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SUSTAINABLE DIGITAL FINANCE: THE PROMISE AND CHALLENGES OF FINTECH IN PROMOTING FINANCIAL INCLUSION

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ABSTRACT

Financial Technology (Fintech) has emerged as a key driver of financial inclusion by enabling access to formal financial services for large segments of India's unbanked and under banked population. In the post-2008 financial crisis era, Fintech innovations gained strong momentum and have since reshaped the landscape of the Indian financial system. By combining digital tools such as mobile applications, data analytics, cloud computing, and blockchain with conventional banking practices, Fintech companies have created more efficient, affordable, and user-centric financial solutions. These advancements have significantly expanded the reach of financial services, especially in remote and rural regions where traditional banking infrastructure remains limited.

Government programmes—including the Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri Mudra Yojana (PMMY), Pradhan Mantri Vaya Vandana Yojana (PMVVY), Aadhaar-linked services, and the Unified Payments Interface (UPI)—have further accelerated this progress. Fintech firms actively support these initiatives by improving digital onboarding, automating service delivery, enhancing transparency, and lowering transaction barriers. As a result, digital payments, micro-credit, insurance, and savings products have become more accessible to diverse socio-economic groups.

However, the Fintech sector also faces several hurdles. Digital illiteracy, inconsistent internet connectivity, cyber security vulnerabilities, data privacy concerns, and regulatory constraints limit its ability to fully transform the financial inclusion landscape. Additionally, low consumer trust and reluctance to adopt digital tools create further barriers. Overcoming these challenges will require collaborative policy frameworks, robust digital infrastructure, consumer awareness programs and responsible technology deployment.

Overall, while Fintech possesses immense potential to deepen financial inclusion in India, realizing this promise demands a balanced approach that embraces innovation while ensuring safety, accessibility, and equity for all users.

INTRODUCTION

India is widely regarded as one of the fastest-growing major economies and is currently among the top five in the world in terms of GDP. However, the strength of any economy depends heavily on its financial infrastructure. Countries like Switzerland, Canada, Singapore, Sweden, Norway, Australia, Germany, the UK, and the US illustrate how a mature banking system correlates strongly with economic development.

Globally, more than **1.7 billion people remain unbanked**, excluded from formal financial services. In India too, despite a well-established banking network, about **20 percent** of the population lacks access to traditional banking, even though the country serves over **1 billion people** under its formal financial system.

Since the 2008 global financial crisis, Fintech (financial technology) has played a transformational role in promoting financial inclusion. By leveraging digital infrastructure, Fintech firms are helping to bring large swathes of the unbanked and under-served population into the formal financial fold. In India, this has dovetailed with government initiatives like **Digital India**, creating powerful synergies. Today, India's Fintech market is rapidly expanding. According to recent estimates, it is valued at **USD 44.1 billion in 2025**, with projections suggesting it may reach **USD 95.3 billion by 2030**: https://www.mordorintelligence.com

This explosive growth in Fintech has not only accelerated financial inclusion but has also enhanced traditional banking. Digital public infrastructure — such as **UPI**, **Aadhaar-enabled e-KYC**, and the **Account Aggregator** framework — has been instrumental in widening access to financial services. (www.indiabudget.gov.in) For instance, digital payments in India have soared. In FY 2024–25, **UPI handled about 186 billion transactions** worth **₹260.6 trillion**, marking a remarkable surge in both volume and value. (www.finextra.com) Fintech-led lending has also expanded: in the same period, Fintech NBFCs sanctioned **10.9 crore personal loans**, totaling **₹1, 06,548 crores**, highlighting how Fintech is democratizing access to formal credit. (economictimes.indiatimes.com)

Moreover, India's Financial Inclusion Index (FI-Index), which tracks access, usage, and quality of financial services, climbed to **64.2** in March 2024, up from 60.1 the previous year evidence that digital and regulatory reforms are making a real difference.

Review of Literature

Iqbal and Sami (2017) analyzed the influence of financial inclusion on India's economic growth over a seven-year period using a multiple regression approach. Their findings indicated that indicators such as the increase in bank branches and improvements in the credit–deposit ratio had a positive and significant impact on the nation's GDP. This underscores the importance of traditional banking infrastructure in driving economic progress.(www.mordorintelligence.com)

Sahay et al. (2021) explored the link between digital financial services and economic resilience across emerging markets. Their analysis indicated that countries with stronger digital financial ecosystems recovered more quickly during economic shocks, demonstrating the role of digital finance in promoting inclusive growth.

Kumar and Gupta (2021) studied the impact of the Unified Payments Interface (UPI) on digital financial inclusion in India. The study concluded that UPI significantly increased access to low-cost digital payments, enabling millions of citizens to participate in the formal financial system.

Aggarwal (2022) examined the transformative role of Fintech in enhancing financial inclusion in India. The study highlighted how Fintech platforms, leveraging digital technologies, supported broader access to financial services. The results confirmed that Fintech companies facilitated easier, faster, and more transparent financial transactions, thereby strengthening the financial inclusion landscape.

Qamruzzaman (2023) studied the impact of financial innovation on financial inclusion across 22 Arab countries from 2004 to 2020. With financial inclusion as the dependent variable and indicators such as ATMs and commercial bank depositors as proxies for financial innovation, the study revealed a significant positive relationship. This suggests that financial innovations accelerate the outreach of formal financial services in developing economies.

Datta (2023) provided a conceptual evaluation of the role of Fintech in promoting financial inclusion in India after the COVID-19 pandemic. Using a descriptive approach, the study proposed that Fintech played a crucial role in reviving economic activities by providing accessible digital financial solutions. The study also emphasized Fintech's contribution to bridging service gaps among different socio-economic groups.

EY (2023), in its Financial Inclusion Insights report, highlighted that India's financial inclusion has rapidly progressed due to digital public infrastructure and Fintech innovation. The report noted significant improvements in access, usage, and quality of financial services, supported by the rise of UPI, Aadhaar-based authentication, and Fintech-led micro-lending platforms.

Reserve Bank of India (2023–2024) findings indicated a steady rise in the Financial Inclusion Index (FI-Index), reaching 64.2 in 2024. This reflects improvements in access to formal banking services, increased digital adoption, and a surge in Fintech-led financial products. The report attributes much of this progress to technological advancements and policy reforms.

Sharma and Bansal (2024) investigated Fintech adoption among rural households in India. Their research found that mobile banking apps, digital wallets, and micro-credit Fintech platforms significantly improved financial accessibility in rural and semi-urban regions. The study also reported increased consumer trust due to simplified on boarding processes, such as e-KYC and Aadhaar verification.

World Bank (2024) reported that Fintech innovations globally have contributed to rising financial inclusion, with digital payments acting as an entry point for savings, credit, and insurance services. The report states that Fintech has narrowed the gender gap in financial access in many developing countries, including India.

Need for the Study

Fintech has emerged as one of the fastest-growing industries in India, reshaping the financial landscape through innovation and technological advancement. In a rapidly digitalizing economy, Fintech enterprises have played a transformative role in improving access to financial services, particularly for underserved and marginalized communities. Despite significant progress, disparities in financial access between rural and urban populations still persist, creating a need for inclusive technological solutions.

Given this scenario, it becomes essential to examine how Fintech contributes to bridging these gaps and promoting equitable financial growth. The present study aims to explore the impact and effectiveness of Fintech in promoting financial inclusion in India. By evaluating the current status, challenges, and opportunities in this sector, the study seeks to provide meaningful insights into how Fintech can further strengthen inclusive financial development and support national initiatives aimed at universal financial access.

OBJECTIVES OF THE STUDY

1. To examine the current status of Fintech development and the progress of financial inclusion in India.
2. To analyze the role of Fintech in enhancing financial inclusion

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STATEMENT OF THE PROBLEM

India has made efforts to improve financial inclusion, yet many individuals especially in rural and low-income groups still lack adequate access to formal financial services. At the same time, the rapid growth of Fintech offers new opportunities to deliver affordable and accessible financial solutions. However, it is not clear how far Fintech development has progressed in India and to what extent it has actually improved financial inclusion. Therefore, the problem lies in assessing the current status of Fintech and evaluating its real impact on enhancing financial inclusion in the country.

HYPOTHESES

H1: Fintech development in India has significantly progressed and expanded access to digital financial services.

H2: Fintech has a positive and significant impact on enhancing financial inclusion in India.

LIMITATIONS OF THE STUDY

1. **Data Availability:**
   Secondary data sources may have limitations in terms of accuracy, comparability, and timely updates.
2. **Digital Divide:**
   Variations in internet access, Smartphone usage, and digital literacy across states may affect the accuracy of measuring Fintech adoption.
3. **Rapid Technological Change:**
   Fintech evolves quickly; therefore, findings may become outdated as new technologies and regulations emerge.
4. **Behavioral Factors:**
   Consumer trust, awareness, and willingness to adopt digital services may affect outcomes but are difficult to measure precisely.
5. **Regional Imbalances:**
   Financial inclusion varies widely between rural and urban regions, which may influence generalization of findings.
6. **Regulatory Constraints:**
   Frequent regulatory changes in data privacy, KYC requirements, and digital lending norms may impact the consistency of Fintech operations during the study period.

CURRENT STATUS OF FINTECH AND FINANCIAL INCLUSION

The Fintech sector in India has emerged as a transformative force in reshaping the financial ecosystem, especially following the 2008 global financial crisis. The crisis exposed systemic inefficiencies within traditional financial institutions and highlighted the need for technology-driven innovation in the financial sector (Arner, Barberis, & Buckley, 2015). Over the past decade, Fintech firms have played an instrumental role in expanding access to financial services, particularly among underserved and marginalized populations.

FINTECH GROWTH AND EXPANSION OF FINANCIAL ACCESS

India has made significant progress in achieving financial inclusion. According to the Financial Inclusion Index (2021), more than **80% of individuals aged 15 and above** possess a bank account, reflecting substantial improvements in access to formal financial services

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(Reserve Bank of India, 2021). This expansion has been strongly influenced by national policies such as the Pradhan Mantri Jan Dhan Yojana (PMJDY), which facilitated the opening of millions of zero-balance accounts (Mukhopadhyay, 2016). India's fintech adoption rate estimated at **87%** is considerably higher than the global average of approximately 64% (Ernst & Young, 2020). This suggests a rapid shift toward digital financial solutions, driven by Smartphone penetration, low-cost internet access, and the growth of digital payment platforms.

INDIA'S FINTECH ECOSYSTEM AND START-UP DISTRIBUTION

India now hosts one of the world's fastest-growing Fintech ecosystems, with **22 Fintech unicorns** and **33 soonicorns** spanning sectors such as payments, lending, insure-tech, wealthtech, and reg-tech (Invest India, 2023). Cities such as **Bengaluru, Delhi-NCR, and Mumbai** account for nearly **77.8% of total Fintech funding**, demonstrating their dominance as financial technology hubs (NASSCOM, 2022). However, emerging centres like Chennai, Hyderabad, and Pune are increasingly attracting investment and talent.

Government and regulatory support has also played a vital role in shaping the ecosystem. Regulatory sandboxes introduced by the Reserve Bank of India, the Securities and Exchange Board of India, and the Insurance Regulatory and Development Authority of India have created controlled environments for Fintech experimentation (RBI, SEBI & IRDAI, 2020).

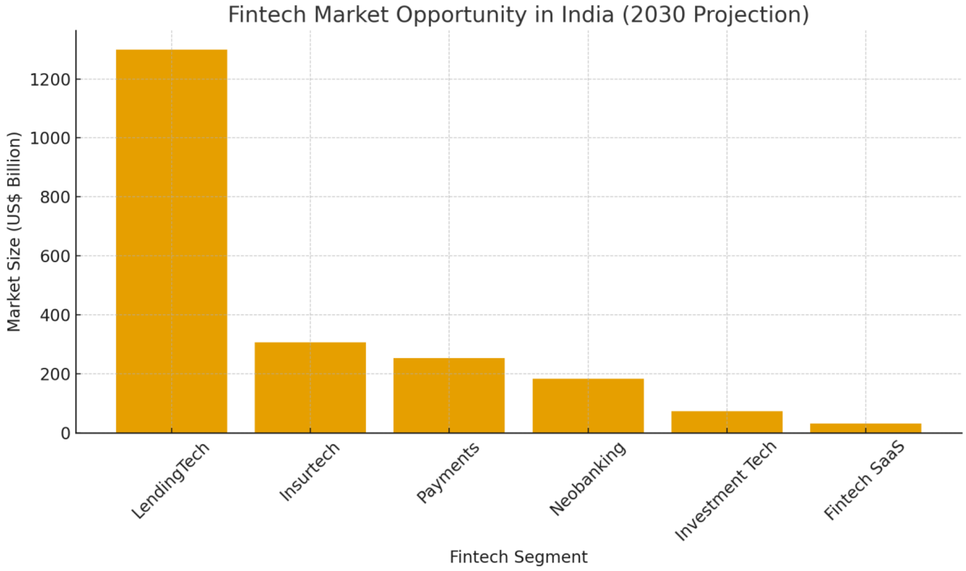
DIGITAL TRANSFORMATION AND BANK–FINTECH COLLABORATION

Traditional banks have recognized the value of Fintech partnerships in enhancing service delivery, improving operational efficiency, and engaging tech-savvy customers. These collaborations have led to the introduction of digital tools such as mobile POS (mPOS), POS terminals, mobile banking applications, digital wallets, and social-media–integrated banking services (Kumar & Goyal, 2019). Such innovations have broadened the reach of financial services, especially among younger populations and rural communities.

Table 1 : Segment-wise Breakdown

Sub-Sector	2022 Market Size	2030 Projected Market Size	CAGR (2022–2030)	% Share of 2030
LendingTech	US$ 270 Bn	US$ 1.3 Tn	22%	60%
Insurtech	US$ 87 Bn	US$ 307 Bn	17%	14%
Payments	US$ 165 Bn	US$ 253 Bn	5%	12%
Neobanking	US$ 48 Bn	US$ 183 Bn	18%	9%
Investment Tech	US$ 9.2 Bn	US$ 74 Bn	30%	3%
Fintech SaaS	US$ 4.6 Bn	US$ 31 Bn	27%	1.5%

Source: asset.inc42.com



ANALYSIS AND INTERPRETATION

1. Lending Tech (US$ 1.3T by 2030)

Lending Tech dominates India's Fintech landscape because the country faces a massive formal credit gap across both consumers and SMEs. Digital lenders are scaling rapidly due to improved data availability, AI-driven underwriting, and the rise of digital public infrastructure like Account Aggregators. Products such as BNPL, SME financing, and supply-chain credit are expanding into underserved regions, creating unprecedented demand. Overall, Lending Tech's size shows that India's Fintech evolution is fundamentally **credit-led**, with lending forming the largest and most profitable opportunity.

2. Insurtech (US$ 307B by 2030)

Insurtech's growth is driven by India's extremely low insurance penetration and increasing digital adoption in sectors like health, motor, and life coverage. Digital-first distribution, embedded insurance, and personalized risk pricing enable faster on boarding and broader reach compared to traditional channels. Despite this momentum, the segment's total size stays lower than lending because average premiums in India remain low and insurance adoption is culturally slower. Still, Insurtech is set to be a **high-growth and high-impact enabler** of financial security.

3. Payments (US$ 253B by 2030)

India's payments sector is large and mature, powered by UPI's hyper-scale adoption and low-friction digital transactions across consumers and merchants. However, revenue growth is constrained because margins are thin, interchange is capped, and regulations promote low-cost payment rails. As a result, payments increasingly function as an **acquisition layer**, enabling companies to monetize users through value-added services like credit, wealth, and insurance. Thus, payments remain foundational but not the primary source of Fintech profitability.

4. Neobanking (US$ 183B by 2030)

Neobanking grows rapidly as SMEs and younger consumers shift toward digital-first financial management and banking experiences. These players offer superior user interfaces, automated workflows, and API-based business banking, filling gaps left by legacy banks.

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Regulatory limitations prevent full digital banking licenses, so neobanks expand through partnerships with regulated institutions and embedded finance solutions. The segment's scale reflects its role as a **customer experience and distribution layer** in the Fintech ecosystem.

5. **Investment Tech (US$ 74B by 2030)**

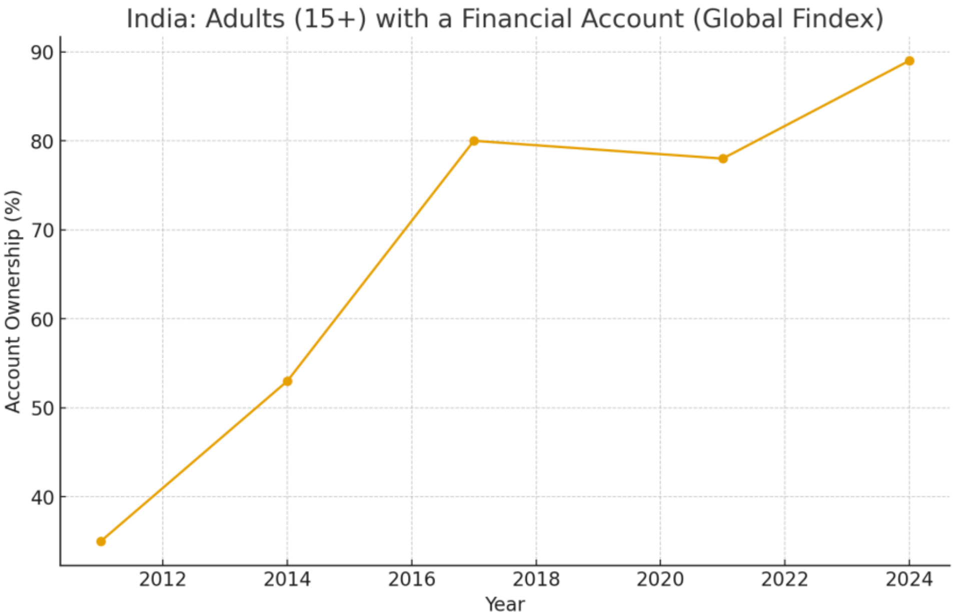
Investment Tech grows quickly from a small base as retail participation in mutual funds, equities, ETFs, and digital wealth platforms increases. Low-cost brokerages, fractional investing, and simplified investment apps are democratizing access to financial markets. Despite high CAGR, its total size remains modest because most Indian households still favor gold, real estate, and bank deposits over financial market products. Still, this sector represents India's **long-term shift toward financialization** of savings.

6**. Fintech SaaS (US$ 31B by 2030)**

Fintech SaaS expands by providing the technology infrastructure—KYC, fraud detection, underwriting, analytics, and compliance—that powers banks, NBFCs, insurers, and other Fintech's. India Stack, AA, and UPI create strong demand for API-based services that enable faster innovation and digital transformation. Although the market size is relatively small compared to other segments, its importance is structural, as SaaS acts as the **backbone of India's financial digital infrastructure**, enabling scale and reliability across the ecosystem.

Table 2. Adults (age 15+) with a Financial Account — India

Year (Global Findex wave / reference year)	% of adults with an account
2011	35%**. The World Bank Docs**
2014	53%**. World Bank Public Documents**
2017	80%**. CGAP+1**
2021	78%**. The World Bank Docs**
2024 (reported in Global Findex 2025)	89% **(reported value for 2024 in the Global Findex 2025 release). World Bank+1**



TREND IN ACCOUNT OWNERSHIP AMONG ADULTS (15+) IN INDIA

The Global Findex data for India from **2011 to 2024** shows a remarkable and sustained rise in formal account ownership among adults. This trend highlights the expansion of financial inclusion driven by policy reforms, digital infrastructure, and targeted government schemes.

1. Rapid Growth Phase (2011–2017)

Between **2011 and 2017**, India experienced its strongest surge in account ownership:

- **2011:** 35%
- **2014:** 53%
- **2017:** 80%

This jump of **45 percentage points** in just six years aligns with major initiatives like:

- The launch and massive rollout of **Pradhan Mantri Jan Dhan Yojana (PMJDY)**
- Expansion of mobile banking and payments
- Aadhaar-linked authentication enabling easier on boarding
- Direct Benefit Transfers (DBT) encouraging account usage

The 2011–2017 period represents the most transformative phase for financial inclusion in India.

2. Stabilization and Slight Correction (2017–2021)

In 2021, account ownership slightly dipped to **78%**, a marginal decline of 2 percentage points. This small correction may reflect survey-based sampling variation or inactive account closures. Still, the value remains extremely high compared to pre-2014 levels.

3. Renewed Growth and All-Time High (2024)

The 2024 value reported in the Global Findex 2025 shows account ownership rising again to **89%**. This new peak indicates:

- Continued digital financial adoption (UPI, mobile wallets)
- Greater penetration into rural and low-income populations
- Strengthening of the financial ecosystem after COVID-19 disruptions

Overall, India has nearly achieved **universal basic financial access**, with nine out of ten adults now having an account.

CONCLUSION

Fintech has become a pivotal driver of financial inclusion by extending access to formal financial services for populations that have historically remained outside the traditional banking framework. The Digital India initiative has further strengthened this progress by fostering collaboration between Fintech enterprises and conventional financial institutions, thereby enhancing service accessibility, particularly in rural and semi-urban regions. This synergy has enabled individuals to engage with banking services more conveniently and with greater autonomy.

Among the most significant technological advancements is the Unified Payments Interface (UPI), which has emerged as the most widely adopted digital payment mechanism in the country. Its user-friendly design, interoperability, and real-time processing capabilities have contributed substantially to the democratization of digital financial transactions.

Looking forward, the banking and financial services sector is poised for continued transformation. Innovations such as fifth-generation (5G) internet connectivity, artificial intelligence, big data analytics, and blockchain technologies are expected to further strengthen the operational capacity of financial institutions and fintech firms alike. These technologies will not only enhance efficiency and security but also facilitate the development of novel financial products and expanded outreach strategies.

In sum, Fintech is positioned to play an increasingly influential role in reshaping the banking ecosystem. Its integration with emerging technologies will contribute significantly to improving service delivery, expanding financial access, and advancing the broader objective of sustainable financial inclusion.

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