



MANAGEMENT OF INVESTMENT RISKS AND WAYS TO IMPROVE THEM IN THE CONTEXT OF THE DIGITAL ECONOMY

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Abstract

This article provides an in-depth analysis of the types of investment risks, their causes, and their impact on enterprises within the context of the digital economy. Special attention is given to emerging types of investment risks arising from factors such as technological innovations, cybersecurity threats, the increasing flow of data, and the rapid development of financial technologies. The article highlights modern methods for identifying, assessing, and managing digital risks, particularly approaches based on artificial intelligence, blockchain technology, and big data tools.

Keywords: Digital economy, investment risk, risk management, cybersecurity, blockchain, artificial intelligence, financial technologies, big data, investment environment, innovation risk, risk analysis.

Introduction

In recent years, the rapid development of digital technologies has been fundamentally transforming the global economy. The digital economy is not limited to e-commerce—it is a complex system that encompasses areas such as artificial intelligence, blockchain, digital finance, and cloud services. These economic transformations bring not only new opportunities for investors and enterprises but also introduce a wide range of new types of investment risks. As the digital transformation progresses, risks are becoming more complex, making it increasingly difficult to detect or prevent them using traditional tools. Issues such as cybersecurity, digital fraud, protection of intellectual property, and data security have become



central concerns for investors. According to international experience, around 68% of companies operating in the digital economy have encountered at least one digital risk incident [1]. Therefore, the correct assessment, identification, and effective management of investment risks in the context of the digital economy have become an urgent scientific and practical issue. The Development Strategy of the Republic of Uzbekistan for 2022–2026 identifies the transition to a digital economy as one of the key priorities. The strategy specifically highlights the task of "assessing the impact of digital transformations on economic security and creating a safe environment for investments." Based on this, reforms aimed at coordinating investment activities, applying financial technologies, and implementing advanced international practices have been initiated [2]. According to Presidential Decree No. PQ-4611, specific measures have been set to identify investment risks during the transition to the digital economy, reduce their probability, and provide legal guarantees for investment processes in the digital environment [3]. As a result, managing digital risks has become a crucial component of ensuring the stable development of the modern economy. Looking at global experience, countries such as the United States, Japan, South Korea, and Estonia are considered leaders in managing investment risks in the digital economy. For example, in the United States in 2022, 82% of investments were directed toward companies equipped with digital risk minimization systems. The country has introduced a "Digital Risk Framework" model to monitor risks in real-time during investment processes. Estonia, having digitized 100% of its public services, has successfully created a secure ecosystem for investors. These experiences are also relevant for Uzbekistan, where implementing automated, AI-based monitoring systems for digital risk detection in companies is becoming a key priority. In Uzbekistan, the main investment risks are associated with financial, technological, and legal uncertainties, especially in projects based on new technologies. According to the 2023 report by the Agency for Economic Analysis, 39% of investments directed toward digital startups failed within the first two years due to financial or technological risks. In such cases, the accuracy of risk analysis, the availability of forecasting models, and government guarantees are of critical importance to investors. Therefore, the use of digital tools—such as big data analytics, blockchain-based audits, and online evaluation platforms—for risk assessment is becoming increasingly necessary. The digital economy not only accelerates investments but also directs them toward new, previously unexplored sectors. For instance, investments in



digital technologies in Uzbekistan grew by 28% in 2022–2023, and this figure reached 35% in the first quarter of 2024 (according to the Ministry of Economic Development). However, alongside this growth, the level of risk is also increasing, potentially undermining investor confidence. Thus, it is essential to identify investment risks and classify them by segments to develop appropriate management models for each risk type. For example, startup projects may require an incubation guarantee system, while IT projects need a risk assessment mechanism based on technological expertise. The “Uzbekistan – 2030” Strategy, aimed at transforming Uzbekistan into a sustainable economy by 2030, identifies digital transformation, innovative development, and attracting investments as key strategic directions [4]. The strategy especially emphasizes “digital security, legal guarantees, and the protection of investor rights” as separate strategic objectives. By 2030, the digital economy is expected to account for 30% of the national economy. This places specific demands on investors, including precise risk analysis, a guaranteed investment environment, and robust technological monitoring. Therefore, creating a safe investment environment within the digital space requires cooperation between the public and private sectors. In this regard, it is crucial to adopt international experience and develop a regulatory and legal framework adapted to local conditions. One significant aspect of digital risk is cybersecurity threats and data breaches. According to the Global Cybersecurity Index (GCI), 71% of companies globally faced at least one cyber threat in 2023. This directly impacts investment processes, as investors prefer to allocate their capital to secure ecosystems. In Uzbekistan, digital security systems are still underdeveloped in certain sectors. Hence, it is proposed that the government establish a special “Investment Risk Management Center” to provide services such as cybersecurity monitoring, technological audits, and expert assessments. This initiative would increase investor confidence and directly affect the volume of attracted investments.

The use of artificial intelligence (AI) technologies in managing investment risks is gaining traction as a modern approach. For example, in Canada and Germany, systems have been implemented to analyze the profitability and risk levels of investment projects in real-time using AI. Such systems are also considered promising for Uzbekistan. According to the 2023 World Economic Forum report, AI technologies have helped reduce investment risks by 38%. In Uzbekistan, however, the introduction of these technologies is still at an early stage. Therefore, developing



AI-based risk analysis models and supporting their implementation through universities and innovation centers has become an important scientific and practical priority. Managing investment risks in the digital economy ensures not only financial stability but also enhances the country's investment attractiveness. Achieving this requires a systematic approach, the use of advanced international practices, modern technologies, reliable statistics, and a solid legal foundation. Through its 2022–2026 Development Strategy and the 2030 development goals, Uzbekistan is striving to improve the investment climate by addressing digital risks. The reforms initiated under Decree No. PQ-4611 are gradually delivering results. However, further strategic steps are needed to manage investment risks through AI, blockchain, digital insurance, and cybersecurity. In this endeavor, international cooperation and the mobilization of local innovation potential will play a key role.

Literature Review

A number of foreign scholars have conducted research on managing and improving investment risks in the context of the digital economy. For instance, Professor Daniel Gozman argues that investment risks become more complex during the digital transformation process. In particular, adapting to regulatory requirements and the rapid evolution of financial technologies have become key risk factors for investors. Therefore, he emphasizes the importance of companies implementing “regtech” technologies [5]. Another foreign scholar, Claudia Biancotti, explores how the level of cybersecurity in the digital economy directly affects investment flows. According to her findings, investors have less confidence in countries with poor cybersecurity indicators. Thus, she concludes that cybersecurity policy should be integrated into national economic strategies [6]. Professor Erik Brynjolfsson states that forecasting risks using artificial intelligence and big data has become an integral part of investment decision-making in the digital era. This approach, he notes, enables the development of more reliable and adaptive strategies for investors [7].

Research Methodology

This article develops a methodological framework based on a systematic approach to study the processes of identifying, analyzing, and managing investment risks in the context of the digital economy.



Analysis and Results

The expansion of the digital economy has had both positive and negative impacts on investment processes. Developed countries have successfully integrated digital technologies into their economies and have managed to regulate investment flows effectively. For example, in 2023, Germany directed 63% of its investments in the technology sector toward projects equipped with digital risk monitoring systems (OECD, 2023). This highlights the fact that the level of security plays a critical role for investors. In the digital age, investment does not only bring profit—it also entails risk. As such, real-time data, technological monitoring, and digital alert systems have become vital tools in making sound investment decisions. Uzbekistan has taken its initial steps in this direction, yet lacks fully developed systems and comprehensive scientific approaches. Globally, the identification and management of investment risks are increasingly being carried out through artificial intelligence (AI), big data, and blockchain technologies. These digital approaches allow for real-time monitoring of investment risks, forecasting the likelihood of threats, and automatically identifying risk segments. For instance, Singapore's "Smart Investment Monitoring Platform", launched in 2022, offers 24/7 risk assessment services to investors. In Uzbekistan, such systems have not yet been widely implemented. Risk assessment in large-scale investment projects often relies on human judgment, which introduces subjectivity and reduces accuracy. Therefore, expanding the use of modern technological tools and adapting them to local conditions has become an urgent priority. The Development Strategy of the Republic of Uzbekistan for 2022–2026 designates digital economy development, improving the investment climate, and supporting the private sector as priority areas. According to the strategy, legal, technological, and financial guarantee systems must be introduced to reduce investment risks. Moreover, the "Uzbekistan–2030" strategic directions outline specific measures to enhance investment security—such as stabilizing the digital environment, strengthening investor confidence, and improving cybersecurity. However, in practice, there is still a noticeable lack of robust systems for early detection of investment risks, legal guarantees, and technological platforms within the framework of these strategies. For this reason, analyzing the current situation and identifying key problems holds significant importance.



Challenges in Managing Investment Risks in The Digital Economy

No.	Problem	Description
1	Complexity of Digital Risks	Risks such as cybersecurity threats, technological malfunctions, and AI-related errors often emerge in hidden forms, making early detection difficult.
2	Lack of a Unified Risk Management System	There is no centralized platform or standardized system at the national level for assessing and controlling investment risks.
3	Shortage of Skilled Personnel and Technological Capacity	There is an insufficient number of qualified experts in cybersecurity, data analytics, and artificial intelligence needed for risk assessment and management.
4	Weakness of the Legal Framework	In the event of digital risks, the existing legislation and liability mechanisms for investor protection are either underdeveloped or incomplete.
5	Limited Use of Advanced Analytical Tools	Tools such as AI, big data analytics, and blockchain are not widely used in practice, and reliance on traditional statistical methods is inadequate.

In the context of the digital economy, the increasing complexity of investment risks and the challenges in identifying them have become serious issues today. As shown in the table above, the first problem is that many investors cannot detect digital threats—such as cybersecurity issues, algorithmic errors in artificial intelligence, and data theft—in a timely manner. In particular, technologies that allow for real-time investment analysis and early warning signals of risks have not yet been widely implemented in many countries, especially in Uzbekistan. The second problem is the absence of a unified digital risk management system, which means there is no standard in evaluating risks between enterprises and investors. Because each legal entity interprets risks differently, overall trust and stability in the investment environment are lacking. This may limit the inflow of international investments. Another important issue shown in the table is related to the shortage of qualified personnel and technological infrastructure. The number of specialists capable of assessing investment risks through digital tools is very limited, especially those knowledgeable in AI, big data, digital auditing, and blockchain technologies. Moreover, due to the limited practical use of analytical and forecasting tools, companies are still forced to rely on classical statistical methods. This does not fully reflect the actual situation of digital risks. Another problem is the weakness of the legal framework. In cases where digital risks arise, the lack of specific laws, procedures, and guarantee mechanisms that protect investors' rights reduces their



trust. Therefore, it is essential to strengthen the system for identifying, regulating, and managing risks from a legal and regulatory standpoint. To adapt the investment risk management system to the demands of the digital economy, it is first necessary to establish a unified centralized digital risk monitoring platform. This system should enable information exchange, real-time risk identification, and evaluation between investors, government agencies, and the private sector. The platform should be based on artificial intelligence, big data, and blockchain technologies and must have an open interface for national and international investors. Such a system would automatically rate investment projects based on the level of risk and provide rapid alerts when threats arise, creating a stable environment for investors. To address the issue of the shortage of qualified personnel, it is advisable to establish specialized master's and doctoral programs in investment risk management, cybersecurity, and digital finance at higher education institutions. Additionally, practice-oriented short-term courses and training centers based on public-private partnerships will accelerate expected outcomes. These courses should provide skills in risk assessment, AI-based investment analysis, and working with digital analytical platforms, thereby increasing the capacity to manage investment risks on a scientific basis. Without qualified personnel, even the most advanced systems will not function fully. To legally protect investors against digital threats, the legal framework must be further strengthened. Specifically, under Presidential Decree PQ-4611, a separate law titled "On the Security of Digital Investments" should be adopted. This law should define the legal classification of investment risks in the digital environment, forms of liability, mandatory audit requirements, and state compensation mechanisms. Furthermore, integrating with international arbitration mechanisms, introducing cybersecurity certificates for investors, and establishing guarantee funds will strengthen investor confidence and stabilize investment flows. Analyses conducted show that investment risks in the digital economy are emerging in new forms and appearances, and traditional approaches are no longer sufficient for managing them. Factors such as cybersecurity threats, incorrect AI-based decisions, technological failures, and decreased data reliability are becoming primary sources of risk for investors. In Uzbekistan, the lack of digital platforms for systematically evaluating investment risks, the shortage of highly qualified personnel, and the underdevelopment of the legal framework are deepening existing problems. This not only reduces investor confidence but also negatively impacts the country's digital transformation process.



In this regard, implementing investment risk management mechanisms based on modern technologies—particularly artificial intelligence, big data, and blockchain—adapting them to national conditions, and improving the legal and regulatory framework remains a top priority. Such measures will help reduce investment risks and create a reliable and stable investment environment for both foreign and local investors. At the same time, by developing human capital, adapting international experience, and consistently implementing national strategic documents, the level of investment security in the digital economy can be significantly increased.

CONCLUSION

In conclusion, the digital economy is fundamentally transforming investment processes on a global scale, bringing with it not only new opportunities but also distinct risks. Alongside traditional investment risks, cybersecurity threats, algorithmic errors, technological malfunctions, and disruptions in data delivery have become pressing risk factors for investors. Analyses conducted in the context of Uzbekistan demonstrate that the necessary infrastructure, technological platforms, and regulatory frameworks for early identification and effective management of current risks have not yet been sufficiently developed. As a result, investor confidence, the volume of investment inflows, and their stability remain at risk. To address these challenges, a comprehensive approach in state policy is essential. First, the implementation of digital platforms for identifying investment risks and their integration with artificial intelligence and big data technologies is of vital importance. Second, enhancing the pool of qualified personnel—by expanding the base of specialists in digital risk management, cybersecurity, and technological auditing—will introduce competitiveness into the investment environment. Third, it is crucial to develop a legal guarantee system against investment risks and reinforce it within the framework of the "Uzbekistan–2030" strategy and Presidential Decree No. PQ-4611. Through these directions, a safe and stable investment environment can be established within the digital economy. Managing investment risks requires a multifaceted approach that is not only economic but also technological, legal, and human capital-based. At a time when such risks have become real threats due to the rapid development of the digital economy, their proper analysis and management will not only protect investors' rights but also ensure the stability of the national economy and support its digital transformation. Although Uzbekistan has taken the first key steps



in this regard, by thoroughly studying international experience, adapting it to national conditions, and consistently implementing modern risk management strategies, it can elevate its investment environment to a new level.

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