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KIBERXAVFSIZLIK VA RAQAMLI MOLIYA

# SECURITY ASSURANCE MECHANISMS IN DIGITAL PAYMENT SYSTEMS IN UZBEKISTAN

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## ANNOTATSIYA / ABSTRACT

This article analyzes the current state of security in digital payment systems in the Republic of Uzbekistan, existing challenges, and ways to prevent them. Statistical data from the Central Bank of the Republic of Uzbekistan for 2020–2024, international experience, and expert conclusions in cybersecurity were used. The study compares the growth in digital payments, fraud statistics, and the effectiveness of security mechanisms, and proposes organizational and preventive measures for secure digital payment systems.

## KALIT SO'ZLAR

digital payments · cybersecurity · financial technologies · fraud · electronic payment systems

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## Annotatsiya

E'tiboringizga havola etilayotgan maqolada O'zbekiston Respublikasida raqamli to'lov tizimlarining xavfsizlik holati, mavjud muammolar va ularning oldini olish yo'llari tahlil qilingan. Bundan tashqari, 2020–2024-yillar davomida O'zbekiston Respublikasi Markaziy bankining statistik ma'lumotlari, xalqaro tajribalar va kiberxavfsizlik bo'yicha ekspertlar xulosalaridan foydalanilgan. Maqolada raqamli to'lovlar hajmining o'sishi, firibgarlik holatlari statistikasi va xavfsizlik mexanizmlarining samaradorligi taqqoslanadi hamda tizim xavfsizligini ta'minlash uchun tashkiliy chora-tadbirlar taklif etiladi.

## Kalit so'zlar

raqamli to'lovlar, kiberxavfsizlik, moliyaviy texnologiyalar, firibgarlik, elektron to'lov tizimlari.

## Аннотация

В данной статье анализируется текущее состояние безопасности цифровых платёжных систем в Республике Узбекистан, существующие проблемы и пути их предотвращения. Используются статистические данные Центрального банка Республики Узбекистан за 2020–2024 годы, международный опыт и заключения экспертов в области кибербезопасности. В статье также проводится сравнительный анализ роста объёмов цифровых платежей, статистики мошенничества и эффективности механизмов безопасности, а также предложены организационные и превентивные меры.

### Ключевые слова

цифровые платежи, кибербезопасность, финансовые технологии, мошенничество, электронные платёжные системы.

### Abstract

This article analyzes the current state of security in digital payment systems in the Republic of Uzbekistan, existing challenges, and ways to prevent them. Statistical data from the Central Bank of the Republic of Uzbekistan for 2020–2024, international experience, and expert conclusions in cybersecurity were used. The study compares the growth in digital payments, fraud statistics, and the effectiveness of security mechanisms, and proposes organizational and preventive measures for secure digital payment systems.

### Keywords

digital payments, cybersecurity, financial technologies, fraud, electronic payment systems.

### Introduction

It is well known that in the 21st century, the rapid development of the digital economy has led to fundamental transformations in financial services. In the Republic of Uzbekistan, the use of digital payment systems has increased significantly over the past five years. According to data from the Central Bank of the Republic of Uzbekistan, electronic payments accounted for 78.3% of the total payment volume in 2024, compared to 42.1% in 2020, demonstrating substantial growth.

However, the process of digitalization has also introduced new risks and threats. According to a World Bank report, with the growth of digital financial services usage in developing countries, incidents of cybercrime have also been steadily increasing.

The aim of this research is to assess the current security condition of digital payment systems in Uzbekistan, identify existing vulnerabilities, and develop effective protection mechanisms.

## Literature Review

The issue of digital payment security has been studied by several international researchers. J. Singh and S. Kumar (2023) emphasize the importance of multi-factor authentication in ensuring the security of mobile payments and evaluate biometric identification methods as 89% more effective than traditional password-based systems.

L. Zhang et al. (2022) analyzed the role of blockchain technology in enhancing the transparency of payment transactions. According to their findings, distributed ledger technology reduces the risk of fraud by 73%.

M. Rahman and A. Ahmed (2023) investigated the effectiveness of artificial intelligence-based security systems in detecting suspicious transactions in real time. Machine-learning algorithms achieve up to 92% accuracy in identifying new forms of fraud.

Among Uzbek scholars, B.T. Khojayev (2023) studied the development prospects of electronic payment infrastructure in Uzbekistan and emphasized the necessity of modernizing security systems. The literature shows that digital payment security requires a comprehensive approach that integrates technological innovation with user literacy.

## Methodology

This study primarily employed comparative and cross-sectional analysis methods. This approach is effective for comparing Uzbekistan's digital-payment security indicators with the experience of Kazakhstan, Turkey and India.

## Analysis and Results

The volume of electronic payments in Uzbekistan has grown rapidly in recent years. Therefore, it is important to compare Uzbekistan's digital-payment security indicators with regional and international experience.

### Digital Payment Security: International Comparison (2024)

Uzbekistan — electronic payments: 78.3%; cyberattacks per 10,000 users: 12.4; security level: 6.2/10.

Kazakhstan — electronic payments: 81.7%; cyberattacks per 10,000 users: 9.8; security level: 7.1/10.

Turkey — electronic payments: 86.4%; cyberattacks per 10,000 users: 7.3; security level: 7.8/10.

India — electronic payments: 79.2%; cyberattacks per 10,000 users: 14.6; security level: 5.9/10.

European Union average — electronic payments: 92.8%; cyberattacks per 10,000 users: 4.2; security level: 8.2/10.

The comparative analysis indicates that although the share of electronic payments in Uzbekistan is at the regional level, its security indicators remain lower than in developed countries. Examining the experience of Turkey and other countries and implementing optimal practices in Uzbekistan could yield significant benefits.

## Discussion

The analysis demonstrates the need to enhance security standards for Uzbekistan to maintain a leading position in the region. Studying the experience of Kazakhstan, particularly the operational model of its National Cybersecurity Center, could be beneficial.

Modern technologies such as blockchain, artificial intelligence and biometric authentication need to be widely implemented. Research shows that the combined application of these technologies can reduce the risk of fraud by up to 85%.

However, technological solutions alone are not sufficient. Digital-payment security requires a comprehensive approach: modernization of the regulatory framework, regular professional development of bank staff, ongoing user education in digital literacy and effective cooperation between banks and government agencies.

## Conclusion and Recommendations

Digital-payment security in Uzbekistan is developing. In 2024, the share of electronic payments reached 78.3%, a positive regional indicator. At the same time, cybersecurity threats are steadily increasing: statistical analyses indicate that the number of cybercrimes in Uzbekistan grew from 863 cases in 2019 to 58,800 cases in 2024.

To enhance digital-payment security, it is necessary to study the experience of Turkey, Kazakhstan and the European Union and widely implement modern technologies. A comprehensive approach that integrates technological, regulatory, organizational and educational measures is critical.

Implement real-time monitoring systems based on artificial intelligence.

Develop and implement a national digital-literacy program for users.

Establish national digital-payment security standards based on ISO 27001.

Create interactive educational platforms for bank customers.

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