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Managing Risks Through Innovative Technologies And Digital Systems In Service Industries

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Abstract
This study examines modern approaches to risk management based on innovative technologies and digital systems. It explores the impact of digitalization, artificial intelligence, big data, blockchain, and the Internet of Things on the processes of identifying, assessing, and mitigating risks within organizations. A comparative analysis of traditional risk-management methods and the advantages of digital platforms is provided, along with justification of the effectiveness of digital technologies in risk forecasting and decision-making optimization. The findings highlight how the implementation of innovative risk-management systems can enhance organizational resilience and overall stability.
Keywords: innovative technologies, digital systems, risk management, artificial intelligence, big data, blockchain, IoT, risk analysis, digitalization, forecasting.

Introduction. In today's modern economic environment, the activities of enterprises depend on increasingly complex global factors. Market competitiveness, the acceleration of digital innovations, geoeconomic changes and unexpected economic instability make risk management a strategically important process. Along with the deepening of the digitalization process, the risks faced by enterprises are also taking on a variety of forms. In such an environment, identifying, assessing and minimizing risks using innovative technologies is an important task. In modern project management practice, the concept of "risk" refers to events or circumstances that lead to a negative deviation from the results planned by the organization [1]. In the era of digital transformation, the nature and composition of risks are changing, in particular, problems related to cyber threats, data security and privacy issues, and the integration of digital technologies are emerging. This, in turn, requires the evolution of risk management systems in project management. The purpose of this article is to study the evolution of risk management systems in project management in the context of digital transformation and analyze indicators for assessing their effectiveness.

Literature review. The concept of risk management is widely covered in the scientific literature, and in recent years it has been developing in close connection with digital technologies. For example, Davenport (2020) emphasizes in his research that risk analysis models based on artificial intelligence create a significant advantage for the activities of the enterprise. Porter (2019) deeply analyzes the impact of digital transformation processes on the efficiency of the enterprise and puts forward new principles of innovative management. Also, UNDP and OECD reports pay special attention to best practices in risk management in the global economy, public policies and technological factors. According to the results of a study by Akbarov et al. (2021), risk management issues in digital transformation projects in Uzbek enterprises are still problematic, and most projects show that enterprises do not

have sufficient experience in change management and risk assessment at the implementation stage [2]. The effectiveness of risk management systems in the implementation of digital transformation projects depends on a number of factors, including organizational culture, attitude to risks, the level of formalization of risk management processes, the level of use of digital technologies, etc. According to leading international researchers, modern risk management systems should have the following key evolutionary characteristics: proactivity - early identification of risks and taking measures to manage them; adaptability - the ability to adapt to changing conditions; integrativeness - integration of risk management systems with strategic management; combination of quantitative and qualitative approaches; use of modern digital technologies [3]. Various indicators are used to assess the effectiveness of risk management systems during the implementation of digital transformation projects. For example, according to the study of Ross (2022), it is advisable to use the following indicators to assess the effectiveness of risk management systems: speed and completeness of risk identification; quality and accuracy of risk assessment; availability and quality of a risk management action plan; effectiveness of risk monitoring and control; adequacy of resources allocated to risk management; level of integration of risk management processes [4]. According to the results of a study conducted in Russia and the CIS countries by Smirnov and Abdurakhmanova (2023), the following trends can be distinguished for the development and assessment of risk management systems in digital transformation projects: Real-time identification and assessment of risks through the use of Big Data technologies and artificial intelligence; Scaling of risk management systems using Cloud technologies; Creation of risk control and monitoring systems based on Blockchain technology; Integrate security considerations into all aspects of project phases by implementing the DevSecOps approach [5].

Research methodology. The methodology used qualitative analysis, content analysis, comparative analysis, systematic approach and empirical data. To measure the effectiveness of digital systems in risk management, international statistical data, government reports and practical opinions of various experts in the field were analyzed. Also, digital monitoring systems, cybersecurity indicators and business analytics tools served as the methodological basis of the study.

Analysis and results. Financial analysis is a key tool for identifying risks, assessing them, and making strategic decisions. The following methodological approaches are of key importance in this process:

1.Taking into account cyclicality: the activities of industrial enterprises consist of different stages, and at each stage the dynamics of financial indicators change. Therefore, the analysis must be carried out continuously.
2. Multifactorial impact: There are a large number of factors affecting performance, and their combined effects must be carefully analyzed.
3.Synthesis of qualitative and quantitative indicators: not only numbers, but also qualitative indicators of the external and internal environment are included in the analysis.
4. Information quality: analysis should be carried out only on the basis of reliable, up-to-date, sufficient and comparable data.

On this basis, financial analysis serves as a methodological basis for identifying and assessing risks, and also creates the basis for the formation of a systematic approach to risks in the enterprise. It is precisely based on this need, taking into account the

need for effective risk management in enterprises, that we have developed a seven-stage risk management system based on a comprehensive approach.

1. Risk identification. Risks are identified using qualitative and quantitative methods. Qualitative methods (expert assessment, SWOT) are practical, but subjective; quantitative methods (statistical modeling, scenarios) are more accurate, but complex and resource-intensive.

2. Concept selection. The approach of an enterprise to risk determines its strategic management model. There are three main approaches to risk in the scientific literature: the first, which views risk as a negative phenomenon and seeks to avoid or reduce it; the second, which evaluates risk as a source of new opportunities and interprets it as a factor of innovative and investment development; the third, which views risk as a resource that must be managed and systematically controls it like other production factors. The combination of these approaches increases the enterprise's flexibility and competitiveness in relation to risks. Based on each concept, an entire management strategy is formed.

3. Information collection and analysis. The collected data must meet the following criteria: usefulness, relevance, reliability, relevance, adequacy, comparability. Information is processed using the following analysis methods: grouping, sorting, calculation, aggregation.

4. Risk assessment. At this stage, operational, technical, financial, environmental, and social risk criteria are determined. For each type of risk, assessment indicators are selected and analysis tools are defined.

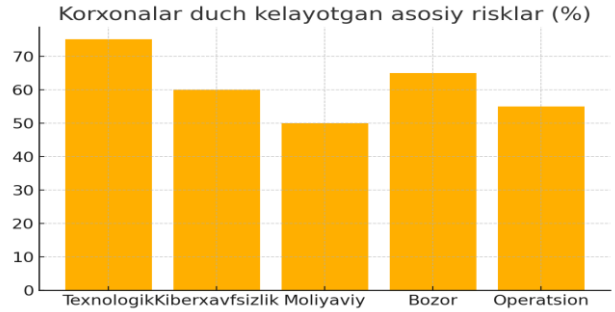
5. Develop a risk management strategy. A decision is made to reduce, prevent, or accept risks. Each decision is prioritized based on the likely consequences.

6. Strategy implementation. Risk response mechanisms are identified, responsibilities are assigned, deadlines are set, and practical monitoring is carried out.

7. Monitoring and improving the register. Risk management should be continuous. The risk register is constantly updated based on the results of monitoring. This increases the accuracy of management decisions.

We have proposed an author's methodology for risk management at an industrial enterprise, which is based on financial analysis tools and involves the formation of a final document - a risk register. This document is one of the means of storing and presenting information about possible risks, and also allows you to assess their impact on various aspects of the financial and economic activities of an industrial enterprise. Further maintenance of the register and organization of monitoring processes allows the management of an industrial enterprise to obtain accurate information on the source of the risk, its consequences, the object of impact and other important parameters [6]. The risk register is the main management document that collects information about risks, their probability, impact, response measures, responsible parties, monitoring frequency, results and proposals. It is used for the following purposes: - Systematic monitoring and management of risks; - Justification of decision-making; - Distribution of responsibility; - Strategic development planning. The results of the study not only strengthen previously existing theories on risk management, but also suggest mechanisms for their practical application in the digital economy. The approach of viewing risk not as a negative factor, but as a manageable resource, increases the competitiveness of industrial enterprises. The risk register is emerging as a convenient tool for identifying, monitoring risks and substantiating strategic decisions. The advantage of this approach over other methods is its continuity, systematicity and

the ability to form management decisions based on data. Therefore, it can be universal for adaptation to different industries [7]. The results of the study show that the main risks faced by enterprises are divided into different categories. Technological risks are associated with failures in digital systems, outdated software or incorrectly configured information systems. Cybersecurity risks are determined by hacking attacks, data theft and system failures. Financial risks are associated with changes in market prices, exchange rate volatility, and economic instability. Operational risks arise from disruptions in the production process, lack of employee skills, or imbalances in management.



The table below shows the overall risks in percentage terms:

Risk type	Level (%)
Technological	75
Cybersecurity	60
Financial	50
Market	65
Operational	55

Conclusion. The above analysis shows that innovative technologies provide a strategic advantage in risk management. Monitoring based on digital technologies, forecasting using artificial intelligence, real-time analytics through IoT devices, and the transparency-enhancing features of blockchain - all of these significantly enhance enterprise security. Support mechanisms provided by the state, including tax incentives, infrastructure projects, and innovation grants, further enhance the effectiveness of the risk reduction process.

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