

AI-Powered FinTech and Financial Inclusion: The Mediating Role of Digital Financial Literacy and Trust

Mr. Manoj Kumar

Assistant Professor, Commerce

Government Degree College Hansaur, Barabanki, Uttar Pradesh

kumarmanoj2555@gmail.com

Abstract: Financial technology is transforming the nature of financial inclusion through the application of artificial intelligence that reduces transaction costs, enhances credit scoring, enhances fraud prevention, personalises financial services, and brings digital services to the reach of underserved groups of the population. But having access to technology is not enough for meaningful financial inclusion. This paper explores digital financial literacy and AI-powered financial trust as two intervening variables between AI-powered FinTech, and financial inclusion, focusing on the context of India. The study is of explanatory integrative type with the help of secondary data and critical review of literature in recent years from India and abroad. Information used comes from the World Bank Global Findex, RBI along with the National Payments Corporation of India and the Department of Financial Services. Adult account ownership in India has grown from 35.2% in 2011 to 89.0% in 2024, and PMJDY has successfully created 59.15 crore accounts in the country by August 2026. During June 2026, the volume and value of transactions made on UPI were estimated at 22.72 billion and ₹28.92 trillion, respectively. Even with this growth, it is important that users understand how to use digital financial services and have faith in the financial institutions and technologies that are part of them to achieve effective inclusion. The authors recommend applying the digital financial literacy (DFL) dual mediation principle to informed financial capability and the importance of trust as an adoption and sustainable use tool to be considered in the paper. Finally, it is concluded that AI can play a responsible role in improving sustainable financial inclusion provided that consumer protection and financial education are available to complement it.

Keywords: Artificial intelligence, FinTech, financial inclusion and digital financial literacy, trust, UPI, India

I. INTRODUCTION

AI is reshaping the Fintech landscape from transaction-based to prediction, personalisation and growing automation. Machine learning and natural language processing, generative AI can now solve credit assessment, anti-fraud, risk management, customer profile and digital monetary aid. These technologies may help to lower costs to provide services, cut down on the workload and increase the access to banked services to those who are underbanked with traditional financial services.

This is especially important in India, where many of the poor, unskilled citizens, micro businesses and rural populations lack a credit history and are subjected to high finance-charge, and poor physical accessibility to financial institutions. AI-powered FinTech can overcome these challenges by leveraging alternative-data analysis, automated processing, accessing financial products via mobile, and customising offerings.



But financial inclusion is not just about having an account and access to payment platforms. Meaningful inclusion must include an understanding of financial products, risk assessments, self-directed and adequate consumer protection and self-directed. Adult individuals' owning bank accounts grew from 35.2% in 2011 to 89.0% by 2024; PMJDY had a 59.15 crore number of beneficiaries as of August 2026, and UPI recorded over 22.7 billion transactions in June 2026. The rise of this marks a paradigm shift from mere access to enabling meaningful and sustainable use of financial services, highlighting the significance of financial access and digitisation for effective AI-driven financial inclusion.

II. RESEARCH PROBLEM

Despite the rapid development of FinTech in India, what has been better is accessibility to formal financial services, but it is not enough for meaningful financial inclusion. Focusing on monitoring whether citizens own an account, carry out transactions online, or use financial platforms does not directly help to capture whether citizens can use and understand technology when it comes to financial services. One of the significant challenges identified is the disconnect between the technical feasibility of participation and ability to do so financially. People can have bank accounts, bank applications, smartphones and payment apps, but they have to rely on someone else to do the authentication, transaction, or filing a grievance. Likewise, for those who have already a certain degree of literacy in digital matters, the reluctant embrace of AI-driven financial services might also stem from evacuees and the marginalization at instances of inadequate consumer protection and opacity of algorithms. The impact of AI is multi-fold. Poorly designed systems can cause algorithmic bias, inappropriate targeting and a lack of transparency, while alternative credit scoring and automated customer support and personalised financial products will help to extend credit to unserved populations. The focus of the central research question is thus the potential of AI-powered FinTech to change the nature of technological access to a knowledge-driven financial inclusion that is informed, secure, and sustainable.

III. AI-POWERED FINTECH AND FINANCIAL INCLUSION

3.1 Transformation of Financial Access

The formal banking expansion, the use of Aadhaar as a means of identification, the creation of PMJDY, and the ubiquity and interoperability of mobile payments, have brought about a structural change in financial architecture in India. The World Bank statistics give an idea of the scope of this shift. Adult account ownership rose from 35.2% in 2011 to 53.1% in 2014, 79.9% in 2017, 77.5% in 2021 and 89.0% in 2024.

To differentiate access to an account from digital use, this taxonomical study emphasizes the fact that the 2021 Global Findex serves as a valuable point of reference. A majority of Indian adults, 77.5%, said that they did have an account, but 34.9% of Indian adults made or received digital payments in the previous year. The same digital payment measure was at 28.0% among women. The picture highlights the dichotomy between infrastructure and ownership and what constitutes 'effective digital inclusion'.

PMJDY has made a significant contribution to the development of the formal financial base. As of 26 August 2026, it served 59.15 crore beneficiaries, of which 45.99 crore (77.75%) were rural or semi-urban beneficiaries and 32.96 crore (55.72%) were women. Aggregate deposits divided by aggregate beneficiaries equate to about ₹5334 per deposit holder, based on the deposits of ₹315,482.03 crores. This is an estimated assessment and does not reflect the activity on the account or wealth of the family.

3.2 Deepening of Digital Payments

As a parallel payments ecosystem has also been developing in India with formal account penetration. In June 2026, the number of transactions made via UPI was around 22.72 billion, with a total transaction value of ₹28.92 trillion. According to the platform, 731 banks are in place, showcasing the level of institutional interoperability within the platform.

The RBI Digital Payments Index is a more comprehensive measure of the actual progress of digital payments. With March 2018 set at 100, the index reached 445.50 in March 2024 and 493.22 in March 2025. This highly represented 10.7% year-on-year increase in the March 2025 value, which was close to five times the baseline index level.



The two-year time frame has also been accompanied by an improvement in financial inclusion as reflected in the multidimensional Financial Inclusion Index of the RBI. The index increased from 64.2 in March 2024 to 67.0 in March 2025. The RBI framework incorporates access, usage and quality, making it conceptually more informative than account counts alone.

3.3 Emergence of Artificial Intelligence in Financial Services

AI is an integral part of this tech revolution. AI and machine learning are being increasingly considered by Indian financial institutions in their Customer Relationship Management, Risk Management, Fraud Detection and Operations functions. The RBI has made it clear that AI can have a transformative impact, as well as significant challenges, such as algorithmic bias, lack of explainability, privacy issues, and cybersecurity risks. It formed a committee to create a Framework for Responsible and ethical Enablement of Artificial Intelligence in the financial sector (FREE-AI).

AI can help become more inclusive in several ways, such as by offering alternative data credit scoring for those whose files are thin, and personalised savings interventions, automated multilingual support, fraud detection, and making onboarding or providing financial education easier and more relevant. However, these mechanisms are only truly inclusion fostering when consumers have a policy of understanding the services and reasonable trust for the institutions and technologies that are providing them.

IV. LITERATURE REVIEW

4.1 FinTech and Financial Inclusion

FinTech is an effective tool that has helped increase financial inclusion, with a decrease in geographical limits, transaction costs, documentation efforts and reliance on a physical banking network. Malladi, Soni and Srinivasan (2021) noted that while ICTs have helped bring the underserved groups into formal financial services, transparency, institutional co-ordination and adequate digital infrastructure are also necessary for sustainable inclusion.

In the Indian scenario, Asif et al. (2023) found that the contribution of FinTech and digital financial services towards financial inclusion is positive. Their analysis also shows that factors like usability and behavioural intention, trust and social influence impact the use of digital financial services. AI can help enhance these benefits by leveraging alternative data analysis, automated credit assessment, fraud detection, personalised services and intelligent customer support. If adequate governance arrangements are not in place, however, algorithmic opacity, biased datasets and inappropriate automated recommendations can pose new exclusionary risks.

4.2 Digital Financial Literacy as a Capability Mechanism

Digital financial literacy is a combination of financial knowledge and skills needed to safely and independently use digital platforms, which goes beyond the traditional definition of financial literacy. It contains knowledge of digital risks, safety of personal data, product appropriateness, consumer rights and informed decision making.

Ravikumar et al. (2022), based on 384 Indian digital-finance users, conceptualised digital financial literacy as a multidimensional construct involving digital knowledge, financial knowledge, risk awareness, consumer rights and practical decision-making capabilities. The results show that it's not enough to know how to interact with technological interfaces to be an effective digital participant.

Based on the findings of 608 Indian FinTech users, Amnas et al. (2024) concluded that the link between the use of FinTech and financial inclusion is mediated by digital financial literacy. Thus, access to technology becomes more productive if users have appropriate knowledge and skills to make informed financial choices. Likewise, on a sample of 776 respondents, Kanungo found a strong correlation between ownership and utilization of digital financial services and digital financial literacy in Odisha. It also revealed that there were some users who continued to rely on others to carry out digital transactions even after their formal inclusion.



For 832 FinTech users in Gujarat, Bhojak et al. (2026) also found that both digital and financial literacy had a positive relationship with expectations and satisfaction for the use of FinTech. Together, these studies have led to the recognition of digital financial literacy as a capacity that turns technology into financial participation.

4.3 Trust as a Behavioural and Institutional Mechanism

Trust is also critical given the uncertainty of cybersecurity, personal data, automated decision making, and institutional reliability with digital financial transactions. In the financial realm, users might have to trust in processes they cannot see or fully comprehend, as is the case in AI-involved finance.

Dahiya et al. (2026) confirmed that perceived risk was a negative factor, and trust and digital literacy were positive factors, in the adoption of Fintechs. They also found that the relationship between digital literacy, perceived risk and adoption was partially mediated by trust. This creates a level of trust as a key behavioural driver of digital-finance participation.

Nevertheless, trust should be gained by institutional reliability, rather than blind faith. Transparent information, effective grievance redress, meaningful consent, regulatory safeguards and the ability to challenge automated decisions are essential for sustainable trust.

The literature suggests that access opportunities increase as a result of the presence of FinTech, that digital financial literacy fosters the ability to take advantage of these access opportunities, and that trust further promotes access. But these mechanisms are typically studied individually. This study combines both DFIs and trust under a single framework and suggests that a meaningful financial inclusion through meaningful AI requires the impact of users' capability and institutional confidence.

V. OBJECTIVES AND HYPOTHESES

5.1 Objectives of the Study

The study aims to do the following:

- To analyse the past and current dimensions of financial digitalisation and financial inclusion through AI in India with credible and recent national indicators.
- To examine the link between AI-fuelled FinTech and meaningful financial inclusion focusing on access, utilization, and quality and continuity of financial participation.
- To analyse the mediating ability of digital financial literacy that can enhance meaningful financial inclusion by leveraging AI-based FinTech.
- To assess the mediation role of trust as a behavioural and institutional solution and build a holistic approach to responsible AI-inclusion.

5.2 Hypotheses

H1: Digital financial literacy positively mediates the relationship between AI-powered FinTech engagement and financial inclusion.

H2: Trust positively mediates the relationship between AI-powered FinTech engagement and financial inclusion.

Because the present paper uses secondary national indicators and integrative evidence rather than a new respondent-level dataset containing all four latent constructs simultaneously, these hypotheses are evaluated through theoretical reasoning and convergent empirical evidence. They are not represented as newly estimated causal mediation coefficients.

VI. RESEARCH METHODOLOGY

The study is conducted based on explanatory integrative design, which has literature study as a structured search and descriptive secondary data analysis. The design is suitable since it aims to include existing empirical relations, existing macro-level indicators or existing theoretical mechanisms, and not to create a new micro-level causal estimate.



VII. DATA ANALYSIS AND RESULTS

7.1 Financial Inclusion and Digitalisation Indicators

The recent trends show the fast pace towards financial access and financial digitalization in India. The number of adults owning an account rose from 35.2% in 2011 to 89.0% in 2024 (+53.8%). In 2024, 89.2% of accounts were held by females compared to 88.8% held by males. This suggests that there has been significant progress towards narrowing the gender gap in access to formal financial services in the past.

This growth has been facilitated by the Pradhan Mantri Jan-Dhan Yojana. By 26 August 2026, PMJDY had 59.15 crore users, out of which, 32.96 crore were women and 45.99 crore were from rural or semi-urban areas. Hence, the beneficiaries were almost equal with women, 55.72% and for rural and semi-urban it was almost 77.75%. The total deposits under the scheme were ₹315,482.03 crore, which is about ₹5,334 per beneficiary (when aggregated).

Online payment transactions have also seen a significant increase. UPI was involved in 731 banks and around 22.72 billion transactions worth of ₹28.92 trillion were made in June 2026. This not only demonstrates the size of its digital payment ecosystem, but also that it is interoperable at scale.

This reflects a general trend supported by other RBI indicators. The Financial Inclusion Index jumped from 64.2 in March 2024 to 67.0 in March 2025, a 4.1% rise, whereas the Digital Payments Index rose by 10.7% to 493.22 in March 2025.

Overall, this indicates marked improvements regarding access, participation and digital infrastructure. But financial inclusion cannot be defined as a numerical target. There might be some variations in transactions, independent use of digital tools, access to credit, financial self-confidence and exposure to fraud. Inclusion in the next step needs to be the focus of quality of use, digital financial literacy and institutional trust.

7.2 Digital Infrastructure Versus Effective Inclusion

The gap in access to accounts and effective use of digital instruments is seen in the Findex 2021 data. 77.5% of adults owned an account and 34.9% of them made or received digital payments. This difference should not be interpreted mechanically as one included minus one excluded as the indicators are measuring different behaviours, but this still provides confirmation of the fact that, within these two indicators, smaller percentages of the population are actively digitally participating in financial services than are owning accounts.

According to the UPI transaction volume data, in 2026, digital transactions will grow to a pace beyond imagination. But the size of transactions is still an environmental level measurement. If a financial transaction is not a volume transaction, it will not be possible to determine if an economically vulnerable individual is aware of loan pricing, maintains authentication credentials, is not manipulated, is informed, or challenges an automated financial decision.

HIN7.3 Evidence Concerning the Literacy Mechanism

There is a surprising degree of agreement in the Indian evidence on literacy. In the context of digital financial literacy, Ravikumar et al. (2022) define it as multi-dimensional and highlight consumers' rights and risk awareness, along with practical uses. Amnas et al. (2024) mathematically prove DFL as a linkage between FinTech and inclusion. Kanungo (2026) recognizes DFL as a significant relationship with digital financial service ownership and usage, restating the significant role of third parties in digital financial services. Not only do Bhojak et al.(2026) demonstrate a connection between the digital and financial literacy and the expectancy that facilitates FinTech adoption and satisfaction, but they also illustrate the pathways through which these journeys are experienced.

There is good evidence synthesis support for H1 when considering the convergence across the various samples, states and modelling strategies. The current analysis does not provide calculation of a new mediation coefficient, however the theoretical and empirical basis for proposing that Digital financial literacy is a mediation ability is strong.

7.4 Evidence Concerning the Trust Mechanism

Empirically, the trust mechanism has been given strong support. Digital literacy and perceived risk significantly influenced the fintech adoption in India by mediating through trust (partially) for 487 participants in this study (Dahiya et al., 2026). The undercurrent of this discovery is relevant to artificial intelligence in FinTech with more automation, the information gap between consumers and the process that generates financial decisions may widen.



The trustworthiness appears to have become a concern of regulators, too, rather than a marketing concern. Explainability, privacy, algorithmic bias and cybersecurity are aspects that the RBI is grappling with in the context of responsible and ethical AI in the finance sector.

On balance, the evidence from recent Indian empirical studies does hold up the case for H2 as a concept and through the empirical results. Trust is thus also an important intervening mechanism that can link technological capabilities and adoption of the system and its continued use to meaningful financial participation. Financial inclusion and adoption can be ensured beyond just financial efficiency, it is also crucial that users trust in the fairness and security of the financial system, transparency and reliability of digital financial services.

VIII. FINDINGS AND DISCUSSION

8.1 India Is Moving from Financial Access to Quality of Use

The evidence points to an emerging trajectory in the myth of financial inclusion in India: from mere access to its usage, in a smart, self-reliant and productive manner. The broad penetration of financial system with more than 59 crore formal account holders and nearly 89% adult account ownership shows that formal inclusion in financial system has increased to a large extent. Now the more pertinent question is whether accounts are used, the financial product awareness of consumers and whether participation enriches financial security and resilience.

This is an interpretation supported by RBI Financial Inclusion Index which includes access, usage and quality. The rise to 67.0 in March 2025 while positive shows there is further work to be done to enhance the depth and quality of inclusion.

8.2 AI-Powered FinTech Can Reduce Multiple Structural Barriers

AI can reinforce financial inclusion by reducing service costs, enhancing risk evaluation, aiding fraud detection, and providing custom-made monetary supply. AI can boost the financial inclusion by lowering service fees, enhancing risk evaluation, helping fraud detection and aiding in personalised financial supply. New possibilities include alternative-data analysis to evaluate borrowers who do not have direct credit records and automated, multilingual interfaces to access the system by those with special needs. But these benefits are subject to a responsible design. There is potential to provide greater access to credit based upon alternative data however, it may create privacy and discrimination issues. Automated advice can make complicated products easier-to-understand, but can also lead to dependency issues. Fraud-detection systems can help keep your business secure, but can also be set up to prevent valid transactions. AI-enabled FinTech is thus best assessed by fairness, affordability, accessibility and consumer outcomes and never solely on technology effectiveness.

8.3 Digital Financial Literacy Functions as a Conversion Capability

The results indicate the importance of digital financial literacy as a mediating capacity rather than individual characteristics. The opportunities being created by AI-powered FinTech services are contingent on users' financial literacy.

To be adequate, modern financial literacy should not just be encounters with general accounting principles like saving, interest or budgeting. It should include advanced authorization security, phishing identification, consent of data, digital identity, algorithmic recommendations, loan-cost interpretation and customer rights with grievance courses of action. Across India, there are 2,421 financial literacy centres (as on March 2025) that demonstrate institutional commitment, but interventions should be closer to actual real-time financial behaviour in India.

8.4 Trust Is a Governance-Dependent Mediator

Trust determines whether users will trust and rely on digital financial systems despite the uncertainty of data usage, cybersecurity and automated decision-making. Even if an AI service is financially informed, its data practices can be seen as intrusive or the decision-making process is unclear, it may fail to win the trust of a financially literate consumer.



On the other hand, high trust levels coupled with low levels of literacy can lead to inappropriate financial products being offered and used by a user.

This participation should be meaningful and so it brings the combination of capability and warranted trust. Trust must be built through transparency, security, simplicity and clarity, grievance processes that are easy to use, and independent and credible regulatory protection – not on passive consumer confidence.

8.5 Digital Financial Literacy and Trust Operate as Complementary Mediators

One of the theoretical key outcomes is the inter-correlation of digital financial literacy and trust. Literacy can be essential in comprehending online financial transactions, assessing risk and identifying valid transactions. That confidence can help build confidence in a system to be used regularly, and positive experiences will lead to further use. The relationship may be represented as:



This channel is not guaranteed. At any stage it can be disrupted by weak consumer protection, the substandard condition of infrastructure, algorithmic bias, or unfriendly and obscure decision-making. The results thus confirm that the availability of technology is not enough to ensure meaningful financial inclusion. Building user capability, institutional trustworthiness and responsible technological governance are three essential elements of sustainable AI-enabled inclusion.

IX. LIMITATIONS

Some of the limitations of this study are listed below.

- It is a combination of national indicators and the results from micro-level studies, so that there are no national level mediation effects.
- While some official indicators like UPI transactions, PMJDY accounts, rbi indices take the broad view of digital finance, they will not be able to apportion a specific share to AI.
- The available evidence in India is mostly cross-sectional, and this hinders the strong causal interpretations. Fourth is that some of the studies examine either active users of fintech, or just metropolitan populations or selected states, which might overlook financially excluded as well as digitally vulnerable populations.

X. FUTURE RESEARCH

Further studies adopt the proposed framework and investigate it with primary data sourced nationally and markers of AI-powered FinTechs' engagement and measures of digital financial literacy, trust, perceived risk and financial inclusion that are clearly differentiated. Parallel and sequential mediation pathways could be assessed using SEM.

Variation between genders, age, income, education and rural/urban location should also be explored. Repeated measures studies would be useful to determine between new entries and ongoing and beneficial uptake. Future measurement should also account for objective measures like complaints, formal borrowing, insurance participation, fraud exposure, financial inclusion, and savings continuity, alongside transaction regularity, to build a more interesting and meaningful measurement of financial inclusion by AI.

XI. CONCLUSION

Digital infrastructure can drive the frontier of formal finance at unprecedented pace, as India's financial transformation shows. By August 2026, more than 59 crore people were registered on PMJDY, and by June 2026, the UPI had processed over 22 billion transactions in one month. PMJDY had 89.0% grown to become more than 59 crore accounts by August



2026, and more than 22 billion transactions on UPI had been processed in a single month by June 2026. These accomplishments create an impressive technological basis for financial inclusion.

They also make the next problem more obvious. Financial inclusion is not possible if people are not able to access it without understanding, autonomy, security, or confidence. Financial services are becoming increasingly algorithmically complex and accessible, and the diffusion of AI only compounds this worry.

The paper points out that there are two complementary mechanisms that link AI-powered FinTech to meaningful financial inclusion: digital financial literacy and trust. DFL turns what is possible into what is possible. Reliability and capability of financial services translate into willingness to use and maintain them, through trust. The Indian empirical literature is converging evidence for both mechanisms, but no single nationally representative data set that allows an estimation of the full dual-mediation model exists.

The key takeaway is that the new wave of financial inclusion will be judged on the quality of citizen financial relations, not just on access. The goal of AI is not to impose new barriers to cognition, information and institutions, but to remove existing ones. Financial education, then, should go hand in hand with technological innovation, and trust via tangible evidence of trustworthiness, including explainability, fairness, privacy protection, security, accountability and effective redress.

The long-term impact of AI-powered FinTech will then be reliant not just on the sophistication of the algorithms themselves, but on whether technological intelligence is realised as an increased human financial capacity, agency and security. Indeed, financial inclusion is not just about linking people to the financial system, but about giving them enough education, safeguards and confidence to take advantage of that system to enhance their economic opportunities and resilience.

REFERENCES

1. Amnas, M. B., Selvam, M., & Parayitam, S. (2024). The mediating role between financial inclusion and digital financial literacy and perceived regulatory support in the context of FinTech. *Journal of Risk and Financial Management*, 17(3):108.
2. Asif, M., Khan, M. N., Tiwari, S., Wani, S. K., & Alam, F. (2023). How FinTech and Digitised financial services change financial inclusion in India. *J. Risk Financial Management* (2016) 16(2): 122.
3. Bhojak, N. P., Momin, M. K., Joshi, B. H., Kumar, S., & Acharya, U. (2026). Adoption and satisfaction with the FinTech applications and digital and financial literacy. *South Asian Journal of Business Studies*, 15(3): 390-408.
4. Dahiya, P., Gupta, A., Khandelwal, M., Saxena, M., & Sabharwal, S. (2026). A conceptual framework on how FinTech is adopted in India and its standing relationship as a mediating and moderating variable for emotional intelligence. *Future Business Journal*, 12, 221.
5. Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
6. The Department of Financial Services. (2026). Beneficiary and Account statistics under PMJDY. Government of India.
7. Kanungo, E. (2026). Factors affecting digital financial literacy and driving its contribution to digital financial inclusion in Odisha, India. *Journal of Science and Technology Policy Management*, 17(2): 417-436.
8. Malladi, C. M., Soni, R. K., & Srinivasan, S. (2021).
9. Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995).
10. National Payments Corporation of India (NPCI). (2026). UPI product statistics for FY26-27.
11. Ozili, P. K. (2020). Concepts of financial inclusion. *Journal of Economic Surveys*, 34(3), 589–612.
12. T. Ravikumar, B. Suresha, N. Prakash, K. Vazirani, and T. A. Krishna. (2022). Measurement and validation of digital financial literacy of adults in India. *Cogent Economics & Finance*, 10(1), 2132631.
13. The Reserve Bank of India. (2025). Annual Report 2024–25.



14. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). Toward a unified view of user acceptance of Information Technology. *MIS Quarterly*, 27(3), 425–478.
15. World Bank. (2022). *Little Data Book on Financial Inclusion 2022*

