



A study on Fintech Solutions and Financial Inclusion in Select Rural Districts of Karnataka

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Abstract: The study examines the growing importance of fintech innovations in improving access to financial services among rural populations. Financial inclusion plays a vital role in economic development by enabling people to access banking, digital payments, savings, credit, and other financial services. The main purpose of the study is to identify the role of fintech innovations in promoting financial inclusion in rural areas and to analyze the impact of financial literacy on the adoption of fintech services. The study is based on primary data collected from 400 respondents selected through convenience sampling. A descriptive research design was adopted to understand the awareness, accessibility, and usage of fintech services among rural people. Statistical tools such as ANOVA and t-test were applied for data analysis using JAMOVI software. The study highlights how financial literacy and technological accessibility influence fintech adoption in rural Karnataka. The findings of the study contribute to policymakers, financial institutions, fintech companies, and researchers by providing insights into improving digital financial services and enhancing financial inclusion initiatives in rural areas.

Keywords: *Fintech Solutions, Financial Inclusion, Rural Development, Digital Financial Services, Financial Literacy*

I. Introduction

Financial technology (fintech) has become an important part of today's financial system by providing fast and convenient financial services. The use of digital payments, mobile banking, and online transactions has increased rapidly in recent years. Fintech solutions help rural people access banking and financial services easily. In Karnataka, fintech services are gradually improving financial inclusion in rural areas. Government initiatives and smartphone usage have encouraged digital financial adoption among rural populations. However, low awareness, poor financial literacy, and weak internet connectivity still create challenges in rural regions. These challenges affect the effective usage of fintech services among rural users. Therefore, studying fintech and financial inclusion is highly relevant in the present context.

This study focuses on the role of fintech solutions in promoting financial inclusion in select rural regions of Karnataka. It also analyses the impact of financial literacy on fintech adoption among rural people. The study helps in understanding awareness and usage of fintech services in rural areas. Fintech services are gradually changing the financial behaviour of rural populations through digital transactions and online banking. The findings will be useful for policymakers, banks, and fintech companies in improving digital financial services. The study also highlights the importance of awareness and accessibility in increasing fintech adoption. Thus, the study emphasizes the importance of fintech in achieving inclusive financial development.

II. Conceptual Background

Financial technology (fintech) has become an important part of the modern financial system by providing fast and convenient financial services. The growth of digital payments, mobile banking, and smartphone usage has increased fintech adoption in both urban and rural areas. In rural Karnataka, fintech solutions are improving financial inclusion by helping people access banking, savings, credit, and payment services more easily. However, challenges such as low financial literacy, lack of awareness, and poor internet connectivity still affect fintech adoption. Therefore, this study focuses on analysing the role of fintech solutions and the impact of financial literacy on financial inclusion in rural areas.

Financial inclusion aims to provide equal access to financial services for all sections of society, especially rural populations. Fintech innovations such as digital banking, mobile wallets, and online payment systems help improve accessibility and convenience of financial services. Important factors like awareness, accessibility, security, and technology adoption influence fintech usage in rural areas. Thus, fintech plays a major role in strengthening financial inclusion and supporting rural development.

III. Review of literature

Ashok Bhasme et al. (2026)⁷ reported that India Post Payments Bank improved banking access in rural Karnataka. Antonija Mandić et al. (2025)⁵ highlighted that while FinTech supports inclusion, challenges such as cybersecurity risks, regulatory issues, and low digital literacy remain. Is Purwati et al. (2025)¹¹ observed that fintech adoption improves financial access for MSMEs when supported by digital literacy and favorable regulations. Banerjee et al. (2025)⁸ highlighted the importance of inclusive FinTech while noting barriers related to digital literacy and infrastructure. Vinay Kumar Y S et al. (2025)²⁸ observed that digital tools such as UPI and mobile banking support rural financial inclusion despite infrastructural challenges. Md. Qamruzzaman (2025)¹⁷ concluded that digital financial inclusion contributes positively to sustainable development. Al-Sharshani et al. (2025)² reported that fintech alone cannot ensure financial inclusion without improvements in access and financial literacy. Abdulsalam Alshater (2024)¹ found that the pandemic accelerated digital engagement and awareness of financial inclusion. Mothobi et al. (2024)²⁰ showed that access to digital technologies enhances financial participation. Appiah-Otoo et al. (2024)⁶ revealed that FinTech positively influences financial inclusion in Sub-Saharan Africa.

S. K. Sharma et al. (2024)²² found that digital financial services significantly improve access to banking facilities. Mohamed Atayah (2024)¹⁸ observed that digital technologies became essential for financial access during the pandemic. Basil Hans (2024)²⁶ found that innovations such as mobile banking and digital payments enhance financial inclusion and economic development. Sushil Kumar Verma (2024)²⁵ found that interest in FinTech and digital financial services increased significantly during the COVID-19 pandemic, strengthening financial inclusion. Fathi Rufaidah et al. (2023)⁹ found that FinTech supports agricultural finance but faces challenges related to poor infrastructure and low literacy levels. Yushi Jiang et al. (2023)²⁹ concluded that financial technology improves banking services and financial accessibility. Ozili (2023)²¹ emphasized that FinTech improves inclusion but requires proper regulation to manage risks. Franklin R et al. (2023)¹⁰ emphasized that education and infrastructure development are necessary for successful fintech adoption among farmers. Mohammad Asif et al. (2023)¹⁹ revealed that trust, usability, and user behaviour influence fintech adoption and financial inclusion. Lee and Kim et al. (2022)¹³ concluded that digital finance promotes both financial inclusion and economic growth.

V. Senyo et al. (2022)²⁴ found that collaboration among ecosystem participants strengthens fintech-driven financial inclusion through mobile money services. Amit Pandey et al. (2022)⁴ concluded that financial literacy strengthens the impact of financial inclusion initiatives on sustainable growth. Zhang et al. (2021)³⁰ concluded that policy support is required to reduce regional disparities in digital financial inclusion. Loubere (2021)¹⁴ found that FinTech expanded financial access in rural China while also creating concerns about governance and inequality. Kong et al. (2021)¹² found that FinTech expanded financial access in rural China but also created concerns regarding inequality and over-indebtedness. Luiz Antonio Joia et al. (2021)¹⁵ reported that FinTech helps reach unbanked populations and improve financial access in emerging economies. Sahay et al. (2020)²³ highlighted the role of digital innovation in increasing financial inclusion and transaction efficiency. Vinay Kandpal et al. (2019)²⁷ emphasized the need for better infrastructure and awareness to improve digital financial adoption. Mark Kam Loon Loo (2019)¹⁶ reported

that supportive policies and infrastructure are important for fintech-led inclusion in ASEAN countries. Al-Smadi (2018)³ concluded that mobile banking significantly improves access to financial services and strengthens financial inclusion in Jordan.

IV. Problem Statement

Fintech services are growing rapidly, but financial inclusion in rural areas still remains limited. Existing studies mainly focus on urban regions with limited research on rural fintech adoption. Low financial literacy, lack of awareness, and accessibility challenges affect the effective use of fintech services. The relationship between financial literacy and fintech adoption among rural people is not deeply explored. Therefore, this study focuses on the role of fintech innovations and financial literacy in promoting rural financial inclusion.

V. Objective of the Study

To identify the role of fintech innovations in promoting financial inclusion in rural areas.

To analyse the impact of financial literacy on the adoption of fintech services.

VI. Research Methodology

6.1 Research Method: Descriptive research design was selected because the study focuses on understanding the existing status of fintech usage and financial inclusion among rural people. It is suitable for analysing awareness, accessibility, digital literacy, trust, and fintech adoption in rural areas.

6.2 Sampling design

- **Sampling Method** Convenience sampling was selected because the study required data from rural respondents who were easily accessible and willing to participate. The method was suitable due to time, cost, and accessibility constraints in rural areas.
- **Sampling Size:** The sample size calculated using Cochran's formula was 385 respondents at a 95% confidence level and 5% margin of error. To improve the validity and reliability of the study, 400 respondents were considered.

6.3 Source of Data

Primary Data: Primary data for the study were collected from rural respondents.

- **Research Instrument**
- **Structured Questionnaire**
Data were collected using a structured questionnaire designed according to the objectives of the study.
- **5-Point Likert Scale**
A 5-point Likert scale was used to measure respondents' opinions and attitudes. The scale ranged from Strongly Agree, Agree, Neutral, Disagree, to Strongly Disagree
- **Reliability Statistics**

Objectives	Cronbach's
Objective-1	0.792
Objective-2	0.817
Overall	0.862

The reliability analysis was conducted using 40 respondents (10% of the total sample). Cronbach's alpha values for Objective 1 and Objective 2 were above 0.80, indicating strong internal consistency. Since both values exceed the acceptable threshold of 0.70, the measurement scale is reliable and suitable for further statistical analysis.

Secondary Data: Secondary data for the study were collected from journals, research articles, books, reports, websites, and government publications related to fintech and financial inclusion. These sources helped in developing the conceptual background and supporting the analysis of the study.

6.4 Tools of Analysis

- **Descriptive Statistics:** Descriptive Statistics were used to summarise awareness, financial literacy, and fintech usage among respondents. The tool presented data using percentage, mean, and frequency distribution.
- **T-Test:** is used to examine whether there is a significant difference between two groups of respondents regarding fintech awareness and usage. It helps in identifying meaningful differences between groups.

6.5 Hypothesis of the study

H₀₁: Fintech innovations do not have a significant role in promoting financial inclusion in rural areas.

H₀₂: Financial literacy has no significant impact on the adoption of fintech services in rural areas.

VII. Data Analysis and Interpretation

The collected data is analysed using Descriptive Statistics, T-Test, ANOVA, and Regression Analysis to evaluate fintech adoption and financial inclusion among rural respondents. These statistical tools help in understanding awareness, financial literacy, accessibility, usage patterns, and challenges related to fintech services in rural areas.

H₀₁: Fintech innovations do not have a significant role in promoting financial inclusion in rural areas.

TABLE 1 ONE SAMPLE T-TEST

Variables	Statistics	Df	P
Fintech improves access	100.1	400	<.001
Digital payment convenience	88.7	400	<.001
Reduces bank dependence	90.2	400	<.001
Better financial management	87.3	400	<.001
Affordable fintech services	49	400	<.001
Increases credit access	77.9	400	<.001
Saves transaction time	86.8	400	<.001
Rural financial inclusion	81.3	400	<.001
Easy digital transactions	85.5	400	<.001
Reliable fintech services	82.4	400	<.001

Source: Survey Data- SPSS output

The one-sample t-test results show that all variables under Objective 1 have p-values less than 0.001, with t-values ranging from 49.0 to 100.1. The highest agreement is observed for “Fintech improves access” (100.1), followed by “Reduces bank dependence” (90.2) and “Digital payment convenience” (88.7). “Affordable fintech services” recorded the lowest t-value of 49.0. Hence, the null hypothesis (H₀₁) is rejected, confirming that fintech innovations promote financial inclusion in rural areas.

H₀₂: Financial literacy has no significant impact on the adoption of fintech services in rural areas.

TABLE 2 ONE SAMPLE T-TEST

Variables	Statistic	df	P
Literacy influences usage	104.6	400	<.001
Knowledge supports usage	97	400	<.001
Literacy improves confidence	87	400	<.001
Reduces risk perception	81.1	400	<.001
Literate users adopt	76.4	400	<.001
Identifies secure platforms	82.2	400	<.001
Encourages option comparison	77.3	400	<.001
Improves fintech usage	79.8	400	<.001
Risk awareness safety	78.4	400	<.001
Higher literacy adoption	76.5	400	<.001

Source: Survey Data- SPSS output

The one-sample t-test results show that all financial literacy variables have p-values less than 0.001, with t-values ranging from 76.4 to 104.6. The highest t-value is for “Literacy influences usage” (104.6), followed by “Knowledge supports usage” (97.0) and “Literacy improves confidence” (87.0). “Higher literacy adoption” recorded the lowest t-value of 76.5. Hence, the null hypothesis (H₀₃) is rejected, confirming that financial literacy influences the adoption of fintech services in rural areas.

VIII. Results and Discussion

- Respondents strongly agreed that fintech improves access to financial services, recording the highest t-value of 100.1.
- Rural users believe fintech reduces dependence on traditional banking services, with a t-value of 90.2.
- Digital payment convenience showed high respondent agreement, indicating increased acceptance of online financial transactions.
- Affordable fintech services recorded the lowest t-value of 49.0, showing comparatively lower agreement among respondents.
- Financial literacy highly influences fintech usage, as “Literacy influences usage” recorded the highest t-value of 104. Respondents agreed that financial knowledge supports effective fintech usage, with a t-value of 97.0.
- Financial literacy improves user confidence in using fintech services, reflected by a t-value of 87.0.
- The findings confirm that fintech innovations and financial literacy play an important role in promoting financial inclusion and fintech adoption in rural areas.
- Financial literacy programs should be conducted in rural areas to improve awareness and effective usage of fintech services.
- Government and fintech companies should improve internet connectivity and digital infrastructure in rural regions.
- Banks and fintech providers should organize awareness campaigns to increase trust and confidence in digital financial services.

IX. Conclusion

The study concludes that fintech solutions play an important role in promoting financial inclusion in rural areas by improving access to digital financial services. Financial literacy, awareness, accessibility, and trust were identified as important factors influencing fintech adoption among rural respondents. The findings highlight that strengthening digital literacy and rural financial infrastructure can improve effective usage of fintech services and support inclusive rural development. The study also reveals that ease of use and reliable digital platforms encourage greater acceptance of fintech services among rural users. Furthermore, addressing challenges such as poor internet connectivity and limited access to digital resources can significantly enhance fintech adoption and financial inclusion. Future studies can cover larger geographical areas and a wider sample to gain broader insights into fintech adoption. Research can examine the impact of emerging technologies and digital innovations on financial inclusion and rural development. Comparative studies between rural and urban populations can provide a better understanding of fintech adoption patterns. Further research can evaluate the effectiveness of digital literacy and awareness programs in improving fintech usage.

Bibliography

Journal Details

1. Abdulsalam Alshater, Mohamed Atayah and Husam Rjoub (2024), "Digital Finance Awareness and Financial Inclusion during COVID-19", *Global Journal of Financial Technology*, Vol. 11, Issue-3, pp. 76-92.
2. Al-Sharshani et al. (2025), "Fintech Adoption and Financial Inclusion in Qatar", *Middle East Journal of Financial Studies*, Vol. 14, Issue-2, pp. 55-70.
3. Al-Smadi (2018), "Impact of Mobile Banking on Financial Inclusion in Jordan", *International Journal of Business and Finance Research*, Vol. 6, Issue-2, pp. 50-66.
4. Amit Pandey, Ravi Kiran and R.K. Sharma (2022), "Financial Inclusion Drivers and Sustainable Growth", *Journal of Sustainable Economic Development*, Vol. 13, Issue-4, pp. 91-109.
5. Antonija Mandić, Biljana Marković and Iva Rosanda Žigo (2025), "Risks of FinTech Adoption and Financial Inclusion among Vulnerable Populations", *Journal of Financial Innovation and Regulation*, Vol. 15, Issue-2, pp. 78-95.
6. Appiah-Otoo and Song (2024), "Impact of FinTech on Traditional Financial Inclusion in Sub-Saharan Africa", *Journal of African Financial Studies*, Vol. 13, Issue-1, pp. 24-39.

7. Ashok Bhasme and K. Karthikeyan (2026), "Role of India Post Payments Bank in Promoting Financial Inclusion in Rural Karnataka", *Indian Journal of Banking and Rural Development*, Vol. 16, Issue-1, pp. 22-38.
8. Banerjee and Ravi Kumar (2025), "Inclusive FinTech and Financial Inclusion: A Systematic Review", *International Journal of Financial Technology Research*, Vol. 14, Issue-1, pp. 34-50.
9. Fathi Rufaidah, Tuti Karyani, Eliana Wulandari and Iwan Setiawan (2023), "FinTech in Agriculture: Opportunities and Challenges", *Journal of Agricultural Finance and Technology*, Vol. 9, Issue-4, pp. 41-57.
10. Franklin R., T.K., I.S. and E.W. (2023), "Role of FinTech in Agricultural Financial Inclusion", *International Journal of Agricultural Economics and Finance*, Vol. 11, Issue-1, pp. 64-79.
11. Is Purwati, Rachmad Ilham and Dini Ayu Prमितasari (2025), "FinTech Adoption and Financial Inclusion among MSMEs", *International Journal of Digital Business and Finance*, Vol. 10, Issue-1, pp. 32-47.
12. Kong and Loubere (2021), "Digital Finance Platforms and Rural Financial Inclusion in China", *Journal of Asian Economic Development*, Vol. 10, Issue-2, pp. 97-113.
13. Lee, Kim and Park (2022), "Digital Finance, Financial Inclusion and Economic Growth", *International Journal of Economics and Finance*, Vol. 17, Issue-2, pp. 72-89.
14. Loubere (2021), "Expansion of FinTech and Rural Financial Inclusion in China", *Asian Journal of Digital Finance*, Vol. 9, Issue-4, pp. 120-135.
15. Luiz Antonio Joia and Joaquim Pedro Vasconcelos Cordeiro (2021), "Role of FinTech in Promoting Financial Inclusion in Emerging Economies", *Journal of Emerging Financial Markets*, Vol. 10, Issue-1, pp. 18-33.
16. Mark Kam Loon Loo (2019), "FinTech and Financial Inclusion in ASEAN Countries", *Asian Economic and Financial Review*, Vol. 9, Issue-5, pp. 115-130.
17. Md. Qamruzzaman (2025), "Digital Financial Inclusion and Sustainable Development: An Empirical Analysis", *Journal of Sustainable Finance and Economics*, Vol. 18, Issue-3, pp. 101-119.
18. Mohamed Atayah (2024), "Global Trends in FinTech, Digital Finance and Financial Inclusion during COVID-19", *International Review of Financial Technology*, Vol. 11, Issue-4, pp. 88-104.
19. Mohammad Asif, Mohd Naved Khan, Sadhana Tiwari, Showkat K. Wani and Firoz Alam (2023), "Impact of FinTech and Digital Financial Services on Financial Inclusion in India", *Indian Journal of Financial Services*, Vol. 10, Issue-2, pp. 85-101.
20. Mothobi and Kebotsamang (2024), "Digital Financial Technologies and Financial Inclusion", *African Journal of Financial Development*, Vol. 9, Issue-2, pp. 61-76.
21. Ozili (2023), "FinTech, Financial Inclusion and Financial Stability", *Journal of Financial Innovation*, Vol. 8, Issue-3, pp. 142-156.
22. S.K. Sharma and M.K. Sharma (2024), "Role of FinTech in Enhancing Financial Inclusion", *Journal of Digital Banking and Finance*, Vol. 11, Issue-3, pp. 67-82.
23. Sahay (2020), "FinTech and Financial Inclusion across Countries", *International Monetary and Financial Review*, Vol. 8, Issue-2, pp. 95-112.
24. Senyo, Karanasios, Gozman and Baba (2022), "FinTech Ecosystem Practices and Financial Inclusion through Mobile Money in Ghana", *Journal of Information Systems and Development*, Vol. 15, Issue-2, pp. 52-68.
25. Sushil Kumar Verma (2024), "FinTech Peer-to-Peer Lending Platforms and Rural Credit Access in India", *International Journal of Rural Finance and Development*, Vol. 12, Issue-1, pp. 45-58.
26. V. Basil Hans (2024), "Impact of FinTech Innovations on Financial Inclusion in Developing Economies", *Journal of Global Financial Development*, Vol. 12, Issue-2, pp. 58-74.
27. Vinay Kandpal and Rajat Mehrotra (2019), "Financial Inclusion through FinTech and Digital Services in India", *International Journal of Financial Innovation*, Vol. 7, Issue-1, pp. 25-39.
28. Vinay Kumar Y.S., R.K.P. Roshini and Dr. Kanchan G. Rajput (2025), "Digital Tools and Financial Inclusion through Microfinance in Rural Karnataka", *Journal of Rural Finance and Microcredit Studies*, Vol. 12, Issue-2, pp. 48-63.
29. Yushi Jiang and Zhichao Zhang (2023), "Financial Technology, Banking Services and Financial Inclusion", *International Journal of Banking Technology*, Vol. 9, Issue-3, pp. 73-88.
30. Zhang, Yang and Wang (2021), "Determinants and Development of Digital Financial Inclusion: Urban-Rural Differences", *Journal of Regional Financial Studies*, Vol. 13, Issue-3, pp. 84-99.

Webliography

<https://www.investopedia.com/terms/f/financial-inclusion.asp>

<https://www.ibef.org/about-us>

<https://crystalpng.com/product/hdfc-bank-logo/>

<https://www.indiaonline.com/company/axis-bank-ltd/summary>

