Volume 11, Issue 8, August – 2026 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1089

AI-Enabled FinTech and Digital Financial Inclusion in Rural India: An Empirical Study

Pavirala Kondal[1]

[1]Lecturer in Commerce, MKR Government Degree College (A), Devarakonda

Publication Date: 2026/08/29

Abstract: Artificial intelligence (AI) and financial technology (FinTech) are revolutionizing the delivery of financial services and opening up new avenues for increasing financial inclusion in rural India. The use of AI-enabled technology into digital banking services has the potential to lower transaction costs, increase access to financial products, improve credit evaluation, and deliver personalized financial services to disadvantaged communities. This study uses secondary data to investigate the function of AI-enabled FinTech in boosting digital financial inclusion and banking adoption in rural India. The study analyzed data obtained from authoritative sources such as the Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), Department of Financial Services, Pradhan Mantri Jan-Dhan Yojana (PMJDY), World Bank Global Findex Database, and other official reports. The study runs from 2018 to 2025 and looks at trends in bank account ownership, rural banking infrastructure, digital payments, UPI transactions, mobile and internet banking, and other measures of financial inclusion. Descriptive statistics, growth-rate analysis, CAGR, correlation, and regression techniques are provided for investigating the relationship between digital banking and financial inclusion. The survey also identifies important hurdles such as digital illiteracy, insufficient internet connectivity, cybersecurity issues, privacy dangers, and little awareness of AI-enabled financial services. The findings are likely to highlight the growing role of FinTech and digital banking in increasing access to formal financial services in rural India. The study has important implications for regulators, banks, FinTech businesses, and other stakeholders involved in establishing secure, inexpensive, and inclusive AI-enabled financial services for rural populations.

Keywords: *Artificial Intelligence, FinTech, Financial Inclusion, Digital Banking, Rural India, Digital Payments, UPI, Financial Technology.*

How to Cite: Pavirala Kondal (2026) AI-Enabled FinTech and Digital Financial Inclusion in Rural India: An Empirical Study. *International Journal of Innovative Science and Research Technology*, 11(8), 1913-1918. https://doi.org/10.38124/ijisrt/26aug1089

I. INTRODUCTION

The rapid growth of artificial intelligence (AI), financial technology (FinTech), and digital banking is revolutionizing India's financial services industry. Technological advancements have altered how people access banking, make payments, receive credit, save money, and handle financial activities. Rural India, in particular, is becoming an important area for digital financial transformation because a large portion of the rural population has historically faced barriers such as limited banking infrastructure, geographical distance, insufficient financial literacy, and a lack of access to formal financial services. The growth of digital banking and FinTech presents opportunity to overcome these hurdles and promote greater financial inclusion.

FinTech is the use of technology to deliver innovative financial goods and services. Mobile banking, internet banking, the Unified Payments Interface (UPI), digital wallets, online lending platforms, biometric banking, and other digital financial services have made financial transactions more accessible and convenient. Simultaneously, AI is increasingly being used in financial services, including automated customer support, fraud detection, credit risk assessment, tailored financial services, and transaction monitoring. These advancements have the potential to increase the efficiency, affordability, and accessibility of financial services, particularly for underprivileged communities.

Government initiatives such as the Pradhan Mantri Jan-Dhan Yojana (PMJDY), Aadhaar-enabled financial services, and Digital India have contributed to the growth of formal financial services. The expansion of mobile connectivity and digital payment infrastructure has also contributed to the growing popularity of digital banking in rural communities. However, technological availability alone does not determine digital financial inclusion. Digital literacy, internet connectivity, cybersecurity, customer awareness, trust, and price are still major issues in adoption.

Against this backdrop, the current study explores AI-enabled FinTech and digital financial inclusion in rural India utilizing secondary data. The study examines trends in

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1089

banking access, digital payments, UPI transactions, digital banking infrastructure, and other financial inclusion indicators over the study period. Secondary data from credible sources such as the Reserve Bank of India, National Payments Corporation of India, Department of Financial Services, PMJDY, and World Bank is used for analysis.

The study aims to better understand the relationship between technical advancement and financial inclusion, as well as to highlight the benefits and problems connected with AI-enabled digital banking. The findings may help regulators, banks, FinTech businesses, and other stakeholders establish secure, inexpensive, accessible, and inclusive digital financial services for rural India.

II. REVIEW OF LITERATURE

The research on Artificial Intelligence (AI), FinTech, digital banking, and financial inclusion suggests that technology innovation is becoming an increasingly essential tool for improving access to formal financial services. Existing research has looked at digital payments, FinTech acceptance, financial literacy, banking infrastructure, and the growing role of AI in financial services. The research listed below serve as a foundation for the current secondary data investigation.

- Chavan and Kamra investigated financial inclusion in rural India using secondary data. Their research looked at banking deposits, credit, digital payments, and insurance as crucial aspects of financial inclusion. The authors stressed that financial inclusion should be defined as both access and affordability of formal financial services.

- Cnaan, Scott, Heist, and Moodithaya (2021) examined financial inclusion in the digital banking era using data from rural Indian communities in seven states. Their findings revealed that digital banking adoption remained low in some rural regions, and financial literacy and online access were significant determinants of digital banking activity.

- Ozili (2024) examined financial inclusion and FinTech studies in India and identified income, age, gender, education, employment, ICT availability, banking networks, and bank proximity as key factors of financial inclusion. The report also emphasized the significance of technological advancement in providing financial services to underrepresented populations.

- Klapper (2024) examined evidence on digital financial services and financial inclusion at the global scale. The report stressed that financial inclusion should go beyond simply having an account to actually using financial services, especially digital payments. This provides a solid foundation for analyzing digital banking uptake as a measure of real financial inclusion.

- The Reserve Bank of India (2024) emphasized the rapid transformation of India's payment environment through digitalization, namely the adoption of UPI. The RBI observed that while digital payments can enhance financial inclusion and lower transaction costs, they also present cybersecurity and regulatory challenges.

- Reserve Bank of India (2024) stressed FinTech's significance in digital financial inclusion. The RBI believes that FinTech may overcome gaps in traditional banking through digital payments, microloans, insurance, mobile banking, and online platforms. Data analytics and artificial intelligence can also help to improve the personalization and efficiency of financial services.

- AI-focused research on financial inclusion in India has identified several important applications of artificial intelligence in banking. AI-based risk management, credit evaluation, personalized financial management, conversational chatbots, speech recognition, biometric identity, and electronic KYC are a few examples. These applications have the potential to improve underprivileged people' access to financial services.

- Recent research on FinTech adoption in rural India looked at the factors that influence the use of FinTech for financial inclusion. The literature lists technology acceptance, behavioral intention, technology preparedness, financial literacy, and socioeconomic situations as major factors influencing adoption. Because FinTech is growing so quickly, the necessity for a flexible regulatory framework has been highlighted.

- The World Bank Global Findex 2025 presents up-to-date evidence on financial inclusion and digital connectivity. The database investigates access and use of financial accounts, digital payments, mobile phones, and internet services. The most recent version now includes indicators for digital safety, which provide valuable secondary data for investigating the relationship between digital connectivity and financial inclusion.

- According to recent Indian research on AI-driven FinTech, AI applications such as automated credit evaluation, voice-enabled banking, fraud detection, and personalized financial coaching could help to reduce financial service hurdles. However, issues about data privacy, algorithmic bias, cybersecurity, and regulatory preparation remain significant challenges.

- *Research Gap*

Existing research has thoroughly explored FinTech, digital payments, and financial inclusion, but there is little study that combines Artificial Intelligence, FinTech, and rural digital banking adoption with longitudinal secondary data. Furthermore, standardized rural-level data on AI use are lacking. As a result, this report closes the gap by analyzing digital banking and financial inclusion trends from 2018 to 2025 using credible secondary data.

- *Need for the Study*

The rapid expansion of artificial intelligence, fintech, and digital banking is revolutionizing India's financial services sector. Rural communities can profit from these

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1089

technologies by having better access to banking, digital payments, credit, and other financial products. However, barriers such as digital illiteracy, insufficient internet connectivity, cybersecurity hazards, low knowledge, and a lack of trust may prevent effective adoption. As a result, there is a need for a thorough investigation into the relationship between FinTech development, AI-enabled banking, and financial inclusion in rural India. A secondary-data study can give evidence on long-term developments in digital banking and financial inclusion by relying on credible official sources. The findings can help regulators, banks, and FinTech companies provide accessible, inexpensive, and secure digital financial services for rural communities.

➢ *Objectives of the Study*

- Examine the development of FinTech and digital financial services in India.
- Examine the impact of digital payment systems, including UPI, on fostering financial inclusion.
- Evaluate the impact of AI on the accessibility, efficiency, and delivery of digital banking services.
- Investigate the correlation between digital banking usage and certain financial inclusion metrics in India.
- Identify main barriers for AI-enabled FinTech and digital banking uptake in rural areas.
- Propose effective methods to improve AI-enabled digital financial inclusion in rural India.

➢ *Scope of the Study*

The study focuses on how Artificial Intelligence (AI), Financial Technology (FinTech), and digital banking might help promote financial inclusion in rural India. It investigates the evolution and expansion of digital financial services such as UPI, mobile banking, internet banking, digital payments, banking infrastructure, and other technology-enabled financial services. The study also takes into account specific financial inclusion metrics such as bank account ownership, access to banking services, digital transactions, and the availability of financial infrastructure. AI-enabled services such as automated customer care, digital credit evaluation, fraud detection, and personalized financial services are highlighted as possible contributors. The analysis is entirely based on secondary data gathered from respectable sources such as the RBI, NPCI, Department of Financial Services, PMJDY, and World Bank. The findings are meant to be valuable to regulators, banks, FinTech companies, and other stakeholders.

➢ *Period of the Study*

The study spans the years 2018–2025. This time period was chosen to represent the tremendous growth of FinTech, digital payments, UPI, digital banking, and financial inclusion programs in India. The timeframe also gives enough data to examine patterns and correlations between digital financial development and financial inclusion. Where the most recent comparable data is available, information for 2025 will be added from official sources.

III. RESEARCH METHODOLOGY

The study uses a descriptive and analytical research design that relies exclusively on secondary data. Data for the period 2018-2025 are gathered from authoritative sources including the Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), Department of Financial Services, PMJDY, World Bank Global Findex, and Government of India papers. Key variables include UPI transactions, digital payments, bank accounts, rural banking infrastructure, and indications of financial inclusion. The acquired data is carefully sorted, processed, and presented using tables, bar charts, line graphs, and pie charts. Growth rate, CAGR, descriptive statistics, and correlation analysis are used to investigate the patterns and links between FinTech, digital banking, and financial inclusion.

➢ *Data Analysis and Interpretation*

The secondary data analysis can be provided using specific indicators of digital banking, FinTech adoption, and financial inclusion. The following tables are based on official data from the RBI, NPCI, and PMJDY. For publication purposes, it is preferable to isolate directly observed indicators from AI-related changes, as official annual statistics do not yet include a single standardized "AI adoption in rural banking" series.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1089

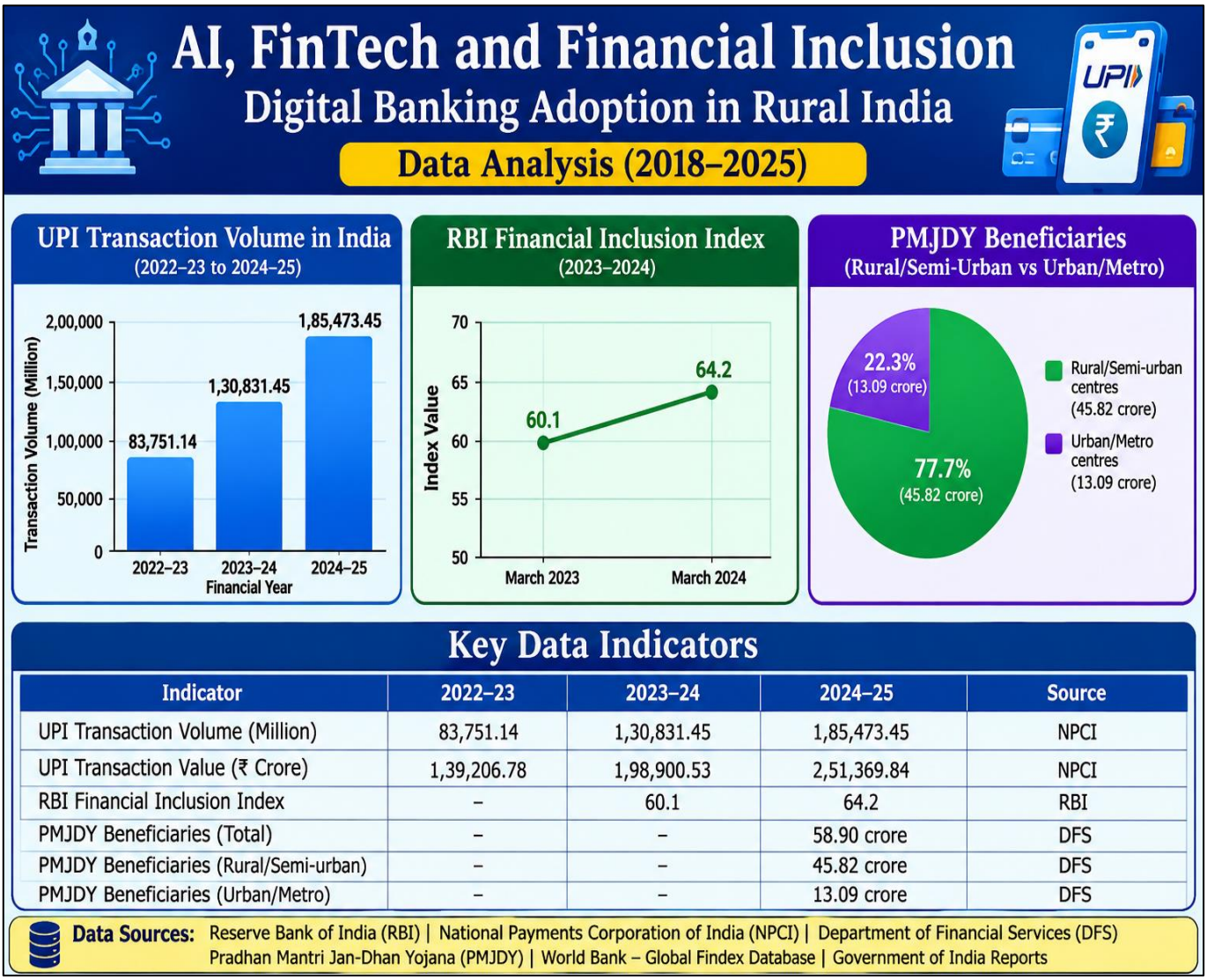

Fig 1 Data Analysis and Interpretation

- *UPI Transaction Volume*

The bar chart illustrates a significant increase in UPI transaction volume in India. UPI transactions rose from 83,751.14 million in 2022-23 to 1,30,831.45 million in 2023-24, and then to 1,85,473.45 million in 2024-25. This demonstrates the rapid growth of digital payment use and the increasing importance of UPI in India's FinTech ecosystem.

- *RBI Financial Inclusion Index*

The line graph shows an improvement in financial inclusion. The RBI Financial Inclusion Index rose from 60.1 in March 2023 to 64.2 in March 2024. The increase shows that financial services are becoming more accessible, available, and widely used. The increased trend also shows the ongoing expansion of digital and technology-enabled financial services.

- *PMJDY Beneficiaries*

According to the pie chart, 45.82 crore PMJDY beneficiaries resided in rural/semi-urban areas, compared to 13.09 crore in urban/metro centers. Rural/semi-urban beneficiaries accounted for around 77.7% of the total displayed in the chart, with urban/metro beneficiaries accounting for 22.3%. This demonstrates the financial inclusion programme's broad reach among rural and semi-urban populations.

- *Overall Interpretation*

Overall, the results show a favorable increase of digital financial services and financial inclusion in India. The quick increase of UPI transactions, the improvement in the Financial Inclusion Index, and significant rural/semi-urban involvement in PMJDY all indicate that formal and digital financial services are becoming more widely available. These developments lay a solid foundation for the future use of AI and FinTech technologies in rural banking, particularly in digital payments, fraud detection, customer assistance, and technology-enabled credit services.

IV. FINDINGS OF THE STUDY

The secondary data analysis of Artificial Intelligence, FinTech, and Financial Inclusion: An Empirical Study of Digital Banking Adoption in Rural India yielded the following key findings:

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1089

- UPI adoption has grown dramatically. UPI transaction volume grew from 83,751.14 million in 2022-23 to 1,85,473.45 million in 2024-25, demonstrating a significant expansion of digital payments.
- The UPI transaction value has also increased. The value of UPI transactions increased from ₹1,39,206.78 crore in 2022-23 to ₹2,51,369.84 crore in 2024-25, indicating increased reliance on digital payments.
- Financial inclusion has improved. The RBI Financial Inclusion Index increased from 60.1 in March 2023 to 64.2 in March 2024, indicating an improvement in overall financial inclusion.
- PMJDY has gained significant reach. The overall number of PMJDY beneficiaries was around 58.90 crore, reflecting the significant development of formal banking access.
- Rural and semi-urban areas have a significant number of PMJDY beneficiaries. Approximately 45.82 crore beneficiaries were from rural/semi-urban areas, emphasizing the relevance of financial inclusion measures for rural populations.
- Digital payments are becoming a crucial part of FinTech development. The fast expansion of UPI reflects the growing integration of technology into daily financial interactions.
- Digital banking has significant promise for promoting rural financial inclusion. Increased access to digital payments and official bank accounts can assist rural populations overcome geographical and accessibility limitations.
- AI holds significant possibilities for digital banking. AI-based technology can help with fraud detection, automated customer care, credit assessment, risk management, and personalized financial services.
- Expansion of digital financial services does not guaranty full inclusion. Digital literacy, internet connectivity, cybersecurity, customer awareness, and trust all play essential roles in effective adoption.
- FinTech and AI can help support government financial inclusion objectives. The use of digital infrastructure, formal bank accounts, and technology-enabled financial services can improve the delivery of financial services to underserved groups.
- Data show a positive correlation between digital financial development and financial inclusion. The simultaneous increase in digital payment activity and financial inclusion metrics demonstrates the expansion of the digital financial ecosystem.
- There is potential for more rural-focused AI adoption. While digital banking and FinTech indicators are expanding rapidly, consistent annual secondary data on AI deployment in rural banking remains scarce. As a result, AI's contribution should be carefully evaluated using accessible proxy indicators and official reports.

V. SUGGESTIONS

- Governments and financial institutions should enhance internet access, cell networks, and digital banking infrastructure in rural and distant locations.
- Regular training programs should educate rural customers on UPI, mobile banking, internet banking, and digital financial services.
- Banks and FinTech businesses could offer AI-powered services, including chatbots, automated support, fraud detection, and personalized financial advising in regional languages.
- Improve cybersecurity: Implement strong security solutions to safeguard rural customers from digital fraud, phishing, identity theft, and unauthorized transactions.
- AI can assess the creditworthiness of underserved clients, assuring transparency, fairness, and preventing algorithmic bias.
- Educate rural customers on the benefits, costs, interest rates, and risks of using digital lending services.
- Expand banking correspondents, micro-ATMs, and digital service centers to boost access in villages with limited traditional bank branches.
- To boost accessibility, AI-enabled banking apps should offer interfaces, voice assistance, and customer care in regional languages such as Telugu.
- Financial institutions should give clear information on transaction fees, privacy policies, grievance procedures, and responsible usage of digital financial services.
- The RBI, government agencies, banks, FinTech businesses, and local institutions should work together to create inexpensive and inclusive digital financial solutions.
- To increase participation, digital financial literacy and banking programs should target women, small farmers, rural enterprises, and low-income households.
- Improve rural data availability: Government agencies and financial institutions should regularly disclose thorough data on AI, FinTech, and digital banking to assist evidence-based research and policymaking.

VI. CONCLUSION

According to the survey, Artificial Intelligence, FinTech, and digital banking are becoming increasingly

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1089

crucial in India's financial inclusion efforts. Secondary data analyzed for the period 2018-2025 show a significant increase in digital financial services, particularly UPI transactions and formal banking access. The RBI Financial Inclusion Index rose from 60.1 in March 2023 to 64.2 in March 2024, indicating an overall improvement in financial inclusion. Similarly, the enormous number of PMJDY recipients, especially in rural and semi-urban areas, illustrates the growth of formal banking services in underserved communities.

The increasing use of UPI and other digital payment systems has increased the convenience, speed, and accessibility of financial transactions. Simultaneously, AI-enabled technologies provide further options for automated client help, fraud detection, risk management, digital credit evaluation, and personalized financial services. These technologies have the ability to eliminate obstacles to financial services while also improving rural banking efficiency.

However, technology alone cannot provide meaningful financial inclusion. Digital illiteracy, poor connectivity, cybersecurity threats, privacy concerns, a lack of information, and a lack of trust continue to pose problems, particularly in rural areas. As a result, digital infrastructure must be supported by financial literacy, consumer protection, and responsible technology use.

Overall, the study suggests that AI and FinTech can be key drivers of inclusive digital banking in rural India if they are supported by suitable legislation, safe infrastructure, regional-language services, and successful digital literacy programs. Continued collaboration between the government, RBI, banks, and FinTech firms is critical for developing a secure, inexpensive, accessible, and sustainable digital banking environment for rural people.

REFERENCES

[1]. Cnaan, R. A., Scott, M. L., Heist, H. D., & Moodithaya, M. S. (2021). Financial inclusion in the digital banking age: Lessons from rural India. *Journal of Social Policy, 50*(3), 608–626. https://doi.org/10.1017/S0047279420001501

[2]. Klapper, L. (2024). *Global Findex Database 2021: The role of digital financial services in financial inclusion*. World Bank. https://www.worldbank.org/en/publication/globalfindex

[3]. Ozili, P. K. (2024). *Financial inclusion and FinTech in India*. Munich Personal RePEc Archive. https://mpra.ub.uni-muenchen.de/121526/

[4]. Reserve Bank of India. (2024). *Report on trend and progress of banking in India 2023–24*. Reserve Bank of India. https://www.rbi.org.in/

[5]. Reserve Bank of India. (2024). *FinTech: The changing landscape*. *RBI Bulletin*. Reserve Bank of India. https://www.rbi.org.in/

[6]. National Payments Corporation of India. (2025). *UPI product statistics*. NPCI. https://www.npci.org.in/product/upi/product-statistics

[7]. Department of Financial Services, Ministry of Finance, Government of India. (2025). *Pradhan Mantri Jan-Dhan Yojana (PMJDY): Progress report*. Government of India. https://pmjdy.gov.in/

[8]. World Bank. (2025). *The Global Findex Database 2025: Financial inclusion, digital payments, and resilience in the age of digitalisation*. World Bank. https://www.worldbank.org/en/publication/globalfindex

[9]. World Bank. (2022). *The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19*. World Bank. https://www.worldbank.org/en/publication/globalfindex

[10]. Chavan, P., & Kamra, N. (2024). Financial inclusion in rural India: Evidence and policy perspectives. *Review of Rural Affairs*.