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ENHANCING THE EFFICIENCY OF PAYMENT SYSTEM MANAGEMENT THROUGH THE IMPLEMENTATION OF FINTECH TECHNOLOGIES

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Abstract The technological transformations taking place within the global financial system are fundamentally reshaping the traditional operating models of banks and payment institutions, significantly increasing the strategic importance of fintech technologies in the creation, delivery, and management of financial services. Under contemporary conditions, the efficiency of payment systems is determined not merely by transaction volumes or the quantitative expansion of payment infrastructure, but increasingly by their capacity to process large volumes of data within a short period of time, automate operational processes, optimize resource utilization, rapidly introduce new services, and support real-time managerial decision-making. From this perspective, fintech technologies are evolving from a distinct innovative segment of financial services into a strategic factor transforming the institutional and economic architecture of payment system management.

The economic essence of fintech is not limited to the digitalization of financial services through technological tools. Its contemporary interpretation encompasses the development of new business models for organizing financial transactions, the optimization of traditional intermediation chains, the acceleration of data-driven managerial decision-making, the reduction of service-scaling costs, and the formation of new economic relationships among banks, payment institutions, and technology companies. Therefore, from an academic perspective, assessing the effectiveness of fintech implementation in payment systems solely on the basis of the number of new technologies introduced or the availability of digital products is insufficient. The key issue is to determine the extent to which implemented technologies optimize the economic resources required for payment system management, enhance transaction-processing productivity, shorten the management cycle, and generate additional economic value through technological investment.

This situation creates a need to distinguish academically between the concepts of “fintech technology” and “fintech-based management.” The former refers to the availability of a new technological solution, whereas the latter implies the reorganization of payment system management processes, resource allocation, operating models, and decision-making mechanisms on the basis of such technology. For example, the mere availability of artificial intelligence or data analytics algorithms does not automatically improve management efficiency. A fintech investment generates tangible economic outcomes only when such tools are used to identify redundant stages in operational processes, forecast transaction workloads, automatically allocate resources, or reduce the time required for managerial decision-making. Thus, from the perspective of this study, the central outcome of fintech transformation is not the technology itself, but rather the improvement in management efficiency generated through its application.

The rapid expansion of Uzbekistan’s technological base is creating the necessary economic conditions for the deeper integration of fintech solutions into payment systems. According to data published by the National Statistics Committee on February 9, 2026, the volume of communication and information services in the country reached UZS 79.5 trillion in 2025, representing an increase of 22.7 percent over the previous year. In the regional structure of these services, Tashkent City ranked first, with a volume of UZS 57.8 trillion. Such rapid expansion of the communication and information services market indicates the emergence of a substantial technological and economic foundation for the development of software platforms, data-processing infrastructure, API-based integration, and automated management tools within payment systems.

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A structural analysis of this process reveals even more significant trends. During January–November 2025, the volume of communication and information services in Uzbekistan reached UZS 70.6 trillion, of which UZS 29.8 trillion was attributable to computer programming services, UZS 22.6 trillion to telecommunications services, UZS 11.0 trillion to information services, and UZS 7.2 trillion to other services. Thus, computer programming services accounted for approximately 42 percent of total communication and information services during this period. This indicator suggests that the technological component of Uzbekistan’s digital economy is increasingly being shaped by the development of software solutions and their application across economic processes.

Trends observed during the first quarter of 2026 further confirm the sustainability of this development trajectory. According to the National Statistics Committee, the volume of communication and information services reached UZS 22.8 trillion during January–March 2026. Of this total, 46.5 percent was attributable to computer programming services, 29.9 percent to telecommunications services, and 14.7 percent to information services. The fact that the share of programming services is approaching half of the total indicates the growing strategic role of software products and platform-based solutions in the economy. From the perspective of payment systems, this trend reflects the increasing capacity to develop fintech solutions based on domestic technological resources, adapt them to local requirements, and integrate them into payment system management processes.

In assessing the impact of fintech technologies on payment system management, the scale of transaction processes within the national payment infrastructure is also of particular importance. According to the 2025 Annual Report of the Central Bank of the Republic of Uzbekistan, the Central Bank’s Instant Payment System enables legal entities and individual entrepreneurs to conduct payment transactions on a 24/7 basis. During the reporting period, under a mechanism whereby payment transaction commissions are borne by the recipient of funds rather than the payer, nearly UZS 261.7 billion in commissions were paid to banks and other payment service providers for more than 106.5 million payment transactions. This amount increased by 43 percent compared with 2024. The mechanism enabled individuals making utility payments, paying state duties, administrative fines, public service fees, and other retail payments to save an equivalent amount in transaction-related expenses.

The impact of fintech technologies on management efficiency in payment systems is primarily reflected in the automation of transaction processes. Under traditional management models, certain stages of transaction verification, classification, data collection, report preparation, and the identification of problematic situations may be highly dependent on human labor. Fintech solutions enable specific components of these processes to be transferred to algorithmic management, thereby creating opportunities to reduce management costs per transaction. In this context, the economic benefit is manifested not simply through a reduction in the number of employees, but through the reallocation of existing human resources from repetitive operational tasks to analytical and strategic activities that generate higher added value.

Second, fintech technologies transform the information base underlying managerial decision-making. Whereas traditional management decisions are often based on reports compiled at the end of a specific reporting period, modern data-processing technologies make it possible to monitor transaction flows and operational indicators in near real time. As a result, management shifts from a model of “responding to events after they occur” toward a model of “anticipating events and proactively reallocating resources.” This transition makes it possible to improve the operational productivity of payment systems, reduce excess capacity, and organize resource management in accordance with changing system workloads.

Third, fintech has significant economic implications for enhancing the scalability of payment systems. Under traditional service delivery models, an increase in the number of customers and transactions may require additional physical infrastructure and human resources. In payment infrastructures based on software and cloud-based solutions, however, costs may not

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increase proportionally as transaction volumes expand. Consequently, as the number of transactions increases, opportunities arise to reduce the average management cost per transaction. This generates a “digital economies of scale” effect, which represents one of the key economic advantages of fintech technologies in payment systems.

Fourth, the development of fintech technologies is transforming payment system management from an internally focused organizational process into the management of a multi-stakeholder integrated ecosystem. Open application programming interfaces (APIs), platform-based integration, and standardized data exchange enable banks, payment institutions, and technology companies to participate within a unified service value chain. As a result, the need for a single organization to independently develop all technological components required to provide payment services is reduced, while opportunities emerge to leverage the technological capabilities of specialized fintech companies.

Presidential Resolution No. PQ-359 dated November 27, 2025, occupies a particularly important place in the legal and institutional development of the fintech market. According to official information from the Central Bank, in accordance with this Resolution, Uzbekistan has developed a National Strategy for the Development of Financial Technologies for 2026–2030. The Strategy defines priority areas and target indicators for the development of the country’s fintech market and is aimed at strengthening digital financial infrastructure, attracting investment, and developing the human capital required for the sector. This strategic document establishes an institutional foundation for considering fintech technologies not merely as individual innovative products, but as an economic resource capable of ensuring the long-term competitiveness of the financial system.

The existence of a special legal regime the “regulatory sandbox” mechanism is also of particular importance in the management of fintech innovation. According to the official definition provided by the Central Bank, this mechanism constitutes a special legal regime that enables participants in the financial technology market to test new financial products and services under controlled conditions. From the perspective of strategic management, such a mechanism makes it possible to test the economic efficiency, business model, and operational capabilities of a technology in practice before its full-scale implementation. Consequently, it helps reduce the uncertainty associated with innovative projects, prevent the allocation of substantial capital to inefficient technologies, and create opportunities for the gradual scaling of promising solutions.

Practical management mechanisms for the technological development of payment systems in Uzbekistan are also expanding. The functions of the Central Bank’s Payment Systems Development Department include the development of the Settlement Clearing System, the QR-online system, the Interbank Payment System, and the Instant Payment System; expanding the scope of services provided through these systems; coordinating their uninterrupted operation; and promoting the development of QR codes, NFC technologies, mobile applications, and other contactless payment technologies. This indicates that the integration of fintech technologies into the national payment infrastructure is evolving from a collection of individual projects into a continuous and institutionally managed transformation process.

The broader digitalization policy being implemented in the country also supports this process. The “Uzbekistan – 2030” Strategy identifies the development of a strong and modern economy as one of the priority areas of national development. In addition, Presidential Resolution No. PQ-286 dated September 16, 2025, established new objectives aimed at accelerating the implementation of digital technologies across regions, sectors, and industries, promoting the digital transformation of economic and public administration processes, and expanding the scope of electronic services. This broader digital transformation environment simultaneously creates demand, technological infrastructure, and institutional support for the implementation of fintech solutions in payment systems.

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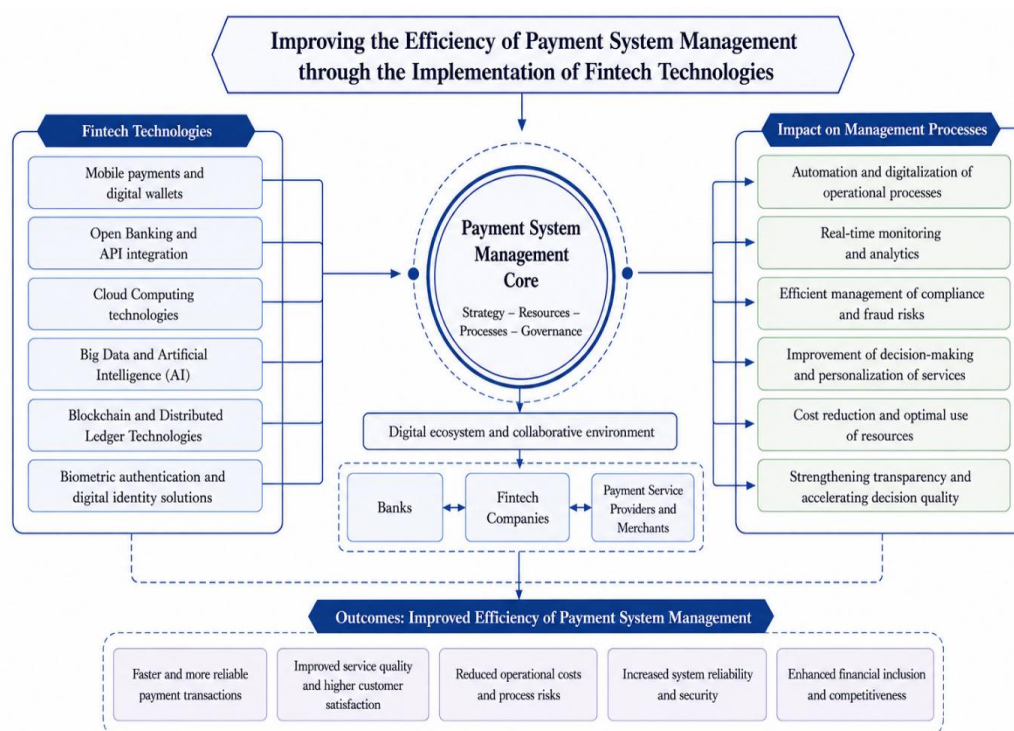


Figure 1. Functional Framework for Improving Payment System Management Efficiency through Fintech Technologies.¹

The figure illustrates the functional mechanism through which fintech technologies contribute to improving the efficiency of payment system management. It demonstrates the interaction between key fintech solutions, the payment system management core, and the digital ecosystem involving banks, fintech companies, payment service providers, and merchants. The integration of these components supports the automation of operational processes, real-time monitoring and analytics, effective risk management, resource optimization, and improved decision-making. As a result, payment transactions become faster and more reliable, service quality and customer satisfaction increase, operational costs and risks decrease, while system security, financial inclusion, and competitiveness are strengthened.

The rapid development of fintech technologies has significantly transformed the traditional model of financial intermediation, making the use of technological resources in payment system management, the automation of operational processes, data-driven decision-making, and the development of new organizational forms of financial services some of the priority areas of economic research. In contemporary academic literature, fintech is examined not merely as a new financial product or digital service, but as a comprehensive factor transforming the value creation models, management architecture, cost structures, and market competition mechanisms of financial institutions. From this perspective, when assessing the effectiveness of fintech implementation in payment systems, it is important to consider not only the innovative characteristics of the technology itself, but also the extent to which it optimizes management processes, reduces transaction and operating costs, enhances the productivity of existing resources, and expands opportunities for creating new economic value.

Among foreign scholars, D. Arner examines the development of fintech in relation to the historical and institutional transformation of the financial system. In the research conducted by D. W. Arner, J. Barberis, and R. P. Buckley, fintech is interpreted not simply as an expansion in the use of technology in financial services, but as a new stage of development that transforms the functional boundaries of financial institutions. The authors divide the evolution of fintech into

¹ Developed by the author.

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several historical stages and argue that, in the period following the global financial crisis, the active entry of technology companies into the financial services market has increasingly blurred the boundaries between banks, emerging fintech companies, and other financial intermediaries. Another scholar who has contributed significantly to the theoretical foundations of the fintech economy is Th. Philippon. Based on long-term historical data, Philippon examines the economic costs of financial intermediation and highlights the problem that, despite the rapid advancement of information technologies, financial intermediation costs have not declined to the extent that might have been expected. Applying Philippon's conceptual framework to payment systems makes it possible to establish indicators such as cost per transaction, operational resource expenditure, service-scaling costs, and the return on technological investment as key criteria for evaluating fintech technologies.

Among economists from the CIS countries, M. Abramova examines contemporary financial technologies in the context of institutional transformations within financial and monetary systems. Her academic research places particular emphasis on changes in the structure of financial market infrastructure resulting from digitalization, the emergence of new financial institutions and service delivery channels, and the restructuring of traditional financial intermediation mechanisms. According to Abramova's perspective, the effectiveness of digital financial technologies cannot be assessed solely on the basis of their technical capabilities; the impact of new technologies on economic relationships and institutional structures within financial markets must also be taken into account. M. Golovnin investigates the impact of digitalization processes on the financial system and monetary relations, emphasizing that technological innovations can reorganize existing forms of financial intermediation and transform economic relationships among financial market participants. In his research, digital financial innovations are viewed not as a factor that completely replaces traditional institutions, but rather as a process that redistributes their functions and transfers certain financial services to new technology-driven market participants.

In analyzing the initiatives undertaken in this area, the study of international experience is of particular importance. The experience of the United Kingdom clearly demonstrates the economic potential of an open-platform model for managing interbank data exchange and payments through fintech technologies. In 2025, the country's Open Banking ecosystem processed 351 million payment transactions, representing an increase of 57 percent compared with 2024. During the same period, 24 billion successful API calls were made through the Open Banking infrastructure, an increase of 27 percent over the previous year. By December 2025, the number of active user connections had reached 16.5 million, compared with approximately 12.1 million a year earlier. Most importantly, despite the substantial increase in transaction volumes, the average availability of the API infrastructure remained above 99.5 percent throughout the year, while the average response time decreased to 324 milliseconds.

These results demonstrate that open API architecture represents a powerful instrument for improving the efficiency of payment system management through the implementation of fintech technologies. Standardized data exchange between banks and fintech companies through APIs simplifies service development and integration processes, thereby reducing the time and technological costs required to develop new payment solutions. In the United Kingdom, the 98 percent increase in Variable Recurring Payments transactions and the 52 percent increase in one-off domestic Open Banking payments in 2025 indicate that users are increasingly adopting fintech-based payment models for their everyday financial transactions.

The experience of Kenya, in turn, demonstrates that the efficiency of fintech in payment system management is not limited to countries with highly developed banking infrastructure. According to official statistics from the Central Bank of Kenya, the country had 83.4 million registered mobile money accounts in January 2025, while by December their number had increased to 89.46 million. Over the same period, the number of active mobile money agents rose from 382,873 to 473,536. In December 2025 alone, 217.58 million cash-in/cash-out

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transactions were conducted through mobile money agents, with a total value of KES 722.53 billion.

These indicators demonstrate that, within the Kenyan model, fintech technology is not merely a software component of the payment system, but rather a platform-based management mechanism integrated with a geographically distributed agent network. The increase of nearly 6 million mobile money accounts and more than 90,000 agents during 2025 indicates that scaling the platform to new users has reduced the need to rely entirely on physical bank branches. This approach is particularly important from the perspective of reducing management and expansion costs: instead of establishing separate banking infrastructure when entering a new geographical area, a technological platform and an agent-based service model operate jointly to provide financial services.

International experience demonstrates that the most effective fintech model is not necessarily the one employing the most sophisticated technology. Rather, a model that enables a greater number of transactions and users to be served with existing resources, reduces integration costs, and accelerates managerial decision-making can achieve a higher level of strategic efficiency.

In conclusion, the implementation of fintech technologies in modern payment systems is becoming an important strategic factor in enhancing management efficiency. Their economic effectiveness is determined not merely by the availability of technological innovations, but by the extent to which these technologies enable the reorganization of management processes, optimization of operational resource utilization, and creation of additional economic value. A comparative analysis of international experience confirms that open application programming interfaces (APIs), platform-based integration, mobile financial infrastructure, instant settlement mechanisms, and interoperability principles generate significant economic benefits by increasing transaction-processing productivity, reducing the costs associated with scaling services, and strengthening functional cooperation between financial institutions and fintech companies.

References:

1. O‘zbekistonda moliyaviy texnologiyalar sohasini yanada rivojlantirish chora-tadbirlari to‘g‘risidagi O‘zbekiston Respublikasi Prezidentining qarori, 27.11.2025 yildagi PQ-359-son.
2. Mamlakat taraqqiyotining 2030-yilgacha mo‘ljallangan ustuvor yo‘nalishlari doirasida islohotlarni izchil davom ettirish va yangi bosqichga olib chiqishning qo‘shimcha chora-tadbirlari to‘g‘risidagi O‘zbekiston Respublikasi Prezidentining Farmoni, 16.02.2026 yildagi PF-21-son.
3. D. Arner, J. Barberis, R. Buckley. The Evolution of FinTech: A New Post-Crisis Paradigm? // Georgetown Journal of International Law. – 2016. – Vol. 47, No. 4. – P. 1271–1319.
4. T. Philippon. The FinTech Opportunity. – Cambridge, MA: National Bureau of Economic Research, 2016. – NBER Working Paper No. 22476. – 34 p.
5. М. Абрамова, С. Криворучко, О. Луняков, А. Фиापшев. Теоретико-методологический взгляд на предпосылки возникновения и особенности функционирования децентрализованных финансов // Финансы: теория и практика. – 2025. – Vol. 29, No. 1.
6. Open Banking Limited. Open Banking in 2025: Now Part of the UK’s Everyday Financial Life. – London, 2026.
7. Open Banking Limited. Open Banking Ecosystem Statistics and API Performance, 2025. – London, 2026.
8. Central Bank of Kenya. Mobile Payments Statistics. – Nairobi: Central Bank of Kenya, 2025.
9. Bangko Sentral ng Pilipinas. 2024 Status of Digital Payments in the Philippines. – Manila: Bangko Sentral ng Pilipinas, 2025.
10. <https://stat.uz/uz/rasmiy-statistika/national-accounts-2>