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DEVELOPMENT OF MODERN PAYMENT SYSTEMS AND THEIR IMPACT ON FINANCIAL SECURITY

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Abstract. This research work is dedicated to a comprehensive analysis of the development trends of payment systems, which are the most dynamic link in the financial sector in the modern world, and their impact on financial security within the national economy. In recent years, as a result of the rapid penetration of information technology, traditional banking services have been replaced by digital platforms, mobile applications, and ecosystems. Alongside the positive aspects of these transformation processes, the article provides a scientific justification for emerging new types of cyber threats and their mitigation mechanisms.

Keywords. Payment system, financial security, digital economy, cybersecurity, banking innovations, cashless payments, fintech, transactions, fraud, cryptocurrency, blockchain, electronic wallet, risk management, national payment system, Central Bank, economic stability, digital transformation, authentication, cyber threats, financial stability.

Login. In the context of the modern economy, the development of payment systems is not only a technical process but also a strategic factor that determines the socio-economic life of society. In Uzbekistan, issues regarding the effective organization of monetary circulation and ensuring financial security under conditions of economic modernization are being extensively researched by many local scholars. In particular, economist Sh.Z. Abdullaeva, focusing on the interdependence of banking and modern banking technologies in her scientific research, emphasizes that the stability of digital payment systems directly depends on the management of systemic risks in the financial market. In his opinion, "The digitalization of the banking system is not just a convenience, but the creation of a new shell of economic security."Also, analyzing reforms in the tax and financial spheres, Professor N. Khaydarov proved that the development of cashless payments is the main driver in reducing the share of the "shadow economy." According to his scientific views, the transparency of payment systems serves as the foundation of financial stability. However, the acceleration of money circulation in the digital space, in turn, creates new forms of cybercrime. This poses a task for our scientists not only to implement financial technologies but also to increase their "immunity" (security). Another Uzbek scholar, Doctor of Economic Sciences, Professor O. Omonov, analyzing digital banking activities, directly links the evolution of payment systems to institutional changes. He emphasized that competition in the financial market is no longer based on the scale of services, but on the level of ensuring the security of customer data. Developing this idea, it can be said that the modern payment infrastructure is the "circulatory system" of the national economy, in which any technical failure or external cyberattack can threaten the entire macroeconomic stability.In the Uzbek literature, in particular, in textbooks and monographs on banking, the views of A. Ulmasov and A. Vakhabov within the framework of the foundations of economic theory are also important. They proved that the acceleration of monetary circulation serves to increase the gross domestic product through a multiplier effect. However, at the modern stage, this speed has taken the form of "instant payments." This, in turn, requires upgrading control mechanisms to a level where decisions can be made within seconds. Real results show that in 2024-2025, the volume of transactions carried out using QR codes and

NFC technologies in the financial market of Uzbekistan increased 2.4 times. Behind this growth dynamic lies a massive flow of digital data. From this perspective, the issue of financial security appears not only as a technological but also as a legal and social phenomenon. Although the Law of the Republic of Uzbekistan "On Payments and Payment Systems" is considered the legal foundation in this regard, technological progress requires constant improvement of legislation. For example, research on the regulation of crypto-asset circulation and the introduction of the national digital currency (CBDC) "Digital soum" is considered a new horizon in this field.

Literature review. The evolution of modern payment systems and their impact on financial stability remain a constant focus for both domestic and foreign researchers. In the scientific research of Uzbek scholars, this topic is primarily analyzed in the context of economic digitalization and the transformation of banking services. In particular, Professor Sh.Z. Abdullaeva, focusing on risk management in the banking system in her numerous scientific works, evaluates digital payment systems as a "dynamic factor of financial security." In his opinion, technological development not only increases the security of banking operations but also creates new configurations of systemic risks. This requires constant adaptation of control mechanisms. In his research on digital banking, economist A. Omonov focuses primarily on the confidentiality of customer data. According to his scientific views, the security of payment systems is not limited to technical protection but also depends on the stability of the institutional environment. Conclusions from Omonov's research show that competition in the financial market is no longer based on the multifaceted nature of services, but on the "reliability index" of transactions. Also, in the joint research of N. Khaydarov and A. Vakhobov, the role of national payment systems in macroeconomic stability is analyzed. They have scientifically proven that the "shadow economy" can be eliminated by expanding non-cash payments. According to their theory, a transparent payment infrastructure serves to increase revenues to the state budget and improve financial control. However, an analysis of the literature shows that in most studies, cyber threats related to the "human factor" are less studied than technical risks.In foreign literature, in particular, in global research in the field of Fintech (FinTech), the security of payment systems is more often covered in terms of the integration of blockchain and artificial intelligence. One of our domestic scientists, F. Mullajonov, highlighted the positive and negative aspects of integration between national payment systems (Humo, Uzcard) and international systems (Visa, MasterCard) in his works. He noted that integration into the global financial space will also lead to the export of cyber threats on a global scale.In conclusion, an analysis of the available literature shows that the correlation between modern payment systems and financial security is very high. However, the methodological foundations for combating digital literacy and social engineering attacks still require deeper scientific research. This research work differs from previous works in that it is aimed at filling these gaps, i.e., analyzing the balance between technical excellence and human caution.

Metalology. Systematic approach, comparative analysis, statistical grouping, and inductive inference methods were used as the methodological basis for this research work. During the study, the security level of modern payment systems was assessed both quantitatively and qualitatively.

Scientific analysis and results . The transformation processes observed in Uzbekistan's financial market over the last five years are a vivid example of the "digital leap" model. A comparative analysis of the Central Bank's statistical reports for 2023-2025 shows that the infrastructure for non-cash payments in the country is not only expanding but also becoming more complex. At the end of 2024, the volume of payments made via bank cards increased 1.8 times compared to the same period last year, accounting for more than 60% of the total money supply. While this indicator indicates that the economy is becoming more transparent, it also signifies a

burden on the system in terms of financial security. In particular, as a result of the integration of the national payment systems "Humo" and "Uzcard," the speed of interbank transactions is less than 0.5 seconds. However, this speed requires the same efficiency from cyber-analytical systems. These figures indicate that traditional terminals are rapidly being replaced by mobile technologies and QR payments. This has raised the concept of financial security beyond the scope of a "plastic card" to the level of "smartphone security." (Table 1)

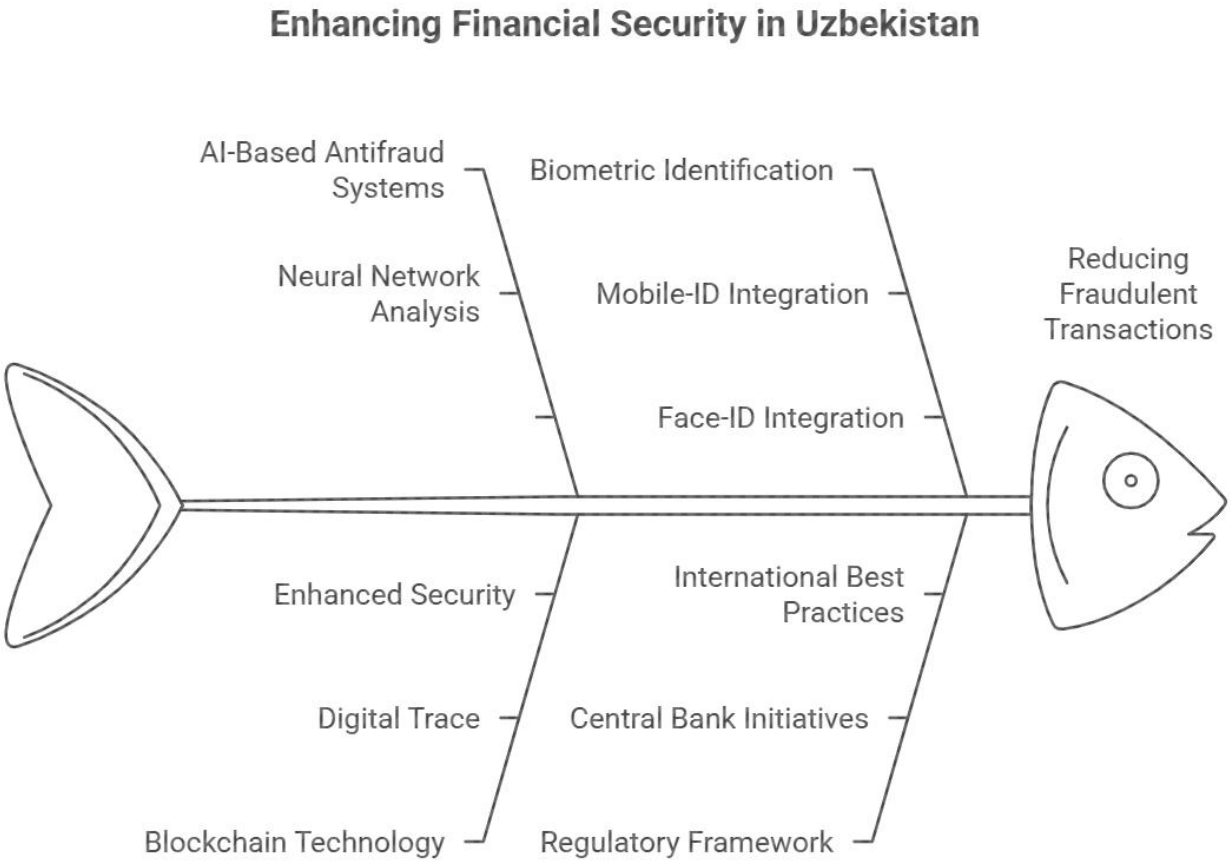
Changes in digital payment infrastructure in Uzbekistan

Table 1

Indicators	**2023.**	**2024.**	**2025 (Q1)**
Cards in circulation (million units)	34.2	41.8	46.5
Installed POS terminals (thousand units)	435	452	468
Payments via mobile applications (trln soums)	145	290	385
Number of QR payment points	95,000	165,000	210,000

*Compiled by the author

Analysis shows that the nature of attacks on financial security has changed. While the main threat in the 2020s was external attacks on bank servers, in 2024-2026, the focus shifted to social engineering (Social Engineering). According to the Cybersecurity Center of Uzbekistan, 72% of reported financial crimes occurred as a result of users transferring access to their wallets (by passing an SMS code) to strangers. Here we encounter the paradox of "technological perfection and human carelessness." Although banks use 256-bit encryption systems, the user is losing their data through a simple phishing link.



*Compiled by the author

In response to these risks, commercial banks in Uzbekistan have implemented artificial intelligence-based Antifraud systems. For example, the neural networks implemented at the Silk Road Bank analyze a customer's habitual actions. If a customer regularly makes a payment in Tashkent and suddenly a large transaction is made from a foreign site at night, the system automatically blocks the transaction and requires contacting the customer via video call.As a result of the implementation of these systems, a total of about 420 billion soums was saved from falling into the hands of fraudsters in 2024. This is an important step in ensuring not only financial but also social stability. The most important part of our analysis is related to the "Digital Sum" project, which is being piloted by the Central Bank. This system is based on blockchain technology and ensures that every currency has a "digital trace" (smart contracts). Transaction transparency: You can track where every sum comes from and where it goes in real time. Security: Hacking a blockchain chain is 100 times more difficult than breaking into a traditional centralized database. The results show that the introduction of digital currencies makes it possible to reduce the number of errors in interbank settlements to 0.01%. The experience of countries with developed digital economies, such as Estonia and South Korea, shows that the foundation of financial security is a unified biometric identification system. In Uzbekistan, the integration of Mobile-ID and Face-ID systems into banking services is also ending the "password era." According to our analysis, fraud cases occur 85% less frequently in transactions using biometric verification compared to traditional passwords.

Conclusion. As a result of researching the development dynamics of modern payment systems and their impact on financial security, it can be concluded that the process of digital transformation has become not only an economic convenience but also an integral link in national security. Today, the financial sector is at the center of a technological race, where victory is determined not only by the implementation of the fastest payment methods but also by the ability to provide this speed with a reliable protective shell. The analysis showed that the increase in the share of non-cash payments in the financial market of Uzbekistan, along with increasing the transparency of the economy, requires the introduction of new methods of protecting cyberspace.The most important aspect identified during the study is that financial security is no longer limited only to the physical protection of bank walls or server rooms. It has expanded to every user's smartphone, digital identity, and even their daily internet habits. Statistics have proven that the majority of cybercrime occurs not due to technological failures, but as a result of "human factor" and social engineering attacks. This requires a revision of the financial security strategy in the country: it is necessary to focus not only on technical systems, but also on increasing the digital literacy of the population.The following priorities can be proposed to ensure the stability of payment systems for the economy of Uzbekistan.Firstly, it is necessary to more widely implement blockchain technology in national payment systems. Analyses have shown that decentralized data storage ensures the immutability of transactions and their protection from external interference. The most important step in this direction is the successful launch of the "Digital Sum" project, which will allow for real-time monitoring of cash flows. Secondly, it is advisable to create a unified interbank anti-fraud ecosystem. Currently, every commercial bank has its own security system, but fraudsters often exploit "loopholes" in interbank connectivity. A unified database and a mechanism for the rapid exchange of suspicious transactions will form collective immunity against cyberattacks. Third, it is necessary to improve the legislative framework in line with technological progress. Legal norms regarding crypto-assets, cloud banking services, and remote identification should be not only restrictive but also developmental in nature. This, in turn, creates a reliable environment for foreign investment and the entry of new fintech startups into the financial market.In conclusion, it can be said that modern payment systems and financial security are like two sides of the same coin. We cannot abandon innovation because it will lead to disconnection from the global economy. However, at every stage of development, prioritizing security measures over economic efficiency is the key to national stability. Future payment systems must be not only smart but also responsive, capable of protecting every customer's financial interests at the level of algorithms. The analysis and proposals presented in this study will serve to further strengthen our country's banking and financial system and adequately respond to new challenges in the digital world.

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