ENHANCING THE PAYMENT SYSTEM IN UZBEKISTAN

Jakhongir Valiyev[1], Inta Kotane[2]
[1] Mg. soc.sc., Rezekne Academy of Technologies, Rezekne, Latvia,
e-mail:: jahongirvaliyev18@gmail.com
[2] Ph.D., assistant professor, leading researcher, Rezekne Academy of Technologies, Rezekne, Latvia, e-mail: inta.kotane@rta.lv

Abstract.
Purpose and aim of the study: *To explore Uzbekistan's payment system and make suggestions for improving the payment system of Uzbekistan.*
Design / Methodology / Approach: *The research employed the following methods: descriptive and logical construction were used for reviewing and analyzing research papers and other information sources, as well as for scientific discussion. The graphic method was applied to better represent and compare the research results.*
Main Findings: *Modern payment systems are an important part of the global economy. The payment system in Uzbekistan is changing as a result of legislative changes and the growing use of digital payments. To reduce fraud and boost security in Uzbekistan's payment system, it is essential to use cutting-edge technology and strong legal frameworks. The integration of artificial intelligence in Uzbekistan's payment systems offers immense potential for improving fraud detection, transaction efficiency, and customer experience. Reducing cash circulation and promoting digital payments are critical for modernizing Uzbekistan's economy.*
Originality: *The research makes strategic recommendations that should increase customer trust in Uzbekistan's financial services industry and promote economic development. By putting these policies in place, the financial services industry can become stronger and more inclusive, which will improve the economy's stability and vibrancy.*
Implications: *The research provides a basis for further research on possibilities of improvement of payment systems.*

Keywords: *artificial intelligence, cash, Fintech, payment system, Uzbekistan,*

Received: *31 October 2024* ***Revised:*** *10 November 2024* ***Accepted:*** *20 November 2024*
Published: *16 December 2024*

Introduction

In the digital age, the role of a robust payment system is pivotal for national economies, impacting everything from individual consumer behavior to international trade dynamics. As the global economy increasingly moves towards digitalization, Uzbekistan faces challenges that hinder its financial inclusivity and efficiency. Saini & Saha (2024) consider that "Fintech companies and financial institutions must prioritize responsible innovation, considering the potential social impact of their products and services. They should also be held accountable for any adverse

https://doi.org/10.17770/jresd2024vol16.8291
This is an open access article under the Creative Commons Attribution 4.0 International License

consequences resulting from their digital finance initiatives, taking proactive measures to mitigate risks and address any unintended consequences".

Beyond simply changing the way people conduct transactions, the evolution of payment systems from traditional banking procedures to advanced electronic methods has also greatly improved the efficiency and security of international trade and economic growth. Fintech, artificial intelligence (AI) and blockchain are just a few examples of technological advances that are constantly being integrated into payment systems. Modern payment systems are evolving due to the Internet and electronic innovations that increase the transparency and efficiency of financial transactions.

Aim of the Paper: To explore Uzbekistan's payment system and make suggestions for improving the payment system of Uzbekistan.

Tasks of the Research:

- explore the theoretical foundations of payment systems;
- describe the payment system of Uzbekistan;
- develop solutions and recommendations for the payment system of Uzbekistan;

The research employed qualitative and quantitative *methods.* The monographic method and logical construction were used to summarize the theoretical aspects of the research problem, analyze them and conduct a scientific discussion. The graphical method was used to represent and compare the results.

Research results and discussion

Theoretical foundations of the payment system

Payment networks that support trade, investment and economic growth are the backbone of the global economy. Big data, artificial intelligence (AI), and the Internet of Things (IoT) have recently caused significant changes in many industries (Papathomas & Konteos, 2023; Siddiqui & Goyal, 2023). Emerging technologies play a pivotal role in driving the transformation of the financial industry through FinTech. These technologies, including blockchain, AI, machine learning (ML), big data analytics, and cloud computing, are enabling unprecedented levels of innovation and efficiency in financial services. Ignoring the development and application of new technologies will lead to delays in the payment infrastructure itself and in the entire economy of the country (Kayode, 2023; Miah et al., 2023; Ganiev, 2023). Noul (2024) concludes that "AI-driven solutions hold immense potential for streamlining transaction processing and enhancing customer experiences. By analyzing customer behavior and preferences, financial

institutions can tailor their services and offerings to meet the evolving needs of their clients".

Payment instruments are the means by which money is exchanged during a transaction. Digital alternatives such as debit and credit cards, electronic payment transfers and digital wallets are gradually replacing more traditional financial instruments such as cash and checks. Each tool has a specific use case, which is determined by variables such as transaction volume, ease of use, and availability of physical infrastructure. Khando et al. (2022) conclude that "Card payments are one of the digital payment technology services made available by banks and other financial institutions to their customers. It is a more conventional form of payment compared to other categories, such as e-payments, mobile payments, and cryptocurrencies".

With the advancement of time and technology, the number of individuals using e-payment platforms have increased, but people still today do not feel safe to provide information to the e-payment service provider because of the trust issues. To increase the participation of individuals in the e-payment platform, the service provider needs to assure the security and privacy gaining trust (Poudel et al., 2023). Rahmad et al. (2024) hold an opinion that "Mobile devices are susceptible to theft or misplacement, leading to financial fraud or identity theft in the event of loss or theft. Engaging in transactions on a mobile device entails the risks commonly linked to mobile usage". In order to effectively detect fraud, in addition to the information available in the databases of the bank or payment organization, it is necessary to add to the data external information (for example, a posteriori assessment of various risks associated with the transaction) (Kolodiziev et al., 2020). Anderson et al. (2013) indicate that "The misallocation of resources associated with cybercrime results mostly from economic and political factors rather than from behavioral ones. Globalization means that for much online crime, the perpetrators and victims are in different jurisdictions".

The global payments system, a complex network of financial transactions, protocols, and institutions, is the backbone of global business and personal finance. However, this system faces various obstacles that weaken its effectiveness, safety, and accessibility. As technology changes, so does the technology of fraudsters, and therefore the way they carry out fraudulent activities. Figure 1 shows the main concerns with international payment systems, such as high transaction prices, infrastructural gaps, currency volatility, regulatory hurdles, financial inclusion, security threats, technology constraints, consumer trust, and economic inequities. Resolving these problems is critical to building more equitable, effective, and safe payment systems globally.

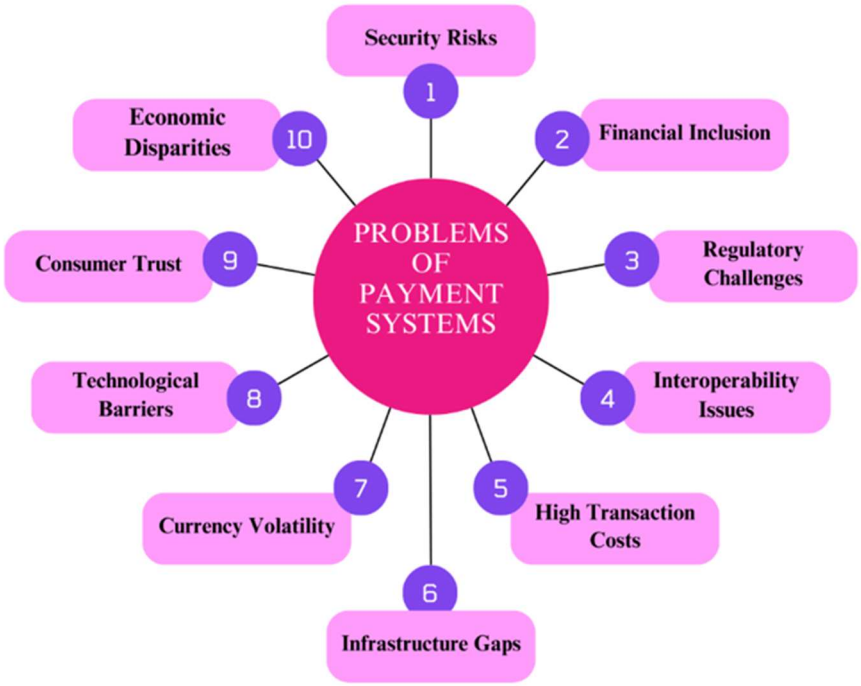

Fig.1 Problems of the payment system from a global perspective
(authors' own compilation based on Rehman et al., 2012; Pay10.com, 2023)

Understanding these challenges is critical for stakeholders at all levels, from policymakers and financial institutions to businesses and consumers, to limit risks and build a safer, more efficient, and inclusive global financial system. Addressing these challenges is critical to the stability and reliability of global payment networks, which in turn promotes economic development and inclusion, manifesting itself in many forms such as identity theft, phishing schemes, and card fraud.

Problems in global payment networks have a significant impact on the global economy, affecting both macroeconomic stability and microeconomic activity. The future of payment security depends on innovations such as blockchain technology for secure decentralized transactions and biometric authentication, which includes facial and fingerprint recognition. These innovations can create more secure, efficient, and transparent payment systems.

As customer behavior and technology change at a rapid pace, payment systems must constantly be innovative. This includes the creation of entirely new payment methods such as cryptocurrency and mobile payments, as well as the integration of advanced technologies such as AI in fraud detection and customer support. Modernization of payment infrastructure, such as the introduction of Faster Payment Systems in various countries, helps to reduce inefficiencies. These technologies enable fast transactions 24/7, significantly reducing the time and costs associated with payments.

To ensure that payment systems are fair, transparent and do not pose a threat to the larger financial system, they are subject to a complex regulatory structure. This involves complying with regulations and laws regarding data privacy, consumer protection, counter-terrorism financing and anti-money laundering (AML). At the regulatory level, efforts are being made to standardize systems and create a more favorable environment for efficient and secure payment systems, and regulatory sandboxes have also emerged as a tool to stimulate innovation in the financial industry.

The dynamic nature of payment systems, driven by rapid technological improvements and changing customer expectations, poses a complex regulatory challenge. By using tactics such as regulatory sandboxes, tiered regulation, and international cooperation, regulators can create an environment that promotes innovation while protecting consumers and maintaining financial stability. Zetzsche et al. (2017) indicate that "In finance, a regulatory sandbox refers to a regulatory “safe space” for experimentation with new approaches involving the application of technology to finance. At the most basic level, the sandbox creates an environment for businesses to test products with less risk of being “punished” by the regulator".

The future of payment systems has enormous potential, based on constant innovation in technology and financial services. However, this future also requires attention and efficiency from both the government and business. As payment systems continue to change, so will the regulatory framework that controls them, influenced by the lessons of the past and the challenges of the future. Regulation and supervision are critical to the integrity and efficiency of payment systems around the world. By continuing to adapt, evolve and collaborate, regulators, financial institutions and technology providers can ensure that payment systems remain secure, efficient, and inclusive. Ongoing dialogue between these stakeholders, based on the principles of consumer protection, innovation, and stability, will determine the trajectory of payment systems in the digital age.

Description of the payment system of Uzbekistan

Uzbekistan, as a country with a developing economy, is actively working to modernize its payment systems and strives to integrate into global financial networks. The history of the payment system of Uzbekistan began in 1991 when Uzbekistan became independent. The evolution of Uzbekistan's payment system: the introduction of electronic payments (1995–2003), enhancements (2003–2010), notable adjustments (2015–2019), and the creation of a data processing center (2019–present) (CBRU, 2020).

In the period from 2015 to 2019, significant changes occurred in the development of the national payment system in Uzbekistan. The Decree of the President of the Republic of Uzbekistan dated September 19, 2018, PP-3945 marked the beginning of the development of the National Interbank Processing Center. This was an important step towards modernizing the payment infrastructure in the country. In 2019, preparations began for the construction of the Data Processing Center at the Central Bank of the Republic of Uzbekistan (CBRU), which will allow payments to be made 24/7. These efforts were aimed at promoting 24-hour activity, which is especially important for the country's business sector. In addition, a new installment system has been developed, allowing businesses and individuals who are clients of commercial banks to make payments at any time. The system was deployed in the first quarter of 2020, and all commercial banks in the country were connected to it. In addition to improving the technological infrastructure, initiatives have also been taken to improve the regulatory framework. On November 1, 2019, the Law of the Republic of Uzbekistan "On Payments and Payment Systems" was adopted (Allahrakha, 2024), which became the basis for regulation of the payment market by the CBRU, the functioning of payment systems, operators and payment service providers, as well as activities in the field of electronic money. The law is based on international experience and is aimed at ensuring the proper operation of payment systems in the country (CBRU, 2020).

The fintech industry in Uzbekistan has witnessed remarkable growth and transformation in recent years. According to the CBRU, this is facilitated by favorable conditions for market participants. As of January 1, 2023, there were 47 licensed payment organizations in Uzbekistan, according to the CBRU (Boboev, 2023).

The CBRU plays an important role in regulating and managing the country's payment systems. It has taken various measures aimed at increasing financial inclusion, enhancing security and encouraging the use of digital payment alternatives. The CBRU has taken steps to reduce reliance on cash transactions, including incentives for businesses and consumers to use electronic payments and the creation of a national payment gateway to support secure online transactions. Boboev (2023) considers that in 2022, payment organizations carried out transactions worth 116 trillion sum, which was 2.1 times more than in 2021, the most popular purpose of transactions in payment services was payment for mobile communications, the number of quick response (QR) codes installed in businesses by the information system increased by only 8 thousand and amounted to 99 thousand units. In 2022, the volume of transactions using near-field communication (NFC) technology increased 2.1 times compared to 2021 and reached 25.5 trillion, in-store payments and payments for transport services

more than doubled, 11.6 million transactions were carried out through electronic money systems (e-wallets).

Over the past decade, the banking industry in Uzbekistan has undergone significant growth with a noticeable step towards digitalization. However, the current digital banking infrastructure still has limitations that prevent it from functioning optimally. Many financial institutions in the country depend on outdated core banking systems that are ill-suited to manage the volume and complexity of ongoing financial transactions. These legacy systems often lack the scalability and flexibility needed to accommodate new technologies that are vital to competing in today's fast-paced financial market. Additionally, the connectivity between multiple financial services and platforms is not seamless, resulting in inefficiencies and a less-than-satisfying user experience. While there have been initiatives to create online banking services, the overall level of adoption and functionality provided through these platforms has room for improvement, especially when compared to global norms. To improve digital transformation in the financial industry in Uzbekistan, the following major obstacles need to be considered and overcome.

- *Technical obsolescence.* Many banks operate with outdated software and technology, affecting transaction processing, service delivery, and security.
- Cybersecurity vulnerabilities. Increased digital transactions have exposed banks to new cyber threats. Existing measures are often insufficient to counter sophisticated attacks.
- *Regulatory Compliance.* The regulatory environment needs simplified rules to enable digital innovation while protecting privacy and data security.
- *Skills gaps.* A significant shortage of trained IT and cybersecurity professionals impacts the development and implementation of innovative solutions.
- *Customer trust and acceptance*. Building customer trust in digital banking products is vital. Concerns about digital security and unfamiliarity with new technologies lead to a preference for traditional methods (authors compiled based on Neverova, 2023)

Barbu et al. (2021) indicated that “Fintechs usually implement their solutions around customer needs and leverage on emerging technologies to produce a comprehensive and enhanced customer experience by gathering different services into one platform”.

In Uzbekistan, the payment sector is less congested, with large banks holding the lion's share of the financial services market. Lack of competition stifles innovation and limits customer options. Introducing new companies,

especially from the financial technology industry, can promote competition and lead to improved services and solutions.

Due to a lack of public trust and knowledge of digital solutions, cash continues to be the primary form of payment in Uzbekistan, despite increased interest in digital ones. Uzbekistan's cybersecurity landscape is reaching a crucial turning point. The danger of cyberattacks rises in tandem with the financial industry's increasing digital presence. In Uzbekistan, a large number of financial institutions now have basic cybersecurity safeguards in place. But as the stakes on digital money climb, they usually are not enough to fend against sophisticated cyberattacks, which become more frequent and sophisticated.

Solutions and recommendations for the payment system of Uzbekistan

The financial environment in Uzbekistan, like much of the world, is rapidly evolving, driven by technological breakthroughs, changing consumer expectations and demand for faster and more secure transactions. Modernizing the payment system is not just about introducing new technologies; it is about having a stable framework that supports economic development, stimulates innovation and increases accessibility. As Uzbekistan continues to integrate into the international economy, modernizing its payment system becomes vital.

The idea of modernizing digital infrastructure in Uzbekistan, especially in the banking sector, includes a dual approach: modernization of fundamental financial systems and large-scale investments in cybersecurity. The rapid pace of technological change internationally requires a strong infrastructure that can manage more digital transactions, provide better security and improve the user experience. For Uzbekistan, strengthening the digital infrastructure within financial institutions is vital to achieving these goals. This will not only improve the efficiency and reliability of financial services but will also integrate the country more fully into the global financial system. It will also build trust among customers and investors, which is an important component in the digital age.

To properly adapt and grow digital payment systems in Uzbekistan, it is necessary to carry out both short-term initiatives and long-term changes. It was essential to develop a comprehensive strategy covering technical modernization, legislative changes and infrastructure development.

Thus, an integrated approach to the introduction of new payment technologies, taking into account both technical aspects and the needs of end users, will create a reliable, secure and efficient payment system in Uzbekistan. To effectively adapt European Union (EU) technologies such as

fast payment systems, NFC and digital wallets to Uzbekistan, it is vital to take into account the uniqueness of local infrastructure, cultural characteristics and consumer behavior. It is also vital to create a legal framework to ensure compliance with international standards and local conditions. The authors' proposals in these areas are presented below.

Table 1 Chronology of actions in the payment system of Uzbekistan
(authors' own compilation)

Step	Months	Actions	Description of actions
Step 1: Preliminary preparation	0-3	Assessment of the current state	Analysis of infrastructure, the legislative framework and technical readiness.
		Defining requirements	Formulation of goals for digitalization of payments and selection of development directions.
Step 2: Develop a strategy	4-6	Technology selection	Identification of key technologies (blockchain, mobile payments, NFC) for a digital payment system.
		Integration planning	Connection of new systems with existing financial structures.
Step 3: Regulatory adaptation	7-12	Development of legislative proposals	Creation of proposals for adapting laws to new technologies.
		Public consultations	Collecting feedback and legal approval of changes.
Step 4: Implementation and testing	13-24	Development and implementation	Deployment of technology solutions with the help of partners.
		Pilot projects	Testing in critical sectors to assess effectiveness.
Step 5: Scaling and optimization	25-36	Evaluation of results	Analyzing the results of pilot projects and identifying improvements.
		Growth and optimization	Expanding the system based on feedback and adaptations.

The payment system digitalization in Uzbekistan spans three years. In the first three months, the current state is assessed and requirements are defined. The next three months involve developing a strategy and selecting technologies. Over the next six months, legislative proposals are developed and public consultations are held. The following 12 months are for implementation and testing through pilot projects. The final year focuses on scaling, optimizing, and improving based on pilot project evaluations.

The path ahead also involves significant public consultation and stakeholder engagement to ensure these reforms are transparent and well-

perceived. By educating the public about the benefits of the revised payment system and persistently demanding participation, Uzbekistan can help to develop a sense of ownership and acceptance among its residents. The targeted implementation of payment technologies and EU regulations provides Uzbekistan with enormous potential to develop its financial infrastructure. This will not only make it more efficient, secure and user-friendly but will also make Uzbekistan a regional leader in financial innovation. Adopting these changes will pave the way for a healthy economic future marked by improved global connectivity and economic sustainability.

AI plays a key role in the evolution of the banking sector in Uzbekistan, adapting to the rapidly changing financial services market. Investing in AI-based analytics allows Uzbek banks and financial institutions to more effectively identify and manage potential risks. These tools not only provide real-time information but also improve the overall responsiveness of the financial system to emerging threats, providing consumers with a safer transaction environment. Despite the opportunities offered by AI, there are significant barriers to its further adoption. In particular, problems related to compliance with data confidentiality rules and information security. Data leaks and insufficient information security measures can undermine customer trust in banking institutions. In addition, the implementation of AI requires significant investments in equipment and the professional development of specialists. Uzbekistan is faced with the need to train personnel capable of working with big data, ML and software development.

AI is becoming a catalyst for transformation in the banking sector of Uzbekistan, ensuring the introduction of advanced technologies into traditional banking processes. This transformation plays a crucial role in adapting to new challenges and market needs, especially in the context of the rapid development of the region's digital economy. The main areas of application of AI in the banking sector of Uzbekistan in the authors' opinion are as follows;

- Improving customer service, AI allows banks to offer a more personalized approach to customer service through communication automation (chatbots and voice assistants). This improves the customer experience by reducing wait times and increasing service efficiency.
- Automate internal processes, using AI to automate routine and time-consuming tasks such as data entry, loan application processing, and transaction analysis helps to reduce operating costs and increase productivity.
- Credit scoring and risk management, AI is helping to develop more accurate models for assessing customer creditworthiness, allowing banks to minimize risk and offer loans based on objective data.

- Security and biometric technologies, using AI to enhance security measures, including biometric identification and behavioral pattern analysis, help to prevent fraud and protect customer data.
- Integration with national payment systems - AI enables smoother integration with national payment systems, facilitating transactions and increasing financial inclusion across the country.

Such an integrated approach will not only overcome existing obstacles but also maximize the potential of AI for the further development and modernization of the banking system of Uzbekistan. Below you can see a picture in which the authors made a road map. The authors outline a comprehensive plan for integrating AI into Uzbekistan's payment systems from 2025 to 2030. (see figure 2).

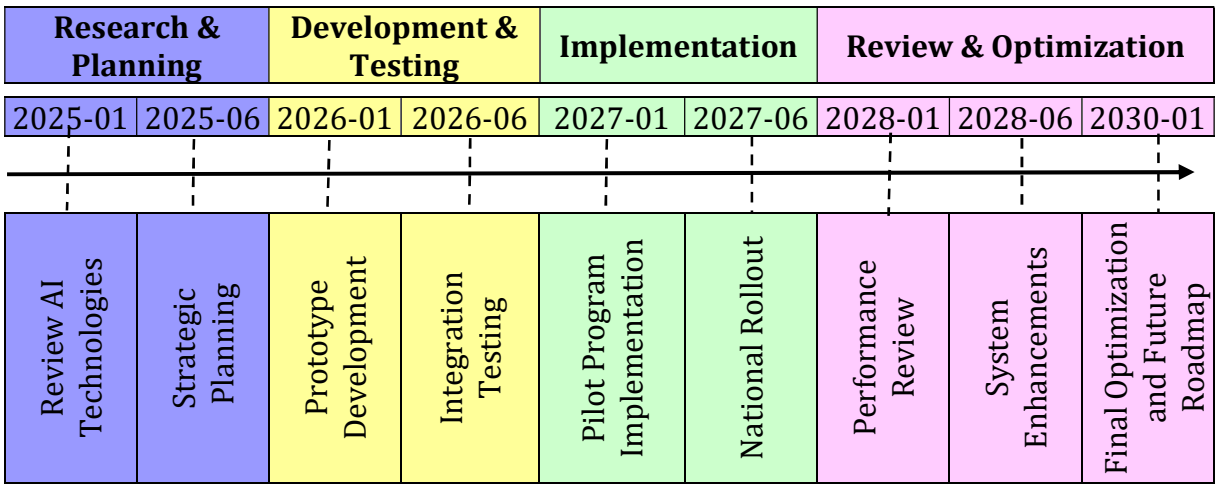

Fig.2 AI integration into Uzbekistan's payment systems (2023-2030), (authors' own compilation)

This timeline picture depicts the incorporation of AI into Uzbekistan's payment systems from 2025 to 2030. The process begins with research and planning, which includes an evaluation of AI technology and strategic planning for 2025. Development and testing begin in 2026, with an emphasis on prototype development and integration testing. Implementation will begin in 2027 with pilot initiatives and a nationwide rollout. The fourth phase, running from 2028 to 2030, entails analyzing performance, implementing system improvements, and concluding optimization to assure long-term success and flexibility.

The authors believe AI will allow Uzbekistan's banks to deliver more tailored services, hence enhancing customer experience and service efficiency. The application of AI in credit scoring and biometrics allows for more accurate risk assessment and customization of financial services, which is critical for Uzbekistan's digital economy growth.

Reducing cash circulation and transitioning to a digital economy in Uzbekistan requires strategic planning and coordination at all levels of the economy. This process includes several key actions that will help to ease the transition and accelerate the adaptation of societies and economies to digital payments.

In the authors' opinion, to successfully transition to a digital economy and reduce dependence on cash, a set of measures is needed to change this situation:

- *Strengthening trust in banking institutions*. This can be achieved through increasing the transparency of banking operations, improving the quality of service and protecting consumer rights. It is also important to actively inform the population about deposit guarantees and measures to ensure the security of accounts and transactions.
- *Development of infrastructure for digital payments*. It is necessary to ensure widespread access to the Internet and mobile communications, as well as expand the network of payment terminals and ATMs, especially in remote and rural areas.
- *Promoting the benefits of non-cash payments*. Through educational programs and marketing campaigns, public awareness can be raised about the benefits and convenience of using cashless payments, such as security, speed and control over one's own finances.
- *Legislative regulation*. Adopting and adapting laws that regulate digital payments and protect digital consumer rights can help to build trust in electronic payment methods.
- *Pilot projects and incentives.* Introducing pilot projects to test new technologies in specific regions or among specific populations can help to evaluate effectiveness and fine-tune approaches before large-scale implementation. Additionally, incentives for businesses to use cashless payments, such as tax breaks or subsidies, can speed up the process.

The authors think in Uzbekistan, the large percentage of cash turnover and the comparatively low level of public confidence in banks, as compared to European nations, provide substantial impediments to the digital economy. Companies and small enterprises often deposit cash, and the general public utilizes large sums of cash on a daily basis, showing a long-standing practice of cash usage. A successful transition to the digital economy requires a fundamental shift in public attitudes about financial services and digital payments, including enhanced openness of banking operations, better service quality, and active public knowledge of the advantages of cashless payments. Latvia's experience demonstrates that the effective application of digital financial technology requires technological preparedness and a high degree of financial knowledge among the populace. Conducting training

programs and awareness campaigns is critical for overcoming preconceptions and increasing trust in digital financial transactions.

Conclusions and suggestions

Modern payment systems are an important part of the global economy, and their transition from traditional banking services to digital and networked ecosystems is characterized by their critical importance and evolutionary trajectory. Technological breakthroughs, updated regulations and changes in consumer behavior have all contributed to this transition, resulting in an environment where affordability, efficiency and safety are critical. The constant innovation and adaptability of these systems underscores how important they are to the smooth, secure and fast execution of financial transactions around the world. Ensuring user trust and the smooth functioning of international financial transactions depends on the security and integrity of payment systems. The adoption of digital transformation by payment systems has led to the crucial adoption of advanced technologies such as blockchain, AI and biometrics, which have improved security protocols against fraudulent activities and cyber threats.

Global payment systems confront several difficulties, such as pervasive fraud, inefficiency, and problems with accessibility. Resolving these issues is crucial to preserving both consumer confidence and financial stability. Innovations in technological integration, regulatory compliance, and fraud detection are essential for risk reduction and maintaining the effectiveness and inclusivity of global payment systems. Payment systems need regulation and oversight to be stable, secure, and effective. Efficient regulatory frameworks maintain the integrity of the financial system by striking a balance between consumer protection and the requirement for innovation.

Although the financial system in Uzbekistan has advanced significantly, it still confronts difficulties because of antiquated laws and regulations. It is admirable that the nation is focusing on financial inclusion and digitalization. The payment system in Uzbekistan is changing as a result of legislative changes and the growing use of digital payments. The CBRU's initiatives to promote financial inclusion and update the payment system are vital strides in the right direction. To fully realize the payment system's potential, it will be necessary to tackle the remaining technological and regulatory issues.

Digitalization is helping Uzbekistan's economy, which has seen notable advancements in e-commerce and financial inclusion. This change is being driven by the government's push for digital payments and the implementation of rules that facilitate them. A continued emphasis on innovation and digital infrastructure development will be necessary for economic growth and development. To reduce fraud and boost security in

Uzbekistan's payment system, it is essential to use cutting-edge technology and strong legal frameworks. The integration of AI into Uzbekistan's payment systems offers immense potential for improving fraud detection, transaction efficiency, and customer experience. Reducing cash circulation and promoting digital payments are critical for modernizing Uzbekistan's economy. Transitioning to a digital economy enhances financial inclusion, reduces transaction costs, and improves overall economic efficiency. Strategic initiatives to encourage digital payments and improve digital infrastructure are vital for achieving these goals.

Suggestions to the CEO of the CBRU: (1) launch extensive informative efforts to enlighten the public about the features and advantages of contemporary payment options; (2) create thorough guidelines for all forms of payment, including mobile, debit, and credit cards. By ensuring security, efficiency, and interoperability, these standards should provide a cohesive and safe payment infrastructure; (3) encourage commercial banks to broaden their online and mobile banking offerings, with a focus on underprivileged communities residing in rural regions. Banks have the potential to empower marginalized populations and advance financial inclusion by providing access to fundamental banking services via digital platforms. By ensuring that everyone has access to the financial system, this expansion will promote economic development and lessen inequality; (4) promote the modification of laws to conform to global norms for countering money laundering and funding of terrorism. The CBU can improve its reputation internationally and guarantee adherence to global best practices by fortifying the integrity and security of Uzbekistan's financial system, which will promote a safe and open financial environment.

References

1. Allahrakha, N. (2024). Legal analysis of the law of the Republic of Uzbekistan "On Payments and Payment Systems", *TSUL legal report,* 5(1), 38-55. https://dx.doi.org/10.51788/tsul.lr.5.1./WAJR6426
2. Anderson, R., Barton, C., Böhme, R., & Clayton, R. (2013). Measuring the Cost of Cybercrime. *Conference: Proceedings of the 11th Workshop on the Economics of Information Security (WEIS).* https://doi.org/10.1007/978-3-642-39498-0_12
3. Barbu, C. M., Florea, D. L., Dabija, D. C., & Barbu, M. C. R. (2021). Customer experience in Fintech. *Journal of Theoretical and Applied Electronic Commerce Research*, *16*(5), 1415–1433. https://doi.org/10.3390/jtaer1605008
4. Boboev, S. (2023). *Deep Dive: Payments in Uzbekistan*. https://samboboev.medium.com/deep-dive-payments-in-uzbekistan-f07981902911
5. CBRU (2020). *History of the development of the payment system and computerization in the banking sector.* https://cbu.uz/en/payment-systems/history/

6. Ganiev, E. J. (2023). The concept and features of the payment system. *Web of Scientist: International Scientific Research Journal,* 4(10), 29-39. https://wos.academiascience.org/index.php/wos/article/view/4375
7. Kayode, S. O. (2023). *Revolutionizing Financial Landscapes: The Role of Emerging Technologies in Fintech Transformation.*
8. Khando, M., Islam, S.,& Gao, Sh. (2022). The Emerging Technologies of Digital Payments and Associated Challenges: A Systematic Literature Review. *Future Internet, 15, 21.* https://doi.org/10.3390/fi15010021
9. Kolodiziev, O., Mints, A., Sidelov, P., Pleskun, I., & Lozynska, O. (2020). Automatic machine learning algorithms for fraud detection in digital payment systems. *Eastern-European Journal of Enterprise Technologies*, *5*(9 (107), 14–26. https://doi.org/10.15587/1729-4061.2020.212830
10. Miah, A., Rahouti M., Jagatheesaperumal S. K., Ayyash M., Xiong K., Fernandez F., & Lekena M. (2023). Blockchain in Financial Services: Current Status, Adoption Challenges, and Future Vision. *International Journal of Innovation and Technology Management,* 20(08). https://doi.org/10.1142/S0219877023300045
11. Neverova, S. D. (2023). Problems and prospects of digitalization of the banking sector of the Uzbekistan economy. *novateur publications Journal NX- A Multidisciplinary Peer Reviewed Journal*. 9(4), 449-455. https://repo.journalnx.com/index.php/nx/article/download/4785/4555/9240
12. Noul, D. (2024). FinTech Evolution: AI-Driven Solutions for Payment Optimization and Supply Chain Dynamics. DOI:10.13140/RG.2.2.16036.69762
13. Papathomas A., & Konteos G. (2023). Financial institutions digital transformation: The stages of the journey and business metrics to follow. *Journal of Financial Services Marketing*. Advance online publication. https://doi.org/10.1057/s41264-023-00223-x
14. Pay10.com (2023). *Common Challenges of Online Payment Processing and Solutions to Tackle Them*. https://www.pay10.com/blog-Common-Challenges-of-Online-Payment-Processing.php
15. Poudel, O., Acharya, P., & Simkhada, D. (2023). Customers' Trust in E-payment: The Influence of Security and Privacy. BMC Journal of Scientific Research. 97-112. https://doi.org/10.3126/bmcjsr.v6i1.60958
16. Rahmad, N. N., Zullzaidi, N. S. M., Azmi, N.D.F., & Khairudin, N.M. (2024). Mobile Payment Security: A Critical Analysis of Vulnerabilities & Emerging Threats. *TechRxiv.* DOI:10.36227/techrxiv.170620372.22051414/mobile payv1
17. Rehman, Sh., Coughlan, J., & Halim, Z. (2012). Usability based reliable and cashless payment system (RCPS). 8(4), 2747–2759. http://www.ijicic.org/ijicic-10-10073.pdf
18. Saini, A., & Saha, S. (2024). Digital Finance-Fintech and its Impact on Financial Inclusion in India. *International Journal of Innovative Science and Research Technology*, 9(4), 2048–2057. https://doi.org/10.38124/ijisrt/ijisrt24apr2261
19. Siddiqui, M. K., & Goyal K. K. (2023). A Study the Use of E-Payment Systems Based on Artificial Intelligence. *Artificial Intelligence and Communication Technologie*s, 1063-1076. https://doi.org/10.52458/978-81-955020-5-9-101
20. Zetzsche, D., Buckley, R., Barberis, J. N., & Arner, D. W. (2017). Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation. *Fordham Journal of Corporate & Financial Law.* https://ir.lawnet.fordham.edu/jcfl/vol23/iss1/2/