



GLOBAL FINANCIAL TECHNOLOGIES (FINTECH) AND THEIR TRANSFORMATIONAL IMPACT ON THE BANKING SYSTEM

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ABSTRACT

This article analyzes the impact of global financial technologies—specifically Blockchain, decentralized finance systems (DeFi), and Central Bank Digital Currencies (CBDC)—on the banking system within the IMRAD framework. The paper examines the transformational influence of modern FinTech innovations on traditional banking services, their role in expanding financial inclusion, and the associated issues of security and regulatory challenges. The study also highlights the prospects of implementing such technologies in developing countries like Uzbekistan.

Keywords: FinTech, Blockchain, DeFi, CBDC, digital currency, banking system, financial innovation, transformation, financial inclusion.

INTRODUCTION

In the past decade, financial technologies (FinTech) have initiated unprecedented changes in the financial sector. Traditional banking services are gradually being replaced by digital services. At the core of this process lie FinTech innovations such as Blockchain technology, decentralized finance systems (DeFi), and Central Bank Digital Currencies (CBDC). This article aims to deeply analyze the transformational impact of these technologies on the banking system.

FinTech solutions, including digital payment platforms, AI-based credit scoring systems, personal finance management apps, and Blockchain-enabled fast and secure transactions, along with DeFi's capability to perform financial operations without intermediaries, are reshaping the financial sector from the ground up. However, these technologies also bring serious concerns regarding financial security, regulatory compliance, and state supervision.

Scientific literature on FinTech and its components typically analyzes these technologies in four key areas: financial inclusion, operational efficiency, regulation, and competitiveness. Gomber et al. (2018) state that the integration of FinTech into the banking system offers convenience, transparency, and operational cost savings for customers.



Narula & Hayes (2020) highlight how Blockchain-based systems are restructuring the trust infrastructure without intermediaries, especially through the automation of financial services via smart contracts.

Research on DeFi (Schär, 2021) indicates that these systems, due to their decentralized and self-governing nature, are increasingly competing with traditional banking services while simultaneously amplifying security and regulation-related issues.

As for CBDCs, BIS (2023) studies evaluate them as both an opportunity and a risk for central banks. According to BIS, CBDCs not only accelerate transactions but can also serve as an effective tool for conducting monetary policy.

In the context of Uzbekistan, although FinTech is still at an early stage, digital payment solutions such as UzCard and Humo, digital banking, and QR payments are giving impetus to the digitalization of the banking system. Moreover, the Central Bank is conducting research on CBDCs.

METHODOLOGY

This study employs a combination of qualitative and quantitative research methods. The main sources of analysis include:

- Scientific articles on Blockchain, DeFi, and CBDC, as well as reports from international organizations (BIS, IMF, WEF);
- Case studies of countries where digital technologies have been integrated into the banking sector (e.g., the USA, China, Sweden, Singapore);
- Public data from financial institutions in Uzbekistan such as the Central Bank, UzCard, and Humo.

The analytical part of the research evaluates the transformational impact in the following areas:

1. Impact on operational efficiency (speed, cost, reliability);
2. Impact on financial inclusion (access via mobile banking, DeFi platforms);
3. Regulatory and security approaches (AML/KYC, oversight technologies);
4. User experience and digital literacy.

RESULTS

The analysis reveals that Blockchain technology, by enabling secure, fast, and transparent transactions, is a transformational factor in financial operations. In particular, smart contract technology is minimizing human intervention in mortgage, insurance, and credit operations.

The DeFi ecosystem bypasses traditional banking intermediaries by offering credit, deposit, and trading services based on crypto-assets. The following table compares



features of traditional banking systems and DeFi platforms:

Indicator	Traditional Banking System	DeFi System
Intermediary	Required	Not required
Operating Hours	Business days	24/7
Entry Requirements	Extensive (identity documents)	Minimal or none
Security	Relies on external regulation	Code-based guarantees
Level of Centralization	High	Low (decentralized)

CBDC initiatives, supported by governments, represent digital currencies that simplify payment systems and enable real-time monitoring of monetary policy. In countries like China (DCEP) and Sweden (e-krona), these currencies are receiving positive public feedback.

In Uzbekistan, experience with digital currencies is still in its early stages. However, the expansion of systems such as Humo and UzCard, along with the growing adoption of mobile banking, indicates a rapid acceleration of financial transformation.

CONCLUSION

In conclusion, FinTech technologies are having a deep and multifaceted transformational impact on the banking system. Solutions such as Blockchain, DeFi, and CBDCs are automating financial operations, increasing trust, and reducing the need for intermediaries. These technologies offer vast potential to enhance financial inclusion, particularly in developing countries.

Nevertheless, this transformation also brings challenges such as security, regulation, and digital literacy. Successful integration of FinTech solutions requires strong collaboration between governments, banks, and technology companies.

In Uzbekistan, supporting digital transformation necessitates the development of the FinTech ecosystem, the establishment of a robust legal framework, and widespread public awareness and education about digital technologies.

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