

**CRYPTOCURRENCIES, BLOCKCHAIN AND ARTIFICIAL INTELLIGENCE —
THREE PILLARS OF THE NEW FINANCIAL SYSTEM**

Tashkent State University of Economics Bachelor's Degree Student

Rasulov Dilshodbek Shuxratbek o'g'li

dilshodbekrasulov191@gmail.com

Bachelor's Degree Student

Abdurahmonova Mohinur Akromxo'ja qizi

mohinurabdurahmonova254@gmail.com

Abstract

This article analyzes the role and significance of cryptocurrencies, blockchain technology, and artificial intelligence in the formation of the modern financial system. The research examines the impact of these technologies on the financial sector, their mutual integration, and their importance in the development of the digital economy. The findings indicate that these three technologies are key factors in enhancing the efficiency, transparency, and stability of the financial system.

Keywords

Cryptocurrency, blockchain, artificial intelligence, digital finance, innovative technologies, financial system, economic development, banking system, digital technologies.

Introduction

Today, the rapid development of the digital economy is bringing about profound structural changes in the global financial system. As information technologies are widely implemented, traditional financial relations are transforming, and new digital financial mechanisms are emerging. In particular, cryptocurrencies, blockchain technology, and artificial intelligence are becoming essential components of the modern financial system.

In the Republic of Uzbekistan, the development of the digital economy has also been identified as one of the priority areas of state policy. In particular, the “Raqamli O‘zbekiston – 2030” strategy¹, adopted by the President of the Republic of Uzbekistan, has strengthened the legal and organizational foundations for the introduction of information and communication technologies, including digital finance and innovative technologies, in the country. This strategy emphasizes the broad application of digital technologies, artificial intelligence, and automated systems in the financial sector as a key objective.

Furthermore, the Resolution of the President of the Republic of Uzbekistan No. PQ-3150 dated July 27, 2017, “O‘zbekiston Respublikasi Istiqbolli loyihalar milliy agentligi faoliyatini tashkil etish to‘g‘risida”² approved the rules for trading crypto-assets on crypto exchanges. This legal framework regulates the circulation and trading of crypto-assets within the country and

¹ The “Raqamli O‘zbekiston – 2030” strategy adopted by the President of the Republic of Uzbekistan, <https://lex.uz/docs/-8050769>

² Resolution of the President of the Republic of Uzbekistan No. Resolution No. PQ-3150 dated July 27, 2017, “O‘zbekiston Respublikasi Istiqbolli loyihalar milliy agentligi faoliyatini tashkil etish to‘g‘risida” including the approval of the “Kripto-birjada kripto-aktivlar savdolarini amalga oshirish qoidalarini tasdiqlash”, <https://lex.uz/docs/-6158330>

clearly demonstrates that the necessary regulatory conditions are being created for the development of the digital financial market.

In addition, several decrees and resolutions have been adopted to promote the development of artificial intelligence technologies and their implementation across various sectors of the economy, including finance. These documents particularly highlight the importance of using artificial intelligence for analyzing large volumes of data, reducing financial risks, and optimizing managerial decision-making processes.

Therefore, studying the role of cryptocurrencies, blockchain, and artificial intelligence in the financial system from the perspective of legislation and state policy is of significant academic relevance. This article analyzes the importance of these technologies in shaping the modern financial system and examines their prospects within the economy of Uzbekistan.

Research Methodology

During the research process, statistical, analytical, comparative, observational, inductive, deductive, logical, monitoring, rapid assessment, and other analytical methods were applied. Based on the review of relevant literature, the topic was comprehensively examined. Reforms carried out in cooperation with foreign countries were also analyzed.

Literature Review

The analysis of scientific literature within the scope of the topic shows that cryptocurrencies, blockchain technology, and artificial intelligence are widely studied as important innovative directions of the modern financial system. Economists and financial scholars evaluate cryptocurrencies as an alternative form of decentralized finance and emphasize their role in simplifying financial transactions and reducing transaction costs.

Cryptocurrency is a digital or virtual currency that uses cryptographic technology to ensure secure financial transactions. Unlike traditional currencies issued by governments (such as USD or EUR), cryptocurrencies operate on a decentralized network, typically based on blockchain technology. This digital ledger records transactions across multiple computers, ensuring transparency and reducing the risk of fraud³. Scientific sources note that the formation and development of cryptocurrencies are closely linked to blockchain technology. Research on blockchain highlights its role in ensuring transparency, security, and immutability of data in financial transactions. Moreover, numerous academic works analyze the potential of automating financial agreements and reducing the number of intermediaries through smart contracts.

Blockchain (from the English “blockchain”) is a continuous chain of blocks that stores information about transactions of all users. Simply put, blockchain is a modern type of database⁴. Scientific studies dedicated to blockchain technology particularly emphasize its importance in ensuring transparency and security in financial operations. Researchers positively assess the opportunities to automate financial agreements through blockchain-based smart contracts. Additionally, the prospects of applying this technology in banking, insurance, and stock market sectors have been widely discussed.

³ Mastykin, Andrey. “What is Cryptocurrency? Definition, Benefits, and Practical Examples” February 26, 2026, <https://tradersunion.com/uz/interesting-articles/what-is-cryptocurrency/>

⁴ “Технология блокчейн: просто о сложном”, 02.05.2022, <https://s-group.io/ru/media-center/blockchain-technology-simple-about-complicated>

In the literature on artificial intelligence, its effectiveness in financial risk management, optimization of lending processes, and financial forecasting has been extensively analyzed. Furthermore, artificial intelligence technologies reduce errors related to the human factor and enhance data-driven decision-making in finance, thereby minimizing potential difficulties in the process of making financial decisions.

Based on the above findings, along with highlighting the individual significance of cryptocurrency, blockchain, and artificial intelligence, we conclude that their integration constitutes a fundamental pillar of the future financial system. At the same time, some sources indicate the existence of legal and institutional challenges related to the implementation of these technologies, which further underscores the necessity for deeper research on this topic.

Main Part

In the modern financial system, the introduction of cryptocurrencies, blockchain technology, and artificial intelligence is giving rise to new forms of financial relations. During the research, the impact of these technologies on the financial sector was analyzed both individually and in their interconnection.

The findings indicate that cryptocurrencies serve as an important element of the decentralized financial system and act as an alternative instrument in international payments and investment processes. Transactions are executed more quickly, the number of intermediaries is reduced, and operational costs decrease. At the same time, cryptocurrencies expand financial inclusion by creating new opportunities for populations with limited access to traditional banking services.

The blockchain ecosystem has penetrated remarkably within a relatively short period. As of 2025, approximately 560–861 million people worldwide use blockchain or cryptocurrency services, accounting for about 6.8%–10.5% of the global population. This figure is expected to grow further, with many analysts predicting that the number of users could exceed 1 billion by 2027 due to the expansion of mobile device adoption and increasing merchant acceptance in emerging markets.⁵

In addition to serving as the technological foundation of cryptocurrencies, blockchain functions as a key mechanism ensuring transparency and security in the financial system. Research results show that in blockchain-based financial operations, altering or falsifying data is nearly impossible. This significantly increases the level of trust among banks, insurance companies, and other financial institutions. The automation of agreements through smart contracts substantially improves the efficiency of financial processes.

Moreover, nearly 3 out of 10 organizations in the banking sector have already adopted blockchain technology. More than 90% of banks in the United States and Europe have launched blockchain-related projects, demonstrating the growing importance of this technology in the development of the banking sector in advanced economies.

The introduction of artificial intelligence technologies into the financial sector has produced significant results in analytical and management processes. Research shows that U.S. institutions are leading in AI implementation, with 65% actively deploying AI compared to the global

⁵ “Blockchain Adoption Statistics – Growth, Users, and Market Trends”, Joseph D’Souza, 02.02.2026, <https://www.sci-tech-today.com/stats/blockchain-adoption-statistics/>

average of 61%. This gap is expected to widen, as 42% of U.S. institutions plan to increase AI investments by more than 50% in 2026.

Among U.S. financial institutions, live AI applications are particularly prominent in the following areas:

- Data analysis and reporting: 47% (compared to 40% globally)
- Document analysis: 41% (compared to 35% globally)
- Credit underwriting and decision-making: 35% (compared to 31% globally)⁶

These figures demonstrate that the share of artificial intelligence in the U.S. financial and banking system exceeds the global average.

As a result of the integration of these three technologies, a new digital financial ecosystem is emerging. For example, on blockchain-based platforms, artificial intelligence is used to assess transaction security, while automated trading mechanisms are being introduced in crypto-asset markets. The research findings indicate that this integration enhances the speed, transparency, and stability of the financial system.

Countries that invested early in digital infrastructure and artificial intelligence development—such as the United Arab Emirates, Singapore, Norway, Ireland, France, and Spain—continue to maintain leadership positions.

The United Arab Emirates has further strengthened its leading position, ranking first: by the end of 2025, 64.0% of its working-age population is using artificial intelligence (compared to 59.4% at the beginning of the year). The UAE surpasses second-ranked Singapore (60.9% usage) by more than three percentage points.⁷

Overall, the analysis demonstrates that cryptocurrencies, blockchain, and artificial intelligence are becoming integral components of the modern financial system. At the same time, it has been identified that improving the legal and regulatory framework and developing technological infrastructure are essential for their broader implementation.

Conclusion and Recommendations

The conducted analysis shows that cryptocurrencies, blockchain technology, and artificial intelligence are becoming integral elements of the financial system. Their implementation accelerates financial transactions, increases transparency, reduces intermediaries, and expands financial inclusion.

Global experience—particularly that of the United Arab Emirates, Singapore, and Norway—demonstrates that early investment, strong governmental strategic support, and the development of qualified human capital are crucial factors for successful implementation. Furthermore, the integration of artificial intelligence and blockchain technologies in financial

⁶ “Finastra research reveals U.S. financial institutions outpace global peers in AI adoption and modernization investments”, LAKE MARY, 10.02.2026, <https://www.finastra.com/press-media/finastra-research-reveals-us-financial-institutions-outpace-global-peers-ai-adoption/>

⁷ “Global AI Adoption in 2025—A Widening Digital Divide”, 08.01.2026, <https://www.microsoft.com/en-us/corporate-responsibility/topics/ai-economy-institute/reports/global-ai-adoption-2025/>

institutions enhances financial system stability, supports the creation of automated trading mechanisms in crypto-asset markets, and optimizes decision-making processes.

In the context of Uzbekistan, several strategic measures are recommended for the effective implementation of cryptocurrency, blockchain, and artificial intelligence technologies. First, it is necessary to improve the legal and regulatory framework by developing and regularly updating normative documents related to crypto-assets, blockchain, and artificial intelligence. It is also essential to introduce secure transaction mechanisms, develop fraud detection systems, and establish effective user protection measures.

Regarding digital infrastructure development, expanding the technological base for integrating blockchain and AI platforms within financial institutions and government systems is critical. Particular attention should be given to secure data storage, strengthening server capacities, and enhancing network resources.

In the area of professional development and training, it is recommended to introduce specialized courses on artificial intelligence and blockchain technologies in financial institutions and universities, as well as to establish joint training and certification programs that integrate IT and finance specialists.

Considering global experience and cooperation, it is important to study and adapt the technological implementation practices of advanced countries such as the United Arab Emirates, Singapore, and France to Uzbekistan's specific conditions. Participation in international cooperation initiatives and consortia will further expand opportunities for innovative technological development.

From an investment perspective, it is necessary to encourage startups and financial institutions to invest early in blockchain and artificial intelligence projects. The introduction of tax incentives and grant programs is recommended to stimulate such investments.

If these measures are implemented, Uzbekistan will be able to accelerate digital transformation in the financial sector, enhance access to global financial markets, and establish an innovative and sustainable financial system.

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