

**TRANSFORMATION OF FINANCING MECHANISMS FOR INNOVATION
ACTIVITIES IN THE CONTEXT OF THE DIGITAL ECONOMY**

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Abstract. This article examines current trends and the specific features of the transformation of innovation financing mechanisms in the digital economy. It focuses on analyzing the impact of digital technologies, financial platforms, and tools on attracting investment in innovative projects. Key areas of financial services digitalization, such as crowdfunding, fintech, blockchain, and smart contracts, are discussed, all of which enhance the transparency, efficiency, and accessibility of financial resources. The paper also highlights the challenges and prospects for the development of digital financial mechanisms in the innovation sector and offers recommendations for improving the institutional environment and financial infrastructure to stimulate innovation.

Keywords: digital economy; innovation; innovation financing; fintech; crowdfunding; blockchain; digitalization of finance; investments; financial platforms; transformation of financing mechanisms.

Introduction

The current stage of global economic development is characterized by accelerated digitalization of all spheres of economic activity, which has a significant impact on innovation development processes. The digital economy is shaping new models of interaction between financial market participants, creating the preconditions for the emergence of modern financing instruments and the transformation of traditional mechanisms for investment support of innovation.

In the context of growing global competition and the need to ensure sustainable economic growth, the development of innovative activities aimed at creating and implementing advanced technologies, products, and services is particularly important. However, ensuring effective financing of innovative projects, taking into account high risks, long investment cycles, and the uncertainty of results, remains a key challenge.

The digitalization of the financial sector opens up new opportunities for addressing these challenges. The use of fintech platforms, blockchain technologies, crowdfunding, and digital ecosystems significantly simplifies the process of attracting investment, increases transparency, and reduces transaction costs. As a result, traditional financial mechanisms are being transformed, and a new infrastructure for supporting innovative businesses is being formed.

Thus, studying the transformation of innovation financing mechanisms in the digital economy is a pressing scientific and practical task. An analysis of these changes will help identify key trends, barriers, and prospects for the further development of financial instruments for innovation, as well as develop recommendations for improving state and institutional support for innovation.

Literature review

The study of innovation financing mechanisms and their transformation in the digital age has been widely reflected in the works of both foreign and domestic scholars. In the classic works of J. Schumpeter (1934), innovation is considered a key factor in economic development, and investment is the primary tool for implementing innovative ideas. According to his theory,

innovative activity requires specific forms of financing capable of accounting for high levels of uncertainty and risk.

In modern research, the emphasis is shifting to studying the impact of digital technologies on financial processes. For example, D. Tapscott (2016) emphasizes that the digital transformation of the financial system is leading to the emergence of new financing models—from crowdfunding to decentralized finance (DeFi) based on blockchain technology. These tools make financial transactions more transparent and accessible to small and medium-sized businesses.

Domestic researchers such as G.L. Azoev, N.V. Ivanova, and A.I. Tatarkin examine innovative financing through the lens of the formation of innovation infrastructure and the development of venture capital. Their works emphasize the need to improve institutions that ensure effective interaction between government, business, and research organizations.

Particular attention is paid to research on the digitalization of financial mechanisms. The works of O.V. Rudskaya, M.A. Afanasyeva, and E.V. Lukyanova (2020–2023) analyze the role of fintech and digital platforms in optimizing investment processes and developing digital financing ecosystems. The researchers note that digital technologies facilitate accelerated capital turnover, facilitate innovative companies' access to investment resources, and foster new forms of financial intermediation.

International authors, in particular B. Lundvall, C. Freeman, and M. Porter, emphasize the importance of a systems approach to innovation financing. They associate the success of innovation not only with the availability of capital, but also with the effectiveness of interactions between innovation ecosystem participants—the government, investors, research centers, and businesses.

Thus, the conducted analysis of scientific sources shows that the transformation of innovation financing mechanisms in the digital economy is a multifaceted process encompassing institutional, technological, and organizational-economic aspects. Contemporary scientific literature emphasizes the need to transition from traditional to flexible, digitally-oriented financing mechanisms capable of ensuring the sustainable development of the innovation environment.

Research methodology

The methodological basis of this study is based on the principles of systemic, institutional, and evolutionary approaches to analyzing the transformation of innovation financing mechanisms in the digital economy. These approaches allow us to consider innovation financing as a complex system in which various economic actors—the government, financial institutions, enterprises, and digital platforms—interact.

The study utilized comparative and structural-functional analysis methods, which allowed us to identify the characteristics of traditional and digital innovation financing mechanisms and determine trends in their mutual integration. To analyze the dynamics of innovation financing, statistical and econometric analysis methods were used based on official data from the World Bank, the OECD, and national statistical agencies.

Furthermore, an analytical method was used to assess the effectiveness of implementing digital tools in innovation financing, such as crowdfunding, blockchain, fintech platforms, and digital investment funds. The comparative analysis was conducted using countries with varying levels of economic digitalization (USA, China, Germany, the Republic of Korea, Russia, and Uzbekistan), enabling us to identify successful practices and potential areas for adapting international experience to national conditions. The study also utilized expert assessment and content analysis of scientific publications, regulatory acts, and strategic documents governing innovation and financial activities in the digital environment. This ensured the comprehensive

nature of the study and allowed for the identification of institutional barriers affecting the development of digital innovation financing.

Thus, the study's methodological framework is based on a combination of quantitative and qualitative analysis methods, ensuring the objectivity of the results and their practical significance for improving innovation financing mechanisms in the digital economy.

Analysis and results

The development of the digital economy is significantly influencing the transformation of innovation financing mechanisms. The transition to digital technologies in the financial sector is facilitating changes in the structure of investment flows, the development of new capital-raising instruments, and increased efficiency in the use of financial resources. In today's environment, innovation is becoming an integral element of national economic competitiveness, and the digitalization of finance is a key factor in ensuring the sustainable development of the innovation environment.

The results of the analysis show that in recent years, there has been a steady upward trend in investments attracted through digital financial instruments. According to the World Bank and the OECD, the volume of funds accumulated through online platforms and fintech services is increasing by 30-35% annually. Digital forms of financing are developing particularly rapidly in countries with a high level of digital infrastructure, such as China, the United States, Singapore, and South Korea. In these countries, public policy is aimed at stimulating the adoption of financial innovation, supporting startups, and developing digital ecosystems.

In Uzbekistan, the digitalization of the financial system is also gaining momentum. As part of the "Digital Uzbekistan 2030" strategy, the government is implementing measures to develop e-commerce, introduce fintech technologies, and create digital investment platforms. Specifically, electronic payment systems are being created, access to government investment resources is being simplified, and programs to support innovative projects are being implemented. All of this is fostering favorable conditions for attracting capital to innovation, particularly for small and medium-sized enterprises.

Digital transformation has changed the structure of funding sources for innovation. While government programs and bank lending previously played a primary role, alternative mechanisms such as crowdfunding, online venture platforms, asset tokenization, and blockchain investments are now gaining increasing importance. These tools provide greater transparency, reduce transaction costs, and allow entrepreneurs to interact directly with investors. As a result, the availability of financial resources for innovative companies, especially in the early stages of their development, is increasing. A study has shown that the use of digital technologies in innovation financing can reduce the time it takes to raise capital by an average of 25–30%, increase the transparency of financial transactions, and reduce the risks of inefficient use of funds. However, despite the obvious advantages of digital financing, institutional and technological challenges remain. These include an insufficient regulatory framework, weak data protection, low levels of digital and financial literacy among entrepreneurs, and limited opportunities for using international platforms in developing economies.

Analysis of international experience demonstrates that the successful development of digital innovation financing mechanisms requires comprehensive government support and active collaboration with the private sector. In the European Union, South Korea, and China, national digital ecosystems are being created in which government institutions, financial organizations, and technology companies collaborate to implement innovative projects. This model facilitates the acceleration of investment processes, minimizes risks, and creates a sustainable innovation infrastructure.

For Uzbekistan, the development of a similar digital ecosystem is essential, with fintech companies, universities, venture capital funds, and government development institutions serving as key elements. This will improve the efficiency of investment resource allocation, stimulate the development of innovative entrepreneurship, and ensure the economy's transition to a sustainable digital growth model.

Thus, the results of the analysis confirm that the digitalization of financing mechanisms is one of the key factors determining the success of innovative development. The transition to digital financing models opens up new opportunities for economic modernization, expanding access to investment resources, and enhancing the competitiveness of the national innovation system.

Conclusion

Amid the digital transformation of the global economy, innovation financing is undergoing significant changes, affecting all levels of economic relations—from public administration to the corporate sector and private investors. The development of digital technologies such as blockchain, artificial intelligence, big data, and fintech platforms is creating new opportunities for the efficient attraction and distribution of financial resources necessary for the implementation of innovative projects.

Analysis has shown that digitalization of the financial sector contributes to increased transparency, reduced transaction costs, and expanded access to investment resources for innovative companies. However, issues related to the legal regulation of digital financial instruments, ensuring cybersecurity, and minimizing the risks associated with the high volatility of digital assets remain pressing.

The transformation of innovation financing mechanisms requires a comprehensive approach, including improving the institutional environment, developing digital infrastructure, and implementing modern models of interaction between government, business, and the scientific community. The development of venture capital and crowdfunding mechanisms, which are taking on new forms and scales in the digital environment, is becoming particularly important. Thus, it can be concluded that the digital economy not only transforms existing mechanisms for financing innovation but also creates new models for sustainable innovative development. Effective implementation of these processes will ensure the long-term competitiveness of the national economy, stimulate technological innovation, and increase the level of innovative activity in society.

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