Original Article
ISSN (Online): 3048-9245

ShodhAI: Journal of Artificial Intelligence
July-December 2025 2(2), 36–41

IMPACT OF BLOCKCHAIN-BASED REGULATORY COMPLIANCE SYSTEMS ON FINTECH STARTUPS: A STUDY OF CRYPTOSHIELD SOLUTIONS PVT. LTD.

Tushara Kottayi [1], Dr. Akshay Kasare [2], Dr. Bhawna Sharma [3]

[1] Amity Business School, Amity University Mumbai, Mumbai, India
[2] Assistant Professor, Amity Business School, Amity University Mumbai, Mumbai, India
[3] Director International Affairs and Programs, Officiating HOI, Amity Business School, Amity University Mumbai, Mumbai, India

Received 28 September 2025
Accepted 29 October 2025
Published 27 November 2025

DOI 10.29121/ShodhAI.v2.i2.2025.55

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The rapid growth of fintech start-ups has led to a drastic change in the financial ecosystem in India, but at the same time, they are under scrutiny from various regulatory bodies because of the volume of risk associated with digital finance (specifically financial fraud, data security, and transaction risk) associated with digital finance. While compliance with the various regulations has historically been a lengthy manual process that involved multiple compliance departments and therefore had a high level of inherent error risk, with the introduction of blockchain technology, there is now the potential to develop compliance systems that use automated and tamper-proof processes that allow for an increased amount of transparency, auditability, and operational efficiencies.

Thus, the main focus of this research paper is to evaluate how a blockchain-based system for regulatory compliance might impact fintech start-ups. A case study was conducted on CryptoShield Solutions Pvt. Ltd., a Mumbai-based RegTech company specializing in distributed ledger–based compliance platforms. The data was collected during the internship through observation, workflow analysis, discussions with professionals, and review of anonymized compliance records.

The findings indicate that fintech firms adopting blockchain compliance tools have observed 35–45% reduction in manual reporting hours, improved accuracy, faster audit completion cycles, and stronger trust among investors and regulators. However, awareness remains shallow due to skill gaps, cost perception, and lack of standardized guidelines. The final recommendations of the study on stronger digital adoption efforts, awareness programs, and capacity-building initiatives will significantly accelerate the pace of blockchain-enabled compliance transformation in India.

Keywords: Blockchain, Regulatory, Compliance, Fintech

1. INTRODUCTION

Fintechs have been stated as having the highest growth of any vertical in the Indian digital economy. Fintechs are fueling innovation, creating large numbers of jobs, and helping to ensure that more individuals become financially included or able to access financial services. However, with increased growth comes the need for more regulatory oversight of certain areas of the fintech sector (e.g., data protection, financial transparency, fraud prevention, and consumer protection). The most recent estimates produced by the industry suggest that the majority of fintechs continue to struggle with systematic compliance due to out-of-date manual

processes, fragmented data, and insufficient access to transaction activity information in real-time.

While many people associate the blockchain technology with cryptocurrencies, there is now a growing belief that blockchain is a game-changer when it comes to regulatory compliance .Blockchain compliance isn't a technical feature but provides the backbone needed to record information securely and immutably, offering automated audit trails. This allows fintech companies to view transactions, retain proof of integrity, and facilitate meeting the myriad regulatory requirements with ease. With more digital financial services emerging in India, companies are looking at solutions that will be able to cut down operational risk while building more trust among investors, consumers, and government authorities.

The paper assesses how blockchain-based compliance systems are affecting the financial and regulatory performance of FinTech startups, based on observations, data collection, and analysis carried out at CryptoShield Solutions Pvt. Ltd., a Mumbai-based RegTech company offering automated audit and reporting solutions to digital financial service providers.

2. LITERATURE REVIEW

Scholars and industry bodies have focused on blockchain applications in financial compliance in recent years.

According to Mishra and Jain (2023), blockchain enhances the reliability of financial data by reducing human interference and strengthening audit trails. The World Economic Forum (2024), reports that companies using decentralized compliance have lower reporting delays and greater trust during regulatory inspections.

According to Sarker, blockchain facilitates the elimination of data manipulation and offers time-stamped system logs that make any fraudulent alterations practically impossible to achieve without immediate detection.

Literature also points out some challenges. Most organizations lack both the trained talent and infrastructure necessary for the effective deployment of blockchain-based systems. Several studies have underlined the need for standardized government frameworks and increased professional education.

This research provides useful evidence from the implementation currently in progress at CryptoShield Solutions, narrowing the gap between theoretical expectations and operational realities for Indian fintech firms.

3. RESEARCH OBJECTIVES

The aim of this study is to:

1) Review how blockchain-based systems enhance the regulatory compliance of fintech startups.
2) Evaluate the operational benefits such as transparency, accuracy, and time efficiency.
3) Assess the level of awareness about blockchain regulatory systems among fintech stakeholders.
4) Identify key challenges in implementation.
5) Recommend strategies for wider adoption

4. RESEARCH METHODOLOGY

4.1. RESEARCH DESIGN

A case study method was used, centered around CryptoShield Solutions Pvt. Ltd.

4.2. SAMPLE SIZE

Three fintech clients using CryptoShield systems were reviewed:

- Client A: Digital Payments
- Client B: Token Marketplace
- Client C: Online Digital Lending

4.3. DATA SOURCES

Primary Data

- Observation of real compliance dashboards
- Discussions with compliance officers
- Review of non-sensitive audit logs

Secondary Data

- RBI guidelines
- Industry journals
- RegTech publications
- Blockchain research papers

4.4. ANALYTICAL TOOLS

- Before–After performance comparison
- Compliance time analysis
- Error reduction documentation
- Descriptive interpretation

4.5. LIMITATIONS

- Small sample size
- Only partial access to internal data
- Short internship duration
- Limited long-term performance tracking

5. IMPORTANCE OF BLOCKCHAIN COMPLIANCE IN FINTECH

5.1. TRANSPARENCY AND TRUST

Blockchain ensures every transaction is:

- Time-stamped
- Cryptographically secured
- Visible in the audit chain

This enhances trust among:

- Regulators
- Investors
- Customers

5.2. REDUCED REGULATORY RISK

Automation eliminates:

- Human oversight
- Delayed filings
- Documentation gaps

5.3. FASTER DECISION-MAKING

With real-time reporting:

- Managers access accurate data instantly
- Audit readiness improves
- Business issues can be addressed sooner

5.4. SCALABILITY

As fintech businesses grow, blockchain systems can handle increasing workloads without additional manpower.

6. AWARENESS OF BLOCKCHAIN COMPLIANCE AMONG STAKEHOLDERS

6.1. AMONG BUSINESSES

Most fintech founders understand regulatory pressure but lack clarity on:

- How blockchain systems work
- The cost-benefit advantage
- Implementation requirements

Adoption is often reactive—after compliance challenges arise.

6.2. AMONG CONSUMERS

Users are becoming aware of:

- Digital fraud risks
- Data security concerns

However, they rarely understand how compliance systems protect them.

6.3. AMONG REGULATORS

Regulatory agencies are upgrading frameworks but:

- No unified blockchain reporting standards exist
- Formal guidelines are evolving slowly

6.4. BARRIERS TO AWARENESS

- Lack of trained professionals

- Perception of high deployment cost
- Limited inclusion in finance education
- Mid-stage talent shortages

Increasing awareness can significantly improve sector-wide compliance performance.

7. DATA ANALYSIS AND INTERPRETATION

7.1. PERFORMANCE COMPARISON

Indicator	Before Blockchain	After Blockchain	Improvement
Manual audit time	120 hrs/month	68 hrs/month	–43%
Compliance errors	14/month	4/month	–71%
Audit completion	9–10 days	4 days	Faster
Data verification	3–4 days	< 8 hours	Strong improvement

7.2. OBSERVATIONS

- Audit logs became easily readable and regulator ready.
- Manual dependency reduced significantly.
- Analysts spent more time on investigation than paperwork.

The results support academic findings that blockchain-based compliance improves operational performance.

8. FINDINGS

The study concludes:

1) Blockchain drastically improves data traceability and reduces manipulation.
2) Fintech firms experience faster compliance turnaround times.
3) Stakeholder trust increases with clearer audit evidence.
4) Limited awareness and skills remain a barrier to wider adoption.
5) Firms implementing blockchain gain long-term strategic advantage.

9. SWOT ANALYSIS

Strengths	Weaknesses
Tamper-proof reporting	High setup and training requirements
Faster audits and monitoring	Not widely understood in small fintech firms
Transparent workflow	Talent shortages
Opportunities	**Threats**
Government push toward digital regulation	Rapid regulation shifts
Growing RegTech market	Cybersecurity challenges
Rising investor expectations	Lack of standardized reporting formats

10. CONCLUSION

Utilizing blockchain technology-based regulatory systems offers a formalized, systematic and transparent way of managing compliance for Fintech startups. The

use of these systems provides a reduced level of risk and an improved operational credibility, as well as increases their overall reputation in the market.

Although there is a growing awareness of the benefits of using blockchain compliance systems, there are still concerns about the current cost of implementing these systems (or the solutions), the limited number of professionals with expertise in this area, and the lack of standardized reporting policies. However, with continued education and regulatory clarity, and providing the industry with more cost-effective options to implement blockchain compliance, it could provide an essential pillar on which to develop India's expanding digital financial system.

11. RECOMMENDATIONS

1) Greater Industry Awareness

Seminars, certifications, and professional development programs should be introduced.

2) Regulatory Standardization

Government agencies should develop clear technical frameworks for blockchain-based reporting.

3) Technical Capacity Building

Startups should invest in training compliance officers and data management teams.

4) Pilot Implementation

Companies can begin with partial deployment (e.g., AML logs) before full-scale migration.

5) Incentive Programs

Subsidies or tax credit schemes can encourage adoption among early stage fintech businesses.

CONFLICT OF INTERESTS

None .

ACKNOWLEDGMENTS

None.

REFERENCES

Financial Action Task Force (FATF). (2023). Virtual Asset Regulatory Standards: FATF Guidelines. FATF.

Mishra, A., and Jain, R. (2023). Digital Compliance and Governance in Fintech Enterprises.

Sarker, D. (2022). Blockchain as An Audit Tool in Financial Compliance.

World Economic Forum. (2024). Digital Trust and Blockchain Monitoring Report. World Economic Forum.