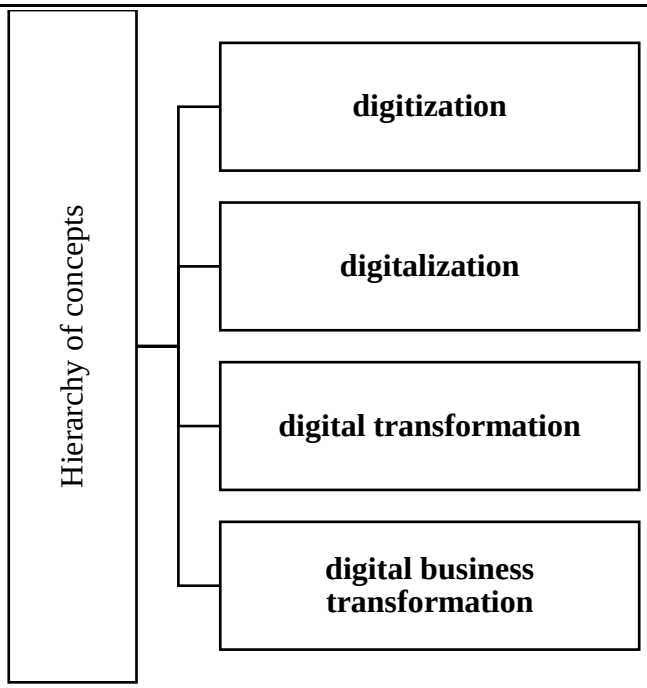

Fig. 1. A four-level hierarchy of concepts

Source: compiled by the author based on [8]

In the proposed hierarchy, digitization involves converting analog data and documents into digital formats without altering process logic. The next concept is digitalization, which involves using digital technologies to automate and improve existing processes. Digital transformation is the strategic process of fundamentally changing the business model, organizational culture, and management architecture in response to digital technologies. At the same time, digital business transformation is the deepest level at which the enterprise's entire value-creation system is reimagined.

Based on a synthesis of the theoretical approaches analyzed, an integrative three-level model of business process transformation within the enterprise’s innovation management system in the context of digitalization and sustainable development can be proposed (Fig. 2).

The scientific novelty of the proposed model lies in integrating the strategic, operational, and value levels of business process transformation into the enterprise’s innovation management system, while accounting for digital and ESG factors.

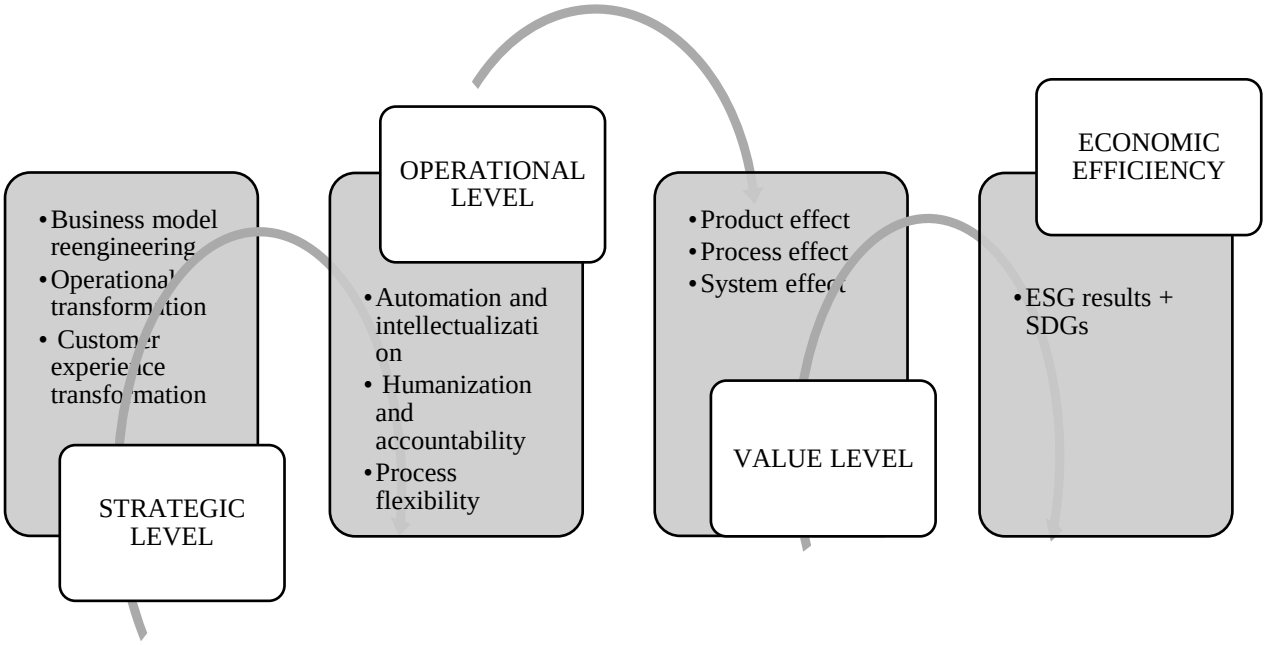

Fig. 2. A three-level model of the transformation of the innovation management system in the context of digitalization and sustainable development

Source: developed by the author

At first, strategic level, the basic paradigm of innovation management undergoes transformation. Thus, the innovation management system shifts from a closed, hierarchical, and process-driven model to an open, platform-based, and data-driven one. According to Bonnet and Westerman [4], strategic transformation involves re-engineering the business model, transforming operational processes, and rethinking customer experience. Re-engineering the business model enables the identification and implementation of new mechanisms to monetize innovations. The transformation of operational processes and the rethinking of customer experience involve new methods for developing and implementing innovations, as well as new forms of interaction with stakeholders.

At the operational level, the transformation encompasses all categories of business processes – production, logistics, marketing, management, and IT. In line with the seven BPM trends [9], the transformation is taking place along two parallel vectors. Firstly, the vector of automation and intellectualization through tools such as RPA, AI/ML, process mining, and intelligent BPM. Secondly, the vector of humanization and accountability based on a people-first approach, ESG integration into BPM, and responsible automation. The final stage involves directly assessing economic efficiency to determine the feasibility of the transformations carried out and their optimization.

The practical implementation of operational transformation requires the development of process flexibility, i.e., the ability of an enterprise's business process management system to adapt to changes in the digital environment without losing operational stability.

At the value level, business process transformation takes on broader significance, serving as a mechanism for integrating corporate innovation activities into the global sustainable development agenda. According to the approach of George et al. [5], digital innovations can help align a company's economic and environmental goals. Transforming a traditional business model into a digital one enables the simultaneous achievement of economic and ESG outcomes.

The transition from a theoretical model to the practical implementation of business process transformation within an innovation management system requires the development of a specific management mechanism. A synthesis of the analyzed sources allows us to propose such a mechanism comprising four interrelated components (Fig. 3).

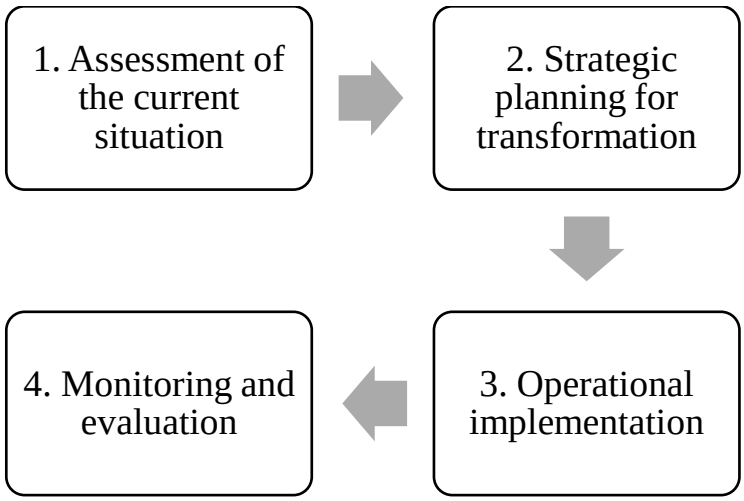

Fig. 3. Mechanism for the transformation of business processes within the innovation management system

Source: developed by the author

Diagnosing the current state involves auditing existing business processes for their digital maturity, assessing the organization's information capabilities, and identifying its dynamic capabilities. Strategic planning for transformation involves formulating a digital strategy for innovation, selecting priority areas for business process transformation, and integrating ESG criteria into the strategic objectives system in line with the concept of digital sustainability. The concept of digital sustainability combines digital transformation and sustainable development. It involves

the creation and use of technologies that meet the modern needs of society without harming the environment, and that contribute to environmental, social and economic well-being. Operational implementation involves adopting digital technologies, developing an integrated information and analytical innovation management system, and cultivating process flexibility as an organizational competence.

At the same time, it is necessary to develop staff's digital skills and establish open innovation channels within the partner ecosystem. Monitoring and evaluation are carried out using the KPI system proposed by Makovoz and Lysenko [6], which combines three groups of indicators: operational KPIs (process execution time, level of automation, number of digital control points); innovation KPIs (time-to-market, share of 'digital' innovations in the portfolio, openness of the innovation system); ESG KPIs (carbon footprint of digital transformations, compliance with SDG indicators, social impact of automation). The alignment of all four blocks ensures the transformation is systematic.

Conclusions. The study found that the transformation of business processes within an enterprise's innovation management system is a complex, multi-level process that combines digitalization, innovative development, and the principles of sustainable development. It has been demonstrated that in the current environment, digital transformation goes beyond the automation of individual operations and entails a fundamental rethinking of approaches to innovation management, the enterprise's business model, and value-creation mechanisms.

Based on an analysis of contemporary scientific approaches, the role of business process transformation within the innovation management system has been clarified, and the rationale for treating it as a strategic tool to enhance an enterprise's competitiveness has been substantiated. A three-level model for transforming the innovation management system in the context of digitalization and sustainable development is proposed, covering the strategic, operational, and value levels. It is determined that the effectiveness of such a transformation is ensured by a combination of technological modernization of business processes, the development of process flexibility, and the integration of ESG principles into the management system.

A practical outcome of the study was the development of a mechanism for transforming business processes within the innovation management system, encompassing an assessment of the current state, strategic planning, operational implementation, and monitoring of results. The proposed mechanism ensures alignment between the enterprise's digital, innovation, and sustainable development objectives.

Prospects for further research should be linked to the development of a methodological approach to assessing the effectiveness of business process transformation within the innovation management system, the formulation of an

integrated indicator of an enterprise's digital and innovation maturity, as well as the empirical testing of the proposed model at enterprises in various sectors of the economy.

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ТРАНСФОРМАЦІЯ БІЗНЕС-ПРОЦЕСІВ У СИСТЕМІ УПРАВЛІННЯ ІННОВАЦІЙНОЮ ДІЯЛЬНІСТЮ ПІДПРИЄМСТВА В УМОВАХ ЦИФРОВІЗАЦІЇ ТА СТАЛОГО РОЗВИТКУ

У статті досліджено теоретичні засади та практичні аспекти трансформації бізнес-процесів у системі управління інноваційною діяльністю підприємства в умовах цифровізації та сталого розвитку. Обґрунтовано, що сучасні процеси цифрової трансформації суттєво змінюють підходи до управління інноваційною діяльністю, сприяючи переходу від традиційних ієрархічних моделей управління до відкритих, платформних і дата-орієнтованих систем.

На основі аналізу сучасних наукових підходів уточнено місце трансформації бізнес-процесів у системі управління інноваційною діяльністю та визначено її роль як стратегічного інструменту адаптації підприємств до динамічних змін у зовнішньому середовищі. Розглянуто чотирирівневу ієрархію

понять цифрових змін, яка включає оцифрування, цифровізацію, цифрову трансформацію та цифрову бізнес-трансформацію. Запропоновано інтегративну трирівневу модель трансформації бізнес-процесів у системі управління інноваційною діяльністю, що охоплює стратегічний, операційний і ціннісний рівні.

Визначено, що на стратегічному рівні трансформація пов'язана з реінжинірингом бізнес-моделі, трансформацією операційних процесів і переосмисленням клієнтського досвіду. На операційному рівні ключовими напрямами є автоматизація, інтелектуалізація бізнес-процесів, розвиток процесної гнучкості та впровадження принципів відповідальної автоматизації. На ціннісному рівні трансформація забезпечує узгодження економічних, соціальних та екологічних результатів діяльності підприємства.

Розроблено механізм трансформації бізнес-процесів у системі управління інноваційною діяльністю, який включає діагностику поточного стану, стратегічне планування, операційну реалізацію та моніторинг результатів. Практичне значення запропонованих положень полягає у можливості їх використання для формування цифровоорієнтованої системи управління інноваційною діяльністю, спрямованої на підвищення конкурентоспроможності підприємства та досягнення цілей сталого розвитку.

***Ключові слова**: інноваційна діяльність, управління інноваційною діяльністю, бізнес-процеси, трансформація бізнес-процесів, цифровізація, цифрова трансформація, сталий розвиток.*

Надійшла до редакції: 01.05.2026
Пройшла рецензування: 15.05.2026
Прийнята до друку: 22.05.2026
Опублікована: 29.05.2026