The Role of Smart Technologies in Enhancing Financial Inclusion in India: A Review on Digital Financial Services

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Abstract:

In the last ten years, India has become the world leader in digital financial services (DFS) using advanced smart technologies. The following paper gives a review of available secondary information about how smart technologies, such as the Unified Payments Interface (UPI), Aadhar biometric KYC system, Artificial Intelligence (AI), blockchain, Internet of Things (IoT), and big data analysis, have improved access to finance for the previously excluded people, especially youth aged 18-35.

This paper is based on the secondary data gathered from the reliable sources such as Reserve Bank of India (RBI) Annual Reports (2020-2025), NPCI transaction data, World Bank Global Findex Database, reports from the Ministry of Finance, and academic literature (2024-2026). This research covers the story of financial inclusion in India from the period of post-demonetization (2016) to this day and found out that only UPI managed to process more than 24,162 crore transactions worth of ₹314 lakh crore in FY 2025-26, which is a rise by 12,000 times from its baseline (FY 2016-17). The RBI Financial Inclusion Index value raised from 53.9 in 2021 to approximately 67 in 2025.

This paper points out both revolutionary successes and ongoing obstacles, namely the problems of digital illiteracy, cyber threats, gender inequality, and insufficient connectivity in the rural areas that hinder the use of smart technologies in the democratisation of financial services.

1. INTRODUCTION

Indeed, the tie-up of smart technology and financial inclusion is perhaps one of the most powerful narratives of development in the twenty-first century. While the sheer numbers in India, a country of 1.4 billion people with a traditionally large segment of the population living outside the banking sector, indicate a unique combination of factors leading to unprecedented results in terms of global financial inclusion, today's India is processing close to half of all the world's digital payments in real time.

This paradigm shift can be attributed to what is often referred to as the "JAM Trinity" comprising Jan Dhan bank accounts, Aadhaar biometric identification, and Mobile telephony, along with the emergence of other smart technologies such as Artificial Intelligence (AI), Blockchain, Internet of Things (IoT), Big Data, and Cloud Computing. It is the combination of all these factors that has enabled India's 900 million internet users, especially its predominantly young population, to conduct their business online.

However, the narrative is still incomplete as there are certain segments of the population that are either financially excluded or underserved. This includes gender inequality, poor rural infrastructure, low digital literacy rates, and cyber security threats.

The following paper presents an in-depth and evidence-based analysis of the use of smart technologies to promote financial inclusion in India based on secondary data. The period under analysis includes 2016 to 2026, from the post-demonetisation phase to the era of fully developed digital finance systems. Data are collected from only peer-reviewed sources (academic papers 2024-2026, government and central bank reports, international databases).

1.1 Objectives of the Study

- To examine the growth pattern of DFS driven by smart technology in India (2016-2026).
- To measure the quantitative effects of several major initiatives such as UPI, PMJDY, Aadhaar-KYC, and CBDC on indicators of financial inclusion.
- To critically evaluate recent academic literature (2024-2026) on smart technology and financial inclusion.

1.2 Research Questions

- How has smart technology affected the provision of financial services in India over the last ten years?
- What recent empirical studies (2024-2026) suggest regarding the process of financial inclusion driven by smart technologies?
- What socio-demographic factors influence the effect of smart technology on financial inclusion?

2. REVIEW OF LITERATURE

There have been rapid developments in the literature related to smart technology-driven digital financial services and financial inclusion. A review of empirical literature published during 2024-2026 from reputed journals.

This literature establishes India as an exemplary case of financial inclusion driven by smart technology while pointing out structural limitations that would need policy intervention to fill the gap.

2.1 Digital Financial Services and Financial Inclusion: Empirical Evidence (2024–2026)

The most fundamental issue regarding the actual contribution of DFS towards financial inclusion has been answered satisfactorily by the literature. Munde et al. (2024) conducted a multi-dimensional empirical study covering 10 dimensions of financial inclusion and found out that UPI, mobile banking, and ewallet are the key empowerment tools in the realm of digital

finance for the individuals who have been denied access to the financial system in the past. The study revealed that digital finance has made substantial progress beyond merely facilitating payments and has covered credit, savings, insurance, and even remittance via digital channels.

In a similar context, Naroliya and Sharma (2025) carried out an empirical analysis of the role of UPI in advancing the process of financial inclusion and building digital trust in India's emerging economy. The research findings clearly demonstrated that the infrastructure of UPI in allowing seamless P2P and P2M payments without the use of any bank account details makes it easy for rural, poor, and unbanked population to participate in digital transactions. Most importantly, the research revealed that the sustained usage was limited due to demographic and infrastructural differences.

This significant longitudinal study conducted through regression analysis of NPCI data and published in the International Journal of Economics, Finance and Management Sciences evaluated the hypothesis of contribution of UPI to growth in digital transaction volumes and value during 2020-2024. Both the hypotheses were proven to be true at $p < 0.001$ indicating highly statistically significant contribution of UPI in achieving financial inclusion. This study also showed significant positive correlation between UPI adoption and growth of MSMEs proving the connection between payment digitization and real economy.

As a result of systematic literature review by Kakde et al. (2026) of 50 articles in Scopus-indexed databases from 2013 to 2025 through PRISMA guidelines and bibliometrics, it was shown that mobile banking applications and e-wallets are the most influential tools of digital financing to achieve financial inclusion, followed by agent banking and electronic banking. The review emphasized increasing convergence of digital finance methods and their complementary nature towards exclusion populations.

According to Goswami, Chouhan and Saraswat (2025), the use of FinTech not only facilitates the process of financial inclusion directly but also indirectly. Synthesized journal articles in their study showed that through inclusive finance using bank accounts and digital payment options, FinTech helps in increasing savings, credit provision, and entrepreneurship in India. In their findings, the authors observed the penetration of FinTech products in terms of tailored credit (peer-to-peer loans and microloans) and micro-insurance to populations that have never been catered to by traditional financial services, relevant for the young population and rural areas in India.

2.2 Artificial Intelligence and Machine Learning in Financial Inclusion

The use of AI in extending financial inclusion is a topic that has been extensively discussed in academia in the years 2024–2026. For example, Kumar and Garg (2024)

conducted a desktop review of the revolutionary power of AI in facilitating digital financial inclusion in India. The authors argued that AI provides a solution for cost-efficient branchless banking that can serve financially excluded at a much lower cost than brick and mortar banks.

As per Aishwaryalaxmi and Rathod (2024), the quantitative research established AI as a significant moderator variable influencing the relationship between financial inclusion, digital adoption, and financial literacy in the developing countries. AI, therefore, can be viewed as a mechanism through which both digital adoption and financial literacy become more inclusive as their impact is increased by AI features in the financial platforms.

According to the Springer Nature article "Bridging the Gap: AI-powered FinTech and its Impact on Financial Inclusion and Financial Well-being," the use of AI increased IT mindfulness, technological self-efficacy, and financial self-efficacy of users, positively influencing performance expectancy, effort expectancy, and hedonic motivation for DFS adoption. The Fintech adoption rate of 87% in India, surpassing the average rate globally (64%) and trailing behind China was used to demonstrate how effective the personalisation through the use of AI can be.

Rashid et al. (2025), in their article published in Technological Forecasting and Social Change, adopted a robust mixed-methods design (N=600 survey respondents, 40 qualitative interviews) involving Structural Equation Modelling (SEM) and fuzzy-set Qualitative Comparative Analysis (fsQCA) to explore the mechanisms through which the poverty alleviation occurs in Indian urban slums through the adoption of Fintech technology. The SEM findings confirmed that fintech adoption strongly predicts productive credit use ($\beta=0.68$, $p<0.001$), which in turn fosters assets ($\beta=0.72$) and capabilities ($\beta=0.75$), improving overall livelihoods ($\beta=0.70$). Critically, policy support was found to significantly moderate the fintech-credit link ($\beta=0.30$, $p=0.002$), underscoring the necessity of complementary government action alongside technological deployment.

2.3 Blockchain and Distributed Ledger Technology in Financial Services

The contribution of the blockchain technology to financial inclusion through various applications has increasingly received scholarly focus through research in areas such as KYC verification, cross-border remittances, micro-lending, and the RBI's CBDC pilot project. The work of Shi and Wang (2025) reviewed over 100 scholarly articles published from 2020 to 2024. From their systematic review, the use of blockchain in financial inclusion has been identified as increasing data integrity, security, and transparency whereas AI technology has the role of enhancing prediction, automation, and efficiency of decision making. The two

technologies thus have synergy effects on financial inclusion that go beyond their separate effects.

The market value of the India Fintech Blockchain Market stood at USD 0.35 billion in 2024 and is predicted to touch USD 1.87 billion in 2030 at a CAGR of 32.1% (IMARC Group, 2025). Major applications are smart contract that automates loan lending and repayment, blockchain technology for KYC in order to avoid fraud and cross-border remittances that minimize the cost of sending money across borders which is crucial in financial inclusion of migrant workers. The AlgoBharat initiative, in collaboration with T-Hub, was launched in February 2024 targeting blockchain financial inclusion in India.

3. SMART TECHNOLOGIES AND THE DFS ECOSYSTEM IN INDIA

There exists an architecture of different layers of smart technologies that serve as the underlying foundation of India's DFS ecosystem.

3.1 The JAM Trinity: Foundation of Financial Inclusion Architecture

The JAM (Jan Dhan–Aadhaar–Mobile) Trinity forms the backbone of India's financial inclusion architecture. Jan Dhan provides the mechanism for bank account access; Aadhaar-driven biometric KYC provides the means for frictionless opening of account and remote identity verification; and mobile telephony provides the medium through which DFS are consumed. When all three foundations work together, they generate highly impactful network effects, a phenomenon proven empirically through the use of ARDL econometric modeling, by Rao et al. (2025).

3.2 Unified Payments Interface (UPI)

UPI, developed by the National Payments Corporation of India (NPCI) and launched in April 2016, represents perhaps the most significant smart technology innovation in Indian financial services. UPI enables real-time interbank fund transfers through a Virtual Payment Address (VPA) system. The platform's open architecture allows third-party app providers to build on UPI rails, fostering intense competition and innovation. As of FY 2025–26, 703 banks are live on UPI, and the platform processes over 23 billion transactions monthly.

3.3 Artificial Intelligence and Machine Learning

AI and ML applications in Indian DFS span credit scoring, fraud detection, customer service (chatbots), robo-advisory investment platforms, and personalised financial product recommendations. The Account Aggregator (AA) framework — with 252.9 million users securely linked as of late 2025 — enables AI-powered predictive analytics that can review real-time financial statements without physical paperwork. MuleHunter.AI, deployed by the RBI

Innovation Hub, uses machine learning to identify and freeze compromised bank accounts involved in illegal transactions.

3.4 Blockchain and Distributed Ledger Technology

Blockchain applications in Indian finance are concentrated in cross-border remittances, supply chain finance, KYC document verification, and the RBI's Central Bank Digital Currency (CBDC) pilot — the Digital Rupee — which reached 6 million users by 2025. The India Fintech Blockchain Market is projected to grow at 32.1% CAGR to reach USD 1.87 billion by 2030 (IMARC, 2025).

3.5 IoT and Smart Payment Infrastructure

IoT-enabled payment mechanisms, NFC-based contactless payments, QR code ecosystems, and connected point-of-sale devices, have expanded merchant acceptance infrastructure. The Payment Infrastructure Development Fund (PIDF) had deployed approximately 5.45 crore digital touchpoints in Tier 3–6 centres as of October 2025. Bajaj et al. (2025, MDPI) found that a one-point boost in the digital infrastructure index is linked to a statistically significant 0.39-point rise in financial inclusion.

3.6 Big Data and Account Aggregators

Big Data analytics enables granular understanding of customer behaviour and risk profiles. The Account Aggregator framework, introduced by RBI, facilitates consent-based sharing of financial data between institutions — enabling AI-powered credit assessment for thin-file borrowers. Cloud computing reduces the cost of building and scaling DFS, enabling neobanks and payment aggregators to reach previously unviable customer segments.

4. RESEARCH METHODOLOGY

The approach taken in the research is that it is based on the use of secondary data with descriptive and analytical research set up, whereby it seeks to understand the role of digital financial services (DFS) that are driven by smart technology in facilitating financial inclusion in India for the period 2016-2026. The data used for the research comes from credible and authoritative sources like Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), Ministry of Finance, Press Information Bureau (PIB), Government of India, World Bank and relevant peer-reviewed academic literature with special focus on industry reports wherever necessary. The analysis in the study covers a number of indicators like volume and value of UPI payments, number of accounts and deposits under PMJDY scheme, Financial Inclusion Index of RBI, use of digital payments, Account Aggregator development, use of CBDC and other related indicators. A review of the latest academic literature published mainly during the years 2024-2026 is also carried out in a thematic manner which looks into ways

through which various technologies like UPI, FinTech, AI, blockchain, digital public infrastructure and others lead to financial inclusion along with challenges faced in terms of digital literacy, cybersecurity, gender related issues.

5. DATA ANALYSIS AND FINDINGS

This section presents a systematic analysis of secondary data from authoritative sources, organised thematically.

5.1 UPI and Digital Payments Growth (2016–2026)

Table 1 presents UPI transaction volume and value data sourced from NPCI and PIB reports.

Table 1: UPI Transaction Volume and Value (FY 2016-17 to FY 2025-26)

Financial Year	Transaction Volume (Crore)	Transaction Value (₹ Lakh Crore)	YoY Volume Growth
FY 2016–17	2	0.07	Baseline
FY 2018–19	874	8.77	44 times from baseline
FY 2020–21	2,233	41.03	+85%
FY 2022–23	8,376	139.2	+58%
FY 2023–24	13,113	199.9	+57%
FY 2024–25	18,395	246.8	+40%
FY 2025–26	24,162	314.0	+31%

Source: NPCI; Press Information Bureau (2025, 2026)

UPI transaction volume expanded by approximately 12,000-fold between FY 2016–17 and FY 2025–26. UPI now accounts for 81% of India's retail digital payments in FY 2024–25, rising to 85% in FY 2025–26. India processes approximately 49% of all global real-time payment transactions by volume — more than three times Brazil's PIX share (14%). The declining average ticket size to ₹1,293 in FY 2024–25 indicates UPI's normalisation for small everyday purchases, confirming the deep integration of DFS into daily economic life identified by Naroliya and Sharma (2025). By CY 2024, digital payments accounted for 99.7% of total payment transaction volume in India.

5.2 Jan Dhan Yojana and Account Ownership Trends

Table 2: PMJDY Account Growth and Key Metrics (2015–2025)

Year	Total Accounts (Crore)	Women Accounts (%)	Rural/Semi-Urban (%)	Total Deposits (₹ Crore)
2015	14.72	53%	60%	15,670

2018	30.00	54%	60%	65,000
2021	42.73	55%	66%	1,46,231
2024 (Aug)	53.13	55.6%	66.6%	2,30,000
2025 (Aug)	56.16	55.7%	66.7%	2,67,756

Source: Press Information Bureau / Ministry of Finance, PMJDY Portal (2025)

Total deposits grew approximately 12-fold while account numbers grew three-fold — confirming that accounts are increasingly functional savings instruments. Average deposit per account rose from ₹1,065 (2015) to ₹4,768 (August 2025). In FY 2024–25 alone, ₹6.9 lakh crore was credited to beneficiaries' accounts under 327 government DBT schemes. These outcomes align with Goswami et al.'s (2025) finding that inclusive finance improves household savings and credit access.

5.3 RBI Financial Inclusion Index Analysis

Table 3: RBI Financial Inclusion Index Progression (2017–2025)

Year (March)	FI-Index Value	Key Driver of Change
2017	43.4	PMJDY account opening surge
2019	49.9	UPI merchant adoption & Aadhaar KYC expansion
2021	53.9	COVID-19 accelerating digital payments
2022	56.4	CBDC pilot; expanded DBT usage
2023	60.1	Rising Usage sub-index; digital payment penetration
2024	64.2	UPI small-value transactions; rural digital infra
2025	67.0	Full-district digital enablement; PIDF deployment

Source: RBI Annual Reports 2022–2025; RBI Trend and Progress of Banking in India 2024–25

The FI-Index has risen by 23.6 points between 2017 and 2025 — driven primarily by the Usage sub-index, which reflects the higher penetration of digital payments in everyday life. As of 2025, 514 districts have become fully digitally enabled. Rao et al.'s (2025) ARDL and FMOLS results confirm this trajectory causally, establishing that both Aadhaar and UPI are statistically significant positive determinants of this Index improvement.

5.4 Youth DFS Adoption Indicators

Table 4: Youth DFS Adoption Indicators

Indicator	Data Point	Source
UPI users aged 18–35 share	55% of all UPI users (2023)	NPCI / EPRA IJMR (2025)
New UPI users per month	60 lakh (6 million) users/month (2024)	NPCI / News on Air
India Fintech adoption rate	87% vs 64% global average	Springer Nature (2025)
Average UPI ticket size	₹1,293 (2024–25), down from ₹1,600+	NPCI / CoinLaw (2026)
P2M UPI share by volume	63% of UPI volume (FY 2025–26)	NPCI (2026)
UPI merchant base	30 million merchants (2023)	Science Publishing Group (2025)
Account Aggregator users	252.9 million linked accounts (late 2025)	RBIH / RBI Innovation Hub
CBDC-Retail Pilot users	6 million users by 2025	RBI Annual Report 2025

Source: Various (as cited)

5.5 Smart Technology Market Size in India's Financial Services Sector

Table 5: Smart Technology Market Size in India's Financial Services Sector

Technology Segment	2024 Market Size	2030/2035 Projection	CAGR
India Fintech Market (Overall)	USD 38.12 billion	USD 186.29 billion (2035)	15.52%
AI in Fintech (India)	USD 8.30 billion (2025)	USD 28.36 billion (2030)	27.86%
Fintech Blockchain (India)	USD 0.35 billion	USD 1.87 billion (2030)	32.10%

Embedded Finance (India)	USD 5.8 billion	USD 28.6 billion (2029)	37.7%
UPI Annual Transaction Value	₹246.8 lakh crore (FY25)	₹314 lakh crore (FY26)	+27%

Source: Spherical Insights (2024); M2P Fintech (2026); IMARC Group (2025); NPCI/PIB (2025–26)

6. CHALLENGES AND BARRIERS TO FINANCIAL INCLUSION THROUGH SMART TECHNOLOGY

6.1 Digital Literacy and Skills Gap

The rapid expansion of digital payment infrastructure has not been matched by commensurate growth in digital and financial literacy. Sharma et al.'s (2025) mediation analysis confirmed that digital literacy significantly mediates the DPI-financial inclusion relationship — meaning that populations with lower digital skills extract substantially less inclusion value from available infrastructure. Despite the RBI's Centre for Financial Literacy network and PMGDISHA initiatives, surveys consistently show that a significant share of digital account holders cannot access the full range of available services.

6.2 Cybersecurity and Digital Fraud Escalation

Afzal et al.'s (2024) UTAUT-DOI integrated model established cybersecurity awareness as a critical determinant of DFS adoption intention — and conversely, cyber fraud as a significant inhibitor of trust. RBI data confirm that digital payment frauds increased more than fivefold to ₹14.57 billion in FY 2023–24. This escalation threatens the consumer trust that is foundational to sustained DFS adoption, particularly among first-time users.

6.3 Gender Inequalities in DFS Adoption

The 3ie/Gates Foundation research (2026) showed that in spite of UPI having 85% market share of digital payments, poor women still use informal savings and cannot access digital payments. The Global Findex data showed 13% gender gap in payments usage. According to 3ie, lack of gender-intentional product design was the main issue in India's inclusion architecture.

6.4 Connectivity Challenges in Rural and Remote Areas

Bajaj et al. (MDPI, 2025) revealed that rural Fintech adoption is restricted by connectivity issues, although digital infrastructure is implemented in India. The districts beyond 514 "fully digitally-enabled" districts are the most difficult populations to reach. The ScienceDirect UPI rural case study (2025), which looked at Aligarh district, demonstrated that

smartphone ownership, digital literacy, and closeness to banking correspondents were the three best predictors of UPI usage in rural area using binary logistic regression models.

6.5 Risk of Concentration

The share of PhonePe and Google Pay in UPI dropped below 80% for the first time in May 2026. That was possible because NPCI actively introduced 20 new third-party application providers in 2024. Concentration risk is an inherent challenge of systemic resilience and innovation diversity.

6.6 Talent and Regulatory Gaps

Shi and Wang (2025, Emerald) identified regulatory, ethical, and technical barriers as significant constraints on blockchain-AI integration in financial services. India faces a scarcity of professionals in AI, blockchain, and cybersecurity. New technologies — CBDC, AI-driven credit scoring, account aggregators — require updated regulatory oversight that balances innovation with consumer protection.

7. DISCUSSION

Results from the current secondary data analysis point to significant increases in financial access and usage of digital financial services due to the rapid growth of smart technology-based financial services in India. The expansion in UPI transactions, increase in the number of accounts and deposits under the scheme of PMJDY, and increase in the RBI Financial Inclusion Index all together show that participation in the formal financial system has expanded in India. The results presented in this study support the notion that the digital transformation of financial sector in India has progressed from mere financial inclusion to using technology in payments and finance. This result is supported by other recent studies which have also highlighted the use of UPI, mobile banking, FinTech, and digital channels as important means of providing services to those who were not served before (Munde et al., 2024; Naroliya & Sharma, 2025; Goswami et al., 2025).

Growth in the use of UPI is one of the most important advancements in the digital financial landscape of India. Increase in transaction volumes and values shows how more and more real-time digital transactions are being integrated into daily economic activities. The decrease in the average transaction value further indicates that UPI is becoming increasingly useful for routine, smaller value transactions and not just large-value transactions. This can be taken to mean that the impact of digital payments on financial inclusion will not be limited to the number of people who have access to formal financial services, but also the frequency with which such financial inclusion occurs. Research studies also highlight that UPI has made it easier to conduct digital transactions and has increased participation in digital finance, despite

inequalities across demographics and infrastructure still impacting sustained participation (Naroliya & Sharma, 2025).

PMJDY's scaling up brings another dimension to the process of financial inclusion through digitization. Growth in the number of accounts opened, women participation in opening of accounts, as well as growth in rural and semi-urban accounts clearly shows considerable success in providing access to formal banking among historically excluded population groups. On the other hand, account ownership is not enough to become a full-fledged measure of financial inclusion. Growth in the volume of deposits, as well as increasing linkages between the accounts and digital payments systems and schemes for transfers of government benefits shows that these accounts are being increasingly utilized as functional financial tools. Hence, it is possible to see that the Indian experience shows an interplay between access to formal banking through programs such as PMJDY and access to digital services through UPI and mobile banking.

An increase in the RBI Financial Inclusion Index further reinforces the fact that there was an overall growth in financial inclusion during the period of the current study. This is because the rise in the Index is in line with the expansion of digital payments, infrastructure, and digital programs supported by the government. However, the current study cannot establish, on its own, that the increase in the Index was due to any single technology, whether it be the Unified Payments Interface (UPI), Aadhaar, or some other technology. The empirical findings of other studies using econometric analysis techniques like Rao et al. (2025) also serve to reinforce this point.

Moreover, the results show that the use of technology does not only apply to digital payments. AI can be used for credit scoring, fraud detection, customer service and personalized financial services, while blockchain can help ensure the integrity and security of the financial transaction. The Account Aggregator framework is expected to allow consent-based financial data sharing and help people without any traditional credit history to gain access to financial services. CBDC and other associated payment technologies are also expected to be the emerging parts of the digital finance environment in India. According to recent research, both AI and FinTech can increase access to financial services and promote financial well-being, while blockchain and AI can help to deliver these financial services (Aishwaryalaxmi & Rathod, 2024; Shi & Wang, 2025). However, availability of the technology does not necessarily imply inclusiveness; the success of the technologies depends on the users' capabilities.

The key insight arising out of this study is thus the inclusion-exclusion paradox of the technological finance model. While there has been an impressive development in terms of digital financial infrastructure in India, the issues of digital literacy, cybersecurity, gender gaps, and rural connectivity persist, limiting equal access to this infrastructure. The literature reviewed above reveals that users who do not have enough digital literacy skills might find it difficult to make use of the services provided via digital infrastructure (Sharma et al., 2025). On top of that, issues such as cybersecurity and digital fraud tend to undermine trust and inhibit continued usage (Afzal et al., 2024). All in all, it appears that financial inclusion cannot be treated as merely provision of digital financial infrastructure.

The analysis of differences in gender and geographic location provides even more support to the claims presented above. Based on the analysis of the data used in the study, it can be concluded that, despite the physical presence of the required digital infrastructure needed to conduct transactions, some difficulties may occur among women living in poor socio-economic status and rural areas. Consequently, it would be incorrect to consider the increase in the adoption of digital financial instruments, like UPI, as evidence of closing of the digital gap. Instead, the results suggest that the nature of the financial exclusion has changed from mere inability to use financial services to the problem of capabilities, trust, afford ability, connectivity and usability of digital technology. This conclusion is consistent with recent academic literature discussing demographic and infrastructural factors in relation to digital financial services (Naroliya & Sharma, 2025; Goswami et al., 2025).

In summary, the findings offer a comprehensive view of India's journey towards digital financial inclusion. It can be seen that smart technologies have made possible an extensive growth of the scope, efficiency and convenience of financial services. Additionally, the development of digital infrastructure has become the basis of wider involvement into the formal financial system. Nevertheless, the development of technology alone cannot guarantee inclusive results. The future success of India's digital financial ecosystem will depend on the combination of technological innovations with digital and financial literacy, cybersecurity, product design sensitive to gender issues, rural connectivity, consumer protection and adequate regulation. Thus, the primary contribution of the current research is in pointing out that the advancement in India's digital financial inclusion should be assessed not only in terms of growth in transactions and accounts but also through the accessibility of technology-based financial services for various socio-economic groups.

8. CONCLUSION

Through this paper, an in-depth secondary data-driven investigation of how smart technology contributes to enhancing financial inclusion in India has been conducted. The study is enhanced through a comprehensive literature review of peer-reviewed research articles written between 2024 and 2026. The main quantitative results are that: UPI increased from 2 crores to 24,162 crores transactions within a decade; PMJDY has created 56.16 crores of accounts with deposits of ₹2.68 lakh crores; RBI FI index has increased from 43.4 to 67; India is home to 49% of the world's real-time payment volume; and 99.7% of India's payment transactions have become digital. The recent literature (2024–2026) explains the causal and mechanistic effects behind the above macro trends. Rao et al. (2025) provide evidence for the significance of Aadhaar and UPI through ARDL/FMOLS modeling. Rashid et al. (2025) explain the effect of fintech on livelihoods using SEM (β=0.68 for productive credit use). Aishwaryalaxmi and Rathod (2024) prove the moderating effect of AI on inclusion outcomes. Afzal et al. (2024) provide evidence for the significance of cybersecurity as an adoption factor. Persistent challenges — escalating digital fraud, gender exclusion, digital literacy gaps, rural connectivity deficits, and platform concentration — require targeted policy responses that complement technological deployment with human capital development and consumer protection. India's experience offers a globally relevant model for leveraging smart technology and digital public infrastructure for financial inclusion — but the model's continued success requires attention to those still left behind.

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