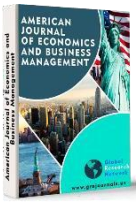

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Article

Mechanisms for Reducing Financial Risks in the Context of Digital Economic Transformation

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Abstract: The digital transformation of the economy entails considerable shifts in the structure and nature of financial risks to be borne by the financial system. As different verticals embrace digital technologies, cyber, system, operational and liquidity risks become increasingly relevant alongside conventional credit, and market risks. The purpose of this article is to study the mechanisms for the minimization of financial risks under conditions of the digital economic transformation. The paper systematizes the main types of financial risks and modern digital tools for their mitigation based on the analysis of international, CIS, and national scientific literature. The study is based on logical-structural analysis, comparative and systemic approaches. We create a financial risk matrix to find top-priority areas of risk management. The findings show that Technology Integration, Regulatory tool and Cybersecurity tracks increases financial stability and effectiveness of financial risk management.

Keywords: Financial Risks, Digital Transformation, Digital Economy, Risk Management, Cyber Risks, Regtech, Big Data.

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1. Introduction

In recent years, the digital transformation of the economy has become a key driver of structural change in the financial system. The active adoption of digital technologies—such as big data, artificial intelligence, cloud computing, blockchain, and fintech platforms—is significantly altering traditional models of financial relations, accelerating financial flows, and increasing the interconnectedness of economic entities. In addition to the obvious advantages of the digitalization, this drives emergence of new financial risks and transformation of the old ones.

Financial risks are moving to a more multilayered and complex form in the digital economy. But alongside conventional credit, market and liquidity risks, we are seeing operational, cyber, data leakage, algorithmic failure, and systemic risks associated with the extreme concentration of digital platforms. The rapid processing of information and automation of financial transactions enhances the responsiveness of financial systems to external and internal shocks and necessitates a reconsideration of risk management frameworks.

At present, the especially acute problem is the creation of effective mechanisms for mitigating financial risks in the context of digital transformation conditions. Established techniques of risk management based largely on historical studies are not effective enough for the early detection and prevention of risks in the digital space. As a result, the finding

of the application of risk management mechanisms ex ante and using technology—in the form of real-time automated risk monitoring, data mining, digital identification, integration of regulatory technologies (RegTech), and synchronization of cybersecurity into financial management systems—has become more significant.

Despite the growing body of research devoted to the digitalization of the financial sector, the issues of systematizing financial risk mitigation mechanisms in the context of the digital transformation of the economy remain insufficiently studied. This is particularly true for an integrated approach that takes into account the interrelationship of technological, institutional, and economic factors. This necessitates an in-depth scientific analysis of existing and prospective mechanisms for managing and mitigating financial risks in the digital economy.

Literature Review

Modern scientific research devoted to the issue of financial risks in the context of the digital transformation of the economy is characterized by a multifaceted and interdisciplinary approach. Foreign and CIS scientific literature, as well as domestic studies, examine both the transformation of traditional financial risks and the emergence of new types of risks caused by the introduction of digital technologies. Particular attention is paid to the development and application of mechanisms for managing and mitigating financial risks using digital tools, regulatory solutions, and institutional transformations. This review systematizes the key scientific approaches and conclusions of foreign, CIS, and domestic authors, revealing the main trends and problematic aspects of developing effective mechanisms for mitigating financial risks in the digital economy.

Douglas W. Arner, Janos Barberis, and Ross P. Buckley emphasize in their research that the digital transformation of the financial sector leads not only to increased efficiency of financial transactions but also to the emergence of new forms of financial risks, including cyber risks and systemic technological risks. The authors emphasized that RegTech and SupTech solutions are some of the most important tools for financial risk mitigation in a digital economy [1]. Adaptive Financial Systems: Andrew W. Lo on Financial Risk Management in the Digital Age As per the author, big data and AI facilitates transitioning from static risk management to dynamic credit risk forecasting models; boosting the resilience of financial institutions against external shocks [2].

Franklin Allen, Xian Gu and Oskar KowalewskiFeature digital financial innovations and their influence on financial stability. Digital platforms and fintech ecosystems need integrated risk management mechanisms that combine technological, institutional, and regulatory tools — the authors conclude [3].

I. T. Balabanov emphasizes that in the context of digitalization, traditional financial risks are being transformed, with operational and information risks coming to the forefront. The author substantiates the need to implement digital internal control systems and automated risk monitoring as key risk mitigation mechanisms [4].

O. I. Lavrushina considers the digital transformation of the banking sector as a factor in changing the architecture of financial risks. In her opinion, the use of digital service channels and online platforms requires strengthening a risk-oriented approach and integrating cybersecurity into the overall financial risk management system [5].

S.N. Silvestrov analyzes the macroeconomic aspects of digitalization and notes that financial risks can only be reduced by creating an institutional environment that ensures the transparency of digital financial transactions and coordinates the actions of regulators and market participants [6].

B.B. Berdiyorov notes in his works that the digital transformation of Uzbekistan's financial sector is accompanied by an increase in operational and technological risks. The author emphasizes the need to implement national digital risk management standards and develop regulatory mechanisms to reduce financial risks [7].

Sh.Kh. Abdullaev examines the role of digital technologies in increasing the resilience of the banking system. According to the author, the use of automated risk assessment systems and digital client identification helps reduce credit and operational risks in the digital economy [8].

N.A. Akhmedzhanova analyzes the impact of fintech solutions on financial risk management in the national economy. The author concludes that the integration of digital platforms and analytical tools allows to improve the quality of management decisions and minimize financial losses [9].

2. Materials and Methods

The methodological basis of this study is a logical-structural analysis of theoretical and empirical data presented in open scientific and analytical sources. The paper employs analytical and synthesis methods, which, on the one hand, allow for the identification of the transformation of traditional financial risks and the emergence of new types of risks in the context of economic digitalization, and, on the other, for the generalization and systematization of modern risk mitigation mechanisms [10]. A comparative approach is also employed to compare international, CIS, and domestic scientific concepts of financial risk management. The study identified key factors and characteristics of financial risks and substantiated priority areas for improving the effectiveness of risk management in the context of economic digitalization.

3. Results and Discussion

In the context of the digital transformation of the economy, the financial risk system is undergoing significant changes, requiring a revision of traditional approaches to their management and mitigation [11]. An analysis of scientific sources and practical approaches allows us to identify key groups of financial risks that are increasing under the influence of digitalization, as well as to identify mechanisms for mitigating them using digital technologies.

The analysis results show that, along with traditional financial risks (credit, market, liquidity), the role of operational, cyber, and systemic risks is significantly increasing in the digital economy [12]. Their specificity lies in the high speed of negative effects and the difficulty of predicting their consequences.

Table 1 presents a systematization of the main financial risks and mechanisms for mitigating them in the context of the digital transformation of the economy.

Table 1. Key financial risks and mechanisms for mitigating them in the context of digital transformation of the economy.

Type of financial risk	Characteristics of risk in the digital economy	Mechanisms of reduction
Credit risk	Automated scoring and the growth of online lending	Big Data analytics, AI scoring, digital customer identification
Market risk	High volatility of digital financial instruments	Algorithmic modeling, real-time stress testing
Liquidity risk	Acceleration of financial flows and settlements	Digital liquidity monitoring, cash flow forecasting models
Operational risk	Failures of IT systems and automated processes	Cloud backup systems, automated internal control

Cyber risk	Cyberattacks, financial and personal data leaks	Cybersecurity systems, encryption, multi-factor authentication
Systemic risk	Concentration of operations on digital platforms	RegTech, SupTech, and macroprudential digital supervision

The analysis shows that digital technologies are not only a source of new risks but also an effective tool for mitigating them. Unlike traditional risk management, digital mechanisms are focused on a proactive approach, enabling the early identification of risks and mitigation of their consequences.

It has been established that the most effective mechanisms for mitigating financial risks are:

- Integrating big data analytics and artificial intelligence into financial decision-making processes;
- Implementing automated risk monitoring and early warning systems;
- Developing regulatory technologies (regtech and suptech) that ensure transparency and control over digital financial transactions;
- Comprehensively integrating cybersecurity into the financial risk management system.

The study's results confirm that the effectiveness of financial risk mitigation in the context of digital transformation largely depends on the coordinated development of technological, institutional, and regulatory mechanisms [13]. The development of a holistic digital risk management ecosystem helps increase the resilience of financial systems and reduce the likelihood of systemic crises. To prioritize financial risks and select appropriate mechanisms to mitigate them in the context of digital transformation, a risk matrix was developed based on two key parameters: the likelihood of a risk occurring and the degree of its impact on the financial stability of economic entities (Table 2).

Table 2. Financial risk matrix in the context of digital transformation of the economy.

Probability / influence	**Low influence**	**Average influence**	**High influence**
Low probability	Regulatory risk (changes in regulations with delayed effect)	Reputational risk	The strategic risk of digitalization
Average probability	Market risk	Liquidity risk	Credit risk
High probability	Operational risk	Cyber risk	Systemic financial risk

The constructed risk matrix shows that, in the context of digital transformation, the greatest threat to financial stability comes from risks characterized by a high probability of occurrence and significant impact [14]. This group primarily includes cyber risks, operational risks, and systemic financial risks associated with the concentration of operations on digital platforms and high dependence on information technology.

Credit risk, despite its traditional nature, is shifting to a high-impact zone in the digital economy due to the growth of online lending and decision automation. This requires the use of intelligent scoring models and advanced data analysis. Liquidity and market risks occupy an intermediate position, but in the context of high-velocity digital financial flows, they can quickly move to a higher-impact zone.

Thus, the results of the matrix analysis confirm that the priority in the financial risk management system should be shifted toward proactive digital mechanisms, including automated monitoring, cybersecurity, and regulatory technologies [15]. Using a risk matrix allows economic entities to rank risks by significance and formulate an adaptive mitigation strategy in the context of digital economic transformation.

4. Conclusion

The study showed that the digital transformation of the economy has a complex impact on the financial risk system, changing its structure, nature, and mechanisms of manifestation. Along with traditional types of financial risks, the digital environment significantly increases the role of operational, cyber, and systemic risks, which are characterized by a high probability of occurrence and a significant impact on the financial stability of economic entities.

The analysis confirms that digital technologies act as a dual factor: on the one hand, they create new sources of risk, and on the other, they create effective tools for mitigating them. In the context of digital transformation, traditional risk management methods, focused primarily on retrospective assessment, are proving insufficient. Proactive and integrated financial risk management mechanisms based on the use of big data, artificial intelligence, automated monitoring, and regulatory technologies are becoming increasingly important. Based on the results obtained, the following practical recommendations can be formulated:

First, it would be advisable for financial institutions and economic entities to implement intelligent risk analysis systems based on Big Data and machine learning algorithms, which improve forecasting accuracy and reduce credit and market risks.

Second, it is necessary to integrate cybersecurity into the overall financial risk management system, viewing it not as an auxiliary function, but as a key element of financial stability in the digital economy.

Third, regulators are recommended to more actively use RegTech and SupTech tools to increase the transparency of digital financial transactions and reduce systemic risks associated with the concentration and scaling of digital platforms.

Fourth, the development of a comprehensive risk matrix and regular stress testing using digital models enable the timely identification of vulnerabilities in financial systems and enhance their adaptability to external and internal shocks.

Overall, the implementation of the proposed mechanisms and recommendations contributes to increased resilience of financial systems, a reduced likelihood of crisis events, and the development of a balanced financial risk management model in the context of the digital transformation of the economy.

REFERENCES

[1] Arner, D. W., J. Barberis, and R. P. Buckley, "The evolution of FinTech: A new post crisis paradigm?" *Georgetown Journal of International Law*, vol. 47, no. 4, pp. 1271, 1319, 2016.

[2] Lo, A. W., *Adaptive Markets: Financial Evolution at the Speed of Thought*. Princeton, USA: Princeton University Press, 2017.

[3] Allen, F., X. Gu, and O. Kowalewski, "Financial structure, economic growth and financial stability," *Journal of Banking and Finance*, vol. 92, pp. 1, 15, 2018.

[4] Balabanov, I. T., *Risk Management*. Moscow, Russia: Finance and Statistics, 2018.

[5] Lavrushina, O. I., "Banking risks and their management under conditions of digitalization," *Banking*, no. 6, pp. 12, 18, 2020.

[6] Silvestrov, S. N., "Digital economy: Risks and institutional constraints of development," *Economics and Management*, no. 5, pp. 4, 11, 2019.
[7] Berdiyorov, B. B., "Digital transformation of the financial sector of Uzbekistan and risk management issues," *Economy and Innovative Technologies*, no. 3, pp. 45, 53, 2021.
[8] Abdullaev, Sh. Kh., "Digital technologies and risk management in the banking system," *Finance and Banking*, no. 2, pp. 28, 34, 2020.
[9] Akhmedzhanova, N. A., "The role of fintech technologies in financial risk management," *Economic Research*, no. 1, pp. 61, 68, 2022.
[10] Basel Committee on Banking Supervision, *Sound Practices: Implications of Fintech Developments for Banks and Bank Supervisors*. Basel, Switzerland: Bank for International Settlements, 2018.
[11] International Monetary Fund, *Global Financial Stability Report: Vulnerabilities in a Maturing Credit Cycle*. Washington DC, USA: IMF, 2019.
[12] OECD, *Digitalisation and Finance*. Paris, France: OECD Publishing, 2020.
[13] World Economic Forum, *Global Risks Report*, 15th ed. Geneva, Switzerland: World Economic Forum, 2020.
[14] KPMG, *The Future of Risk Management in the Digital Era*. Amstelveen, Netherlands: KPMG International, 2021.
[15] Gai, K., M. Qiu, and X. Sun, "A survey on FinTech," *Journal of Network and Computer Applications*, vol. 103, pp. 262, 273, 2018.