

Role of Digital Payments in Advancing Financial Inclusion among Rural and Semi-Urban Populations in India

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Abstract: Digital payments are increasingly emerging as a powerful driver of financial inclusion in financial services that are accessed outside the formal banking system by those who are under-served. The purpose of this study is to explore the development and enhancement of financial inclusion with the implementation of digital financial service among rural and semi-urban population of India and the barriers faced while availing the financial service. The research design employed is quantitative and the data collected are from respondents of 150 who are given structured questionnaires. Descriptive statistics and regression analysis were used to analyse the data. The results show that the digital payment services have a high positive effect on financial inclusion and increase access to banks and financial services. It also revealed that digital illiteracy, poor infrastructure, connectivity, security are major factors that affect the acceptance and utilization of digital payment technologies. The study calls for further progress in the creation of digital infrastructure and financial literacy to enhance inclusive and sustainable economic development in rural and semi-urban areas of India.

Keywords: Digital Payments, Financial Inclusion, Rural Population, Semi-Urban Areas, Mobile Banking, UPI, FinTech.

1. INTRODUCTION

Financial inclusion serves as a crucial dimension of economic development, which enables individuals and households to benefit from basic financial services, manage risks and plan for the future. (Morgan, 2022) Despite its importance, financial exclusion continues to be a pervasive and serious problem in rural India, where many individuals remain unbanked and unable to access formal financial services (Asif, et al., 2023). Around 48% of India's adult population is not banked and this is more prevalent in rural areas. "The Third Plenary Session of the 18th Central Committee of the Communist Party of China (CPC) officially introduced the idea of digital finance" and identified the advancement of digital inclusive finance as a crucial endeavour to enhance the financial market system (Bala, & Singhal, 2022).

The introduction of FinTech, which provides digital and mobile financial services, has opened up the possibility of revolutionizing the situation to solve this imbalance (Raj & Upadhyay, 2020). FinTech' is a term derived from financial technology, which is the use of technology to improve, automate and transform financial service providers (Goswami, et al., 2022). With the use of technology to deliver financial services, FinTech has become a possible solution to the financial exclusion in rural India. The convergence of technology and finance has shown exponential growth as it promises to improve financial service access, especially for historically excluded or marginalised people (Jena, 2025).

FinTech companies in India are gaining importance as the Government of India continuously strives to provide financial services to the underbanked populace (Mehrotra, 2019). Digital technology is now the key enabling force for financial inclusion, whether it is providing “access to financial services or driving economic growth. Improving financial inclusion” is a key priority for India to tap into underbanked pockets and build a robust footing for fintech companies (Mittal, et al., 2023).

1.1 Accessibility and Affordability of Mobile Banking for Financial Inclusion

Mobile banking platforms have had a huge impact on financial inclusion, particularly in regions where traditional banking networks are less developed (Agrawal & Jain, 2019). Mobile banking offers great convenience by letting people make financial transactions on the spot using their mobile devices. This has proven beneficial for people in rural and remote areas where it is difficult to get to a physical bank branch (Barik & Sharma, 2019). While mobile banking may overcome the barriers of geography, it can help to increase participation in “the formal financial system, such as access to savings accounts, credit and insurance products” (Durai, & Stella, 2019).

Moreover, reduced operational costs associated with mobile banking significantly enhance financial inclusion. Mobile banking services are cost-effective in comparison to conventional banking models, where financial institutions can deliver cost-effective banking services to the untouched population (Ghosh & Hom Chaudhury, 2022). The cost-cutting helps remove barriers such as high transaction charges and minimum account balance requirements, making banking services available to low-income families (Kandpal & Mehrotra, 2019). Persons with irregular work or informal employment have an option to manage their finances as per their convenience with the continuous availability of mobile banking systems (Patel, et al., 2023).

1.2 Mobile Banking, Financial Literacy, and Challenges to Inclusive Finance

Mobile banking is a key tool for promoting financial inclusion in terms of its user-friendliness and ease of use. While traditional banking systems may require intricate documentation and procedures, mobile banking apps are generally designed with intuitive interfaces, making it easier to navigate. (2019). These streamlined processes encourage greater usage of financial services, particularly by people who are new to them or do not have much experience with formal financial institutions. As a result, mobile banking has the potential to improve financial literacy and increase financial inclusion (Siddik, & Kabiraj, S. 2019).

Additionally, mobile banking apps frequently include financial education features that help users understand budgeting, saving, borrowing, and other personal finance aspects (Suresh & Sriwastaw, 2024). These embedded aspects in the literacy support consumers in making informed financial decisions and increase their interaction with formal financial services (Vyas & Jain, 2021). However, financial exclusion continues to be hindered by challenges including the digital divide, cybersecurity concerns and regulatory constraints. It emphasized that mobile banking need to be complemented with supportive government policies, development of digital infrastructure, and public-private partnerships to ensure financial access for all the sections of society, while addressing the issue of equity and sustainability in financial access (PRABHAKAR, 2024).

The objective of the study is to explore the contribution of digital payment methods to financial inclusion in the rural and semi-urban communities of India. The study aims to understand the impact of digital payment systems like “UPI, mobile banking, digital wallets and Aadhaar enabled payment systems on the accessibility of formal financial services, financial participation and economic empowerment of the financially under-served population”. It also seeks to highlight opportunities and obstacles related to the use of digital payments to enhance inclusive financial development.

2. REVIEW OF LITERATURE

Behara, N. (2026) noted that in rural areas of India, traditional banking infrastructure was limited, and digital payments have significantly changed the landscape of financial inclusion. The study aimed at providing insights on the costs and benefits of digital payments and extent of financial inclusion from digital payment systems. It aimed to evaluate the financial access and the effects of UPI, mobile wallets and Aadhaar-based payment on financial saving, credit availability and economic empowerment. The literature review and information obtained from the government, field study, and case studies showed that digital payments are a facilitator of financial inclusion despite the challenges. It found that it was necessary to have more robust infrastructure, digital literacy and specific policy interventions.

Akhtar, S. J., & NP, A. A. (2025) explored the significance of “Unified Payments Interface (UPI) in enhancing financial inclusion and bridging the digital divide in rural India. The objective of the study was to find out the factors affecting the adoption of UPI by the users of the rural areas”. It was aimed to test the likelihood of the use of UPI with the socio-economic and demographic characteristics. The researchers used primary information gathered in the rural part of Aligarh district and then processed the information using logistic regression analysis. The findings revealed that age, gender, education and occupation-income were significant factors for the adoption of UPI. The results indicate that specific awareness and financial literacy campaigns can help enhance the use of UPI and financial inclusion.

Banerjee, S. (2025) noted that Digital Financial Services (DFS) is increasingly contributing to the improvement of financial inclusion among various socio-economic groups in India. The study set two objectives: (1) to understand the adoption of DFS and their contribution to narrowing financial access gaps and (2) to analyse the scope of the influence. The aim was to evaluate the use, obstacles, facilitators, and socio-demographic predictors of adoption and satisfaction. Data were collected using a structured survey and were analysed using descriptive statistics, ANOVA and Chi square tests with 420 respondents from urban, semi-urban and rural areas of Maharashtra. The results revealed that income, education and digital literacy had significant impact on the use of the DFS. The study found that it was critical to build digital skills and infrastructure for successful financial inclusion.

Gupta, P. (2025) studied the role of Mobile Banking for financial inclusion of unbanked people in rural India. The objective of the study was to evaluate the impact of mobile banking on increased access to affordable and reliable financial services and inclusive growth. The aim was to consider its impact on financial inclusion, poverty alleviation, entrepreneurship and women empowerment. Using secondary data and case analysis, the study investigated the impact of mobile financial services in rural contexts. The results showed that mobile banking had a positive impact on financial participation and access. The study found that mobile banking was effective in creating sustainable financial inclusion.

Mula, K. (2025) noted that financial inclusion remains a major problem in the world, particularly for the unbanked, and emphasized the need for greater insights into the barriers. This study aims to explore the potential of the digital payment technologies in relation to better access to financial services and inclusive financial systems. The objective was to gain insights into the innovative payment solutions such as mobile banking, digital wallets, and UPI and its influence on financial inclusion. The study identified that these technologies had a notable impact on improving financial access, through a descriptive and analytical review of digital payment initiatives across the world. The study found that a combination of government, financial institutions, and technology providers was critical for fostering sustainable and inclusive financial ecosystems.

Tejasmayee et al. (2025) emphasized the role of financial technology, financial literacy, and financial inclusion in achieving rural development and eradicating poverty in India. The study was conducted to understand the effect of financial inclusion with the post offices and India Post Payment banks and RRB's on the economic development of rural areas. The objective was to assess their contribution to rural growth. Sixty five hundred valid responses were collected from rural youth of eastern UP and analysed using PLS-SEM 4.0 with the help of a structured questionnaire. The results indicated that financial inclusion had a positive effect on the economic development of the rural area. The study found that awareness campaigns have the potential to improve the adoption of technology and financial inclusion.

Johari, A. (2024) explored the digital financial inclusion and the adoption of Unified Payments Interface (UPI) among rural masses of Uttar Pradesh. The study sought to explore the role of UPI and digital banking technologies in augmenting financial inclusion in the backdrop of financial and digital divides. The aim was to address the role of digital literacy and financial technology in enhancing participation in formal economy. Qualitative Semi-structured interviews with respondents from the rural areas of Bareilly and thematic analysis showed that digital skills had a significant impact on the adoption of UPI and financial inclusion. The study concluded that financial and digital exclusion are potentially reduced through the use of technology and education.

Yadav et al. (2024) analysed the increasing trend of rural residents and urban residents using digital payments. The study was conducted to examine factors that affect the use of digital payment and how it impact users' behavioural intentions. The goal was to determine the effects of perceived usefulness, compatibility, performance expectancy, transaction speed, trust, facilitating conditions, and operational constraints. “Data were analysed using Confirmatory Factor Analysis (CFA), Structural Equation Modelling (SEM) and multi-group analysis using an online survey of 557 respondents”. These factors had a strong impact on the findings of behavioural intentions. The study found that there were behavioural differences between rural and urban users.

2.1 Research Gap

While prior studies have demonstrated the transformative role of digital payment systems and digital financial services in improving financial inclusion and enhancing the economic development of rural areas (Johari, 2024; Akhtar & NP, 2025; Behara, 2026), many have concentrated on a specific region, platform, or user segment. The existing literature also shows that there are barriers like digital illiteracy, lack of infrastructure and trust issues in adopting digital payment systems (Yadav et al., 2024; Banerjee, 2025; Gupta, 2025). There has been however, only limited studies that explored the relationship between the use of digital payment services and financial inclusion and the influence of difficulties and barriers on digital payment technology utilization by rural and semi-urban population in India. The present study thus aims to fill this gap by empirically examining both relationships in one study.

3. RESEARCH OBJECTIVES

1. To assess the impact of digital payment services on financial inclusion in terms of access to banking and financial services among rural and semi-urban residents.
2. To analyse the challenges and barriers faced by rural and semi-urban populations in using digital payment technologies.

4. RESEARCH HYPOTHESIS

H1: Digital payment services usage has a significant positive impact on financial inclusion among rural and semi-urban residents.

H2: Challenges and barriers significantly influence the adoption and usage of digital payment technologies among rural and semi-urban populations.

5. RESEARCH METHODOLOGY

The present study uses a quantitative research methodology to explore the financial inclusion and role of digital payments in the rural and semi urban population of India. The study adopted descriptive and analytical research design. The study includes all semi-urban and rural areas in India and covers adult population (18 years and above) who have a bank account and have access or experience with digital payment services. Stratified random sampling method has been adopted and 150 participants have been taken into consideration. Data have been gathered from both primary and secondary sources and the main instrument of primary sources used is structured questionnaire. Both the independent variables of the study were Digital Payment Services Usage and Challenges and Barriers and the dependent variables were Financial Inclusion and Usage of Digital Payment Technologies. The data has been analysed using MS Excel and SPSS Version 27 and statistical techniques like Mean, Standard Deviation, and Regression Analysis have been used to understand the relationship between the study variables.

6. RESULTS

6.1 Results based on demographic variables

S. No.	Demographic Variables	Category	N	%
1	Gender	Male	82	54.7
		Female	68	45.3
2	Age Group (Years)	18–25 Years	38	25.3
		26–35 Years	44	29.3
		36–45 Years	37	24.7
		Above 45 Years	31	20.7
3	Area of Residence	Rural	84	56.0
		Semi-Urban	66	44.0
4	Occupation	Agriculture/Farming	42	28.0
		Self-Employed/Business	39	26.0
		Salaried Employee	36	24.0
		Others	33	22.0
5	Experience in Using Digital Payment Services	Less than 1 Year	35	23.3
		1–3 Years	48	32.0
		4–6 Years	39	26.0
		More than 6 Years	28	18.7

The demographic profile of the respondents table 1 shows that majority were male (54.7%) with 45.3% being female (68). “As far as age distribution is concerned, the respondents ranged between 18 and 45 years with the highest proportion being in the age group 26–35 years (29.3%), followed by the age group 18–25 years (25.3%), the age group 36–45 years (24.7%) and the age group above 45 years (20.7%). Among the respondents, more (56.0%) were from rural areas than were from semi-urban areas (44.0%), which are the focus of the study and therefore reflect the digitally inclusive populations of the rural areas. Agriculture/farming is the most represented class (28.0%), followed by self-employed/business (26.0%), salaried employee (24.0%) and others (22.0%). When it comes to experience with digital payment services, the majority of respondents (32.0%) indicated that it had 1–3 years of experience, with 26.0% of respondents claiming to have 4–6 years of experience, 23.3% having less than one year of experience, and 18.7% having more than six years of experience. Overall, the sample is a representative cross section of rural and semi-urban adults with different levels of exposure to and usage of digital payment technologies, which is appropriate to study the effect of these technologies on financial inclusion” and challenges faced in adoption.

6.2 Results based on Objectives

Table 2: Regression Table

Hypothesis	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Hypothesis Result
H1	Digital Payment Services Usage > Financial Inclusion	.072	.151	26.386	5.137	.000	Supported

The regression result table 2 shows “that Digital Payment Services Usage has a significant positive impact on Financial Inclusion among the rural and semi-urban inhabitants. The model accounts for 15.1% of the variance in financial inclusion ($R^2 = 0.151$), indicating that digital payment usage has a significant impact on improving financial inclusion. The beta coefficient ($\beta = 0.072$) suggests that there is a positive correlation between the variables, and the F value of 26.386 confirms that the regression model is statistically significant. In addition, the t-value of 5.137 and p-value of 0.000 ($p < 0.05$) show that the effect of the usage of digital payment services on financial inclusion is statistically significant. Thus, the hypothesis H1 is accepted”, and it is concluded that the use of digital payment services is a key determinant to enhance the financial inclusion of rural and semi-urban people.

Table 3: Regression Table

Hypothesis	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Hypothesis Result
H2	Challenges and Barriers > Usage of Digital Payment Technologies	.324	.105	17.411	4.173	0.000	Supported

The results of the regression analysis table 3 show that “Challenges and Barriers significantly influence the Usage of Digital Payment Technologies by rural and semi-urban people. The model accounts for 10.5% of the total variance in usage of digital payment technology ($R^2 = 0.105$) which shows that the challenges and barriers are crucial in shaping the adoption and usage. The correlation value of beta coefficient (0.324) indicates that the relationship between the variables is substantial. The F-value of 17.411 shows that the regression model is statistically significant and the t-value of 4.173 with p-value of 0.000 ($p < 0.05$) indicates that the effect is significant”. The results of this study have shown that the challenges and barriers have a significant impact on the adoption and use of digital payment technologies among the rural and semi-urban population. So, it concludes that Hypothesis H2 is confirmed.

7. DISCUSSION

The study's results suggest that digital payment has contributed greatly towards the financial inclusion of rural/semi-urban people in India (Kumar, 2025). “The shift to mobile banking, Unified Payments Interface (UPI), digital wallets, and online banking has made formal financial services more accessible, especially for the population that is previously excluded from traditional financial services” (Kamal, et al., 2025). Digital payment platforms have contributed to smooth, secure, and efficient payments, minimizing the use of cash and improving access to the formal financial sector (Putrevu, & Mertzanis,

2024). The findings also indicate that the government's push for digital payment and financial education has helped to enhance awareness and adoption of digital payment services among rural people (Mookerjee, et al., 2025).

The study also found that digital payments have been a positive impact on financial inclusion in enabling direct savings and fund transfers, payments for bills and even direct access to government benefits to bank accounts (Rana, & Goel, 2025). Financial transactions were also found to be more convenient, transparent and efficient, which improved users' trust in digital financial services, for both rural and semi-urban users (Yadav, et al., 2024). However, there are still challenges that hinder the widespread adoption of them, such as a lack of knowledge of how to use digital tools, poor Internet infrastructure, Internet security, and a low technological infrastructure (Djatkiko et al., 2025). Acknowledging these challenges, awareness campaigns targeted at rural and semi-urban India, with the support of digital infrastructure, and strengthening measures for security can further cement digital payments' role as a catalyst for inclusive and sustainable financial development in the region (Malladi, et al., 2021).

8. CONCLUSION

The study finds that digital payment services have a great potential to promote financial inclusion of the rural and semi-urban population of India. The results indicate that the expanded adoption of digital payment platforms “like UPI, mobile banking, digital wallets and Aadhaar enabled payment systems has a positive impact on financial inclusion. The regression analysis showed that digital payment services have a positive impact on financial inclusion, which supports the hypothesis H1”. Additionally, the challenges and barriers like digital illiteracy, internet connectivity, security concerns and technological limitations have a significant impact on the adoption and usage of the digital payment technologies, supporting H2. Yet, these factors have not dampened the increasing adoption of digital payment methods, which has helped to improve financial inclusion, convenience and economic empowerment for underserved groups. Thus, improving digital infrastructure, digital literacy, and providing a safe digital transaction environment is crucial to inclusive and sustainable financial growth in rural and semi-urban India.

✓ Implications, Findings and Suggestions

The findings indicate that digital payments are a promising channel to expand financial inclusion and to reach previously underserved populations. However, there are still some obstacles to their real-world application, such as a lack of digital skills, inadequate infrastructure, and trust issues. The study recommends that policy makers, financial institutions and fintech organisations need to diversify digital literacy, expand internet access, increase cybersecurity protection, and implement targeted awareness campaigns to boost the use of digital payment technologies and boost financial inclusion.

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