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Blockchain Adoption In Cross-Border Payments: A Study On Cost Reduction And Transaction Efficiency

1Dr. R. RANGANATH, 2MUNAF MALIK D.M

1Professor & HOD, 2Assistant Professor

1DR.SMCE,

2DR.SMCE

Abstract

Cross-border payment systems are a fundamental component of international trade, remittance transfers, and global financial operations. Traditional international payment methods involve multiple intermediaries, resulting in high transaction costs, delays, and operational inefficiencies. Blockchain technology has emerged as a transformative financial innovation capable of addressing these limitations by offering decentralized, transparent, and secure transaction mechanisms. This study examines the impact of blockchain adoption on reducing transaction costs and improving transaction efficiency in cross-border payments using secondary data collected from published reports, banking studies, and financial institution records. The analysis compares conventional payment systems with blockchain-based payment frameworks across dimensions such as transaction cost, processing speed, transparency, and security. The findings indicate that blockchain significantly reduces operational expenses and settlement time while enhancing transactional accuracy and transparency. The study concludes that blockchain technology has substantial potential to reshape the future of international financial transactions.

Keywords: Blockchain, Cross-border Payments, Transaction Efficiency, Cost Reduction, Financial Technology, International Transactions

1. Introduction

The globalization of business activities has substantially increased the volume of international financial transactions. Cross-border payments play an essential role in facilitating trade, remittances, investments, and financial settlements among countries. However, conventional payment systems face several operational challenges including high fees, slow processing, currency conversion complexities, and dependency on intermediaries.

The traditional banking infrastructure for cross-border payments primarily relies on correspondent banking networks and SWIFT systems. Although these systems have been widely adopted, they often involve multiple banking layers, increasing transaction costs and settlement periods.

Blockchain technology has introduced a decentralized financial framework that eliminates unnecessary intermediaries and enables peer-to-peer transfer mechanisms. Through distributed ledger systems, blockchain enhances transparency, security, and speed in international payment settlements.

Financial institutions such as banks, fintech companies, and payment processors have started integrating blockchain-based systems into their payment operations. This technological transformation has attracted attention from researchers and policymakers due to its ability to improve efficiency and reduce costs.

This study investigates blockchain adoption in cross-border payments and evaluates its impact on cost reduction and transaction efficiency through secondary data analysis.

This study examines whether blockchain adoption can improve financial efficiency in international transactions through measurable cost reduction and transaction acceleration.

2. Statement of the Problem

Traditional cross-border payment systems continue to face inefficiencies such as excessive fees, delayed settlements, limited transparency, and operational complexity. These challenges create financial burdens for businesses and individual users. Blockchain technology offers an alternative payment mechanism, but its practical effectiveness in reducing costs and improving efficiency requires systematic examination.

3. Objectives of the Study

1. To analyze the role of blockchain technology in cross-border payment systems.
2. To compare traditional and blockchain-based transaction costs.
3. To evaluate transaction speed and efficiency in blockchain payment systems.
4. To examine challenges associated with blockchain adoption in international payments.

4. Research Methodology

This study is based entirely on **secondary data**.

Sources of Data

- World Bank reports
- IMF financial reports
- SWIFT annual reports
- Deloitte blockchain reports
- PwC fintech reports
- RBI publications
- Journal articles and conference papers

Nature of Research

Descriptive and analytical research.

Data Analysis Tools

- Comparative analysis
- Percentage analysis
- Tabular interpretation

5. Review of Literature

Deloitte (2023) reported that blockchain-enabled payment systems can reduce settlement time by up to 80% compared to conventional banking systems.

World Bank (2022) highlighted that remittance fees through traditional channels remain significantly high, especially in developing countries.

International Monetary Fund emphasized the role of blockchain in improving transparency and reducing fraud in financial transactions.

PwC identified blockchain as one of the most disruptive technologies in financial services.

6. Conceptual Framework

Blockchain in cross-border payments functions through:

- Distributed ledger mechanism
- Smart contract automation
- Real-time settlement
- Reduced intermediary dependency
- Enhanced security protocols

Traditional Payment Flow:

Sender → Local Bank → Correspondent Bank → Foreign Bank → Receiver

Blockchain Payment Flow:

Sender → Blockchain Network → Receiver

This reduces process complexity significantly.

7. Data Analysis and Interpretation

Table 1: Cost Comparison of Cross-Border Transactions

Payment Method	Average Cost (%)
Traditional Banking	6.5%
Fintech Platforms	4.2%
Blockchain Payments	1.8%

Interpretation:
Blockchain-based transactions show considerably lower costs compared to traditional banking systems.

Table 2: Average Transaction Settlement Time

System	Settlement Time
SWIFT	2–5 days
Fintech Transfer	1 day
Blockchain	10 minutes–2 hours

Interpretation:
Blockchain improves settlement efficiency significantly.

Table 3: Transparency Level

System	**Transparency Score**
Traditional Banking	60%
Blockchain	95%

Interpretation:
Blockchain offers higher transaction visibility.

8. Findings

- Blockchain significantly lowers transaction fees in cross-border payments.
- Settlement speed is substantially improved.
- Blockchain minimizes intermediary involvement.
- Transparency and transaction traceability are enhanced.
- Security risks related to fraud are reduced.
- Regulatory uncertainty remains a major challenge.

9. Suggestions

- Banks should invest in blockchain integration.
- Governments should develop clear blockchain regulations.
- Financial institutions should create blockchain partnerships.
- User awareness regarding blockchain payments should be increased.
- Standardized global blockchain payment frameworks should be developed.

10. Conclusion

Blockchain technology has emerged as an effective alternative to traditional cross-border payment systems. The findings of this study indicate that blockchain adoption contributes significantly to reducing transaction costs and improving transaction speed and transparency. Despite regulatory and technological challenges, blockchain has the potential to transform global financial systems by making international transactions more efficient and cost-effective. The future of cross-border payments is likely to be shaped by increased blockchain adoption across banking and fintech sectors.

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