IOSR Journal of Business and Management (IOSR-JBM)
e-ISSN:2278-487X, p-ISSN: 2319-7668. Volume 28, Issue 4. Ser. 2 (April. 2026), PP 01-12
www.iosrjournals.org

Determinants And Financial Inclusion Effects Of Doorstep Digital Banking: Evidence From Rural Households In Bangalore Rural District

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Abstract
Background of the Study: *Financial inclusion has emerged as a major policy priority in rural India, where access to formal financial services remains constrained by distance, low digital literacy, limited awareness, and affordability barriers. Although several policy initiatives have expanded the reach of banking services, meaningful inclusion depends not merely on account ownership but on sustained and practical access to usable financial services. In this regard, India Post Payments Bank (IPPB), through its doorstep digital banking services delivered via the postal network, represents an important institutional mechanism for extending last-mile banking access to underserved rural households. Bangalore Rural District provides an appropriate context for assessing the effectiveness of such services due to its dispersed population and socio-economic diversity.*
Objectives of the Study: *The study sought to examine the determinants influencing the adoption of IPPB's doorstep digital banking services and to evaluate their impact on financial inclusion among rural households in Bangalore Rural District. Specifically, it aimed to identify the socio-economic, demographic, and digital-access factors affecting adoption, measure the level of adoption and usage, and assess the extent to which these services contribute to financial inclusion outcomes.*
Methodology: *The study employed a quantitative cross-sectional survey design, using primary data collected from 120 rural respondents via a structured questionnaire. The instrument captured information on demographic profile, socio-economic characteristics, digital access, awareness, adoption, usage, and financial inclusion indicators. A multistage sampling method was employed for respondent selection. The analysis used descriptive statistics, multiple regression, Binary logistic regression, one-way ANOVA, and logistic regression to examine determinants of adoption, group differences in usage, and the influence of service-related factors on financial inclusion. Secondary data from institutional and academic sources supported the conceptual framework and interpretation.*
Major Findings: *The results revealed that awareness was the most consistent and statistically significant predictor of adoption. Respondents aged 46–60 years reported lower adoption levels relative to younger respondents, while distance from the post office showed a weak negative association with adoption. Descriptive results indicated relatively high mean scores for adoption, usage, accessibility, affordability, satisfaction, and financial inclusion, though service availability and perceived quality were comparatively lower. Group differences in usage across age, education, income, and distance were not statistically significant. In the financial inclusion model, accessibility, affordability, and awareness emerged as significant positive predictors, whereas usage frequency alone was not a significant predictor after controlling for broader service conditions. Logistic regression further confirmed that adoption, accessibility, and awareness significantly increased the likelihood of high financial inclusion.*
Conclusion: *The study concludes that IPPB's doorstep digital banking services have meaningful potential to strengthen rural financial inclusion; however, their effectiveness depends more on awareness, accessibility, and affordability than on frequency of usage alone. The findings imply that inclusive financial outcomes are more likely when services are understandable, easily reachable, and financially manageable for rural users. Accordingly, policy and institutional interventions should prioritise awareness-raising, user education, and strengthened last-mile service delivery to enhance the inclusive impact of doorstep digital banking in rural India.*
Keywords: *India Post Payments Bank, Doorstep Banking, Financial Inclusion, Rural Households, Bangalore Rural District, Digital Banking, Awareness, Accessibility, Affordability, Adoption, Rural India, Postal Network*

Date of Submission: 06-04-2026 Date of Acceptance: 16-04-2026

I. Introduction

Financial inclusion has emerged as a critical policy objective in India, particularly in rural areas where access to formal financial services remains uneven despite significant institutional efforts. The Government of India, through initiatives such as Pradhan Mantri Jan Dhan Yojana (PMJDY), Digital India, and the expansion of payments banks, has aimed to bridge this gap by leveraging digital and doorstep banking solutions. Among these, India Post Payments Bank (IPPB) plays a unique role by utilising the extensive postal network to deliver banking services directly to rural households through doorstep banking, supported by digital infrastructure.

In rural settings, however, the availability of financial services does not automatically ensure effective inclusion. Adoption and regular use of doorstep digital banking depend on a combination of demographic, socio-economic, and service-related factors, including age, income, education, digital access, awareness, and trust. This is especially relevant in areas where households may face mobility constraints, weak digital infrastructure, and limited familiarity with formal financial systems.

Bangalore Rural District provides a particularly important context for examining these issues. The district combines geographical dispersion with socio-economic diversity, creating conditions in which access to branch-based financial services may vary considerably across rural households. As per Census 2011, the district had a population of 990,923 spread across 2,298 sq. km., indicating a rural setting in which distance and last-mile connectivity can shape access to formal banking. In addition, the presence of Scheduled Castes (21.57%) and Scheduled Tribes (5.34%) highlights the significance of studying inclusive service delivery among socially and economically vulnerable groups. In such a district, IPPB's doorstep banking model is not merely a convenience-based service innovation; it represents a practical mechanism for testing whether assisted digital banking can reduce barriers to financial participation.

Existing studies on rural digital finance largely examine either the determinants of adoption or the outcomes of financial inclusion separately. Few studies integrate these two dimensions within a single household-level framework that connects service uptake with inclusion outcomes. This gap is especially visible in relation to IPPB's doorstep digital banking services in Karnataka, and more specifically in Bangalore Rural District.

Against this background, the present study develops a two-stage empirical framework. In the first stage, it examines how socio-economic, demographic, and digital-access variables influence the adoption of IPPB's doorstep digital banking services among rural households. In the second stage, it analyses whether adoption and related service conditions—particularly usage, awareness, accessibility, and affordability—contribute to improved financial inclusion outcomes. By linking determinants of adoption with inclusion effects in one empirical design, the study provides a more comprehensive assessment of the role of doorstep digital banking in rural financial development. The study also considers whether adoption and usage operate as linking mechanisms through which household characteristics influence financial inclusion outcomes.

Research Questions

1. What are the key socio-economic, demographic, and digital factors influencing the adoption of IPPB's doorstep digital banking services among rural households in Bangalore Rural District?
2. To what extent does the adoption of IPPB's doorstep banking services impact the level of financial inclusion among rural households?
3. How do adoption and usage of doorstep digital banking services mediate the relationship between household characteristics and financial inclusion outcomes?

II. Literature Review

Financial inclusion in rural India extends beyond mere account ownership to sustained access to affordable, usable, and meaningful financial services. In this context, digital and doorstep banking models have become important because conventional branch-based banking is often constrained by distance, weak infrastructure, and low digital capability. IPPB is especially relevant because it combines digital payment infrastructure with the wide reach and local familiarity of the postal network.

Adoption Determinants

Existing literature shows that adoption of digital financial services is shaped by socio-economic, demographic, and behavioural factors rather than technology availability alone. In rural India, performance expectancy, ease of use, and social influence encourage adoption, while perceived risk discourages it (Mohapatra et al., 2020; Ponnuraj & Nagabhushanam, 2017). Digital literacy also plays a central role, with age, gender, income, education, and occupation affecting the ability to use digital finance effectively (Azeez & Akhtar, 2021). Evidence from rural Belagavi further shows that education, smartphone ownership, and age significantly influence IPPB adoption, while low awareness and gender gaps constrain wider use (Bhasme & Karthikeyan, 2025). Trust is equally important, especially in agent-assisted settings, where institutional confidence, transaction security, and awareness shape uptake (Yadav & Kalluru, 2024; Afzal et al., 2024).

Rural Digital Barriers

The literature also shows that rural adoption is constrained by structural barriers such as poor internet connectivity, low smartphone ownership, weak digital literacy, and limited trust. Even where formal accounts and digital rails have expanded, meaningful usage remains restricted by weak infrastructure and limited ICT capability (Dermish et al., 2011; Miyan & Mishra, 2025; Shaw & Riyat, 2025). Studies further note that account opening does not necessarily lead to regular and diversified use; in many rural settings, accounts are used mainly for receiving transfers rather than for savings, borrowing, or insurance (Ray et al., 2020). Similar evidence shows that households may use digital channels for remittances while continuing to rely on informal systems for other financial needs (Thulani et al., 2014). Women and other marginalised groups often face added barriers such as lower digital literacy, restricted mobility, and limited device access (Kemal, 2019; Sinha & Nayak, 2024).

IPPB and Postal Banking Relevance

Postal banking is particularly significant in the literature because it offers a trusted last-mile institutional channel for underserved populations. Cross-country evidence shows that post offices often reach poorer and less educated groups more effectively than traditional financial institutions (Anson et al., 2013). In India, scholars argue that IPPB has strong potential to promote rural financial inclusion by integrating postal outreach with digital payment infrastructure and doorstep service delivery (Kumari, 2017; Singh & Yadav, 2023; Mondal, 2022). Thus, IPPB represents more than a payment institution; it is a hybrid model that combines physical proximity, public trust, and assisted digital access.

Financial Inclusion Outcome

The literature generally suggests that digital and doorstep banking can improve financial inclusion, but outcomes depend on service conditions and depth of usage. Studies on rural India report positive links between digital banking and broader inclusion, including easier payments, improved transaction convenience, and stronger participation in formal systems (Miyan & Mishra, 2025). Research on post offices, IPPB, and related banking channels also suggests positive effects on rural access and service connectivity, although continued awareness and user support remain important (Tejasmayee et al., 2025; Mondal, 2022). At the same time, evidence indicates that usage frequency alone does not guarantee stronger inclusion, and that accessibility, affordability, awareness, and user-centred design matter more for meaningful outcomes (Mangani et al., 2019; Ozili, 2021; Neltje et al., 2025).

Research Gap

Although prior studies have examined determinants of adoption, rural digital barriers, the relevance of postal banking, and financial inclusion outcomes, these strands are often treated separately. Limited research has jointly examined both the determinants of adoption and its inclusion effects within a single household-level framework. This gap is even more evident in the specific context of IPPB doorstep banking in Karnataka, particularly in the Bangalore Rural District. The present study addresses this gap by integrating determinants of adoption, usage variation, and financial inclusion outcomes into a two-stage empirical framework.

III. Objectives Of The Study

Main Objective

To examine the determinants of adoption of India Post Payments Bank's doorstep digital banking services and their impact on financial inclusion among rural households in Bangalore Rural District.

Specific Objectives

1. To analyse the socio-economic, demographic, and digital-access determinants of adoption of IPPB's doorstep digital banking services among rural households in Bangalore Rural District.
2. To measure the level of adoption and usage of IPPB's doorstep digital banking services among rural households in Bangalore Rural District.
3. To assess the impact of the adoption and usage of IPPB's doorstep digital banking services on financial inclusion among rural households in Bangalore Rural District.

IV. Hypotheses Of The Study

H01: Socio-economic, demographic, and digital-access variables do not significantly influence the adoption of IPPB's doorstep digital banking services among rural households in Bangalore Rural District.

H11: Socio-economic, demographic, and digital-access variables significantly influence the adoption of IPPB's doorstep digital banking services among rural households in Bangalore Rural District.

H02: There is no significant difference in the level of adoption and usage of IPPB's doorstep digital banking services across rural household groups in Bangalore Rural District.
H12: There is a significant difference in the level of adoption and usage of IPPB's doorstep digital banking services across rural household groups in Bangalore Rural District.

H03: Adoption and usage of IPPB's doorstep digital banking services do not have a significant effect on financial inclusion among rural households in Bangalore Rural District.
H13: Adoption and usage of IPPB's doorstep digital banking services have a significant positive effect on financial inclusion among rural households in Bangalore Rural District.

V. Methodology

This study employed a quantitative cross-sectional survey design to examine the determinants of adoption of India Post Payments Bank (IPPB) doorstep digital banking services and their effect on financial inclusion among rural households in Bangalore Rural District. The design was appropriate because the study focused on measurable household characteristics, service-related factors, and financial inclusion outcomes, and tested their relationships statistically.

Primary data were collected from 120 rural respondents using a structured questionnaire. In contrast, secondary data were drawn from IPPB reports, RBI publications, government documents, and relevant academic literature to support the conceptual framework and interpretation. The target population comprised rural households in Bangalore Rural District, with one adult respondent selected from each household, preferably the member responsible for financial decisions.

A multistage sampling technique was used. First, rural taluks were identified; second, villages were selected; and third, households were chosen through systematic random sampling. This approach ensured coverage of respondents across different rural locations within the district.

The questionnaire captured information on demographic and socio-economic characteristics, digital access, awareness of IPPB services, adoption, usage, and financial inclusion indicators. Major constructs such as awareness, adoption, usage, accessibility, affordability, barriers, enabling factors, perceived quality, satisfaction, and financial inclusion were measured using Likert-type scale items, and composite scores were developed for analysis. The instrument was refined to improve clarity and contextual relevance, and the internal consistency of the scales was assessed through reliability testing. Content and construct validity were ensured by aligning the measures with the study objectives, literature, and conceptual framework.

The estimation strategy was carried out in multiple stages. Descriptive statistics were used to summarise respondent characteristics and key constructs. Multiple regression was used to identify the determinants of adoption and estimate the effects of adoption-related factors on financial inclusion. Binary logistic regression was used as an extended model for adoption and as a robustness check for high financial inclusion. One-way ANOVA was employed to test group differences in adoption and usage across respondent categories. Together, these methods enabled a two-stage empirical assessment of determinants of adoption and financial inclusion outcomes.

VI. Analysis And Interpretation

This section presents the socio-demographic and access profile of respondents. Then, determinants of adoption of IPPB doorstep digital banking services are examined. Then, results on group differences in usage are reported. Finally, the effect of adoption and related service factors on financial inclusion is assessed. The findings are presented in relation to the stated hypotheses.

Respondent profile

Older rural respondents dominated the sample: 54.2% were above 60 years and 26.7% were aged 46–60. Women constituted 52.5% of the sample. Educational attainment was modest, with 45.0% educated up to primary level and 10.0% having no formal education. A majority of households fell into lower-income categories, with 60.9% reporting monthly income below ₹25,000. In terms of access conditions, 89.2% owned a mobile phone, but only 38.3% had a smartphone, and 90.0% reported no internet access at home. Physical access barriers were also notable, as 65.0% of respondents lived six kilometres or more from the nearest post office. These patterns indicate that assisted doorstep banking is particularly relevant in the study area.

Table 6.1: Socio-demographic characteristics of respondents

Variable	Category	N	%
Age group	18–25	4	3.3
	26–35	4	3.3
	36–45	15	12.5
	46–60	32	26.7
	Above 60	65	54.2

Gender	Male	57	47.5
	Female	63	52.5
Marital status	Single / Never married	18	15.0
	Married	74	61.7
	Widowed	22	18.3
	Separated / Divorced	6	5.0
Education	No formal education	12	10.0
	Primary	54	45.0
	Secondary	32	26.7
	Senior Secondary / PUC	15	12.5
	Graduate	5	4.2
	Postgraduate & above	2	1.7
Occupation	Farmer	18	15.0
	Daily wage / Labour	15	12.5
	Self-employed / Small business	16	13.3
	Salaried employee	14	11.7
	Homemaker	15	12.5
	Retired / Other	42	35.0
Household monthly income	Less than ₹10,000	26	21.7
	₹10,000–₹25,000	47	39.2
	₹25,001–₹50,000	36	30.0
	₹50,001–₹75,000	7	5.8
	Above ₹75,000	4	3.3

Interpretation

The survey data indicate that rural households in the study setting were characterized by advanced age, low to moderate educational attainment, modest incomes, and weak digital infrastructure. These characteristics collectively suggest a population that may face constraints in independently using formal and purely digital financial systems.

Digital and physical access conditions

Awareness was primarily generated through local interpersonal channels. The postman or Gramin Dak Sevak was the first source of awareness for 31.7% of respondents, followed by village meetings or Gram Panchayat gatherings (20.0%) and self-help group members (15.8%). Social media played a limited role. This indicates that trusted local intermediaries remain central to service awareness in rural contexts.

Table 6.2: Digital and physical access profile of respondents

Variable	Category	N	%
Mobile phone ownership	Yes	107	89.2
	No	13	10.8
Smartphone ownership	Yes	46	38.3
	No / Not sure	61	50.8
Internet access at home	Yes	12	10.0
	No	108	90.0
Distance to nearest post office	Less than 1 km	8	6.7
	1–5 km	34	28.3
	6–10 km	40	33.3
	More than 10 km	38	31.7

Interpretation

The descriptive patterns suggest that any adoption and use of IPPB doorstep digital banking services are likely to depend on assisted rather than autonomous digital engagement. Limited smartphone ownership, low home internet access, and the importance of postal and community channels for awareness indicate that service uptake in this setting would likely be mediated by trust-based, face-to-face delivery arrangements rather than by self-service digital banking.

Awareness of IPPB doorstep services

A multiple regression model was estimated with adoption score as the dependent variable and age, education, income, mobile category, distance to the nearest post office, and awareness as predictors. The model was statistically significant ($F(18,101) = 1.99$, $p = .017$), with $R^2 = .262$ and adjusted $R^2 = .131$. Awareness emerged as a significant positive predictor of adoption ($B = 0.19$, $p = .026$). Respondents aged 46–60 reported significantly lower adoption than the 18–25 reference group ($B = -0.48$, $p = .035$). The mobile category variable was also significant ($B = -0.27$, $p = .014$), indicating lower adoption of the second coded category relative to the reference category; this should be interpreted in line with the dataset's coding scheme. Distance of 6–10 km showed a weak negative association with adoption ($B = -0.30$, $p = .053$).

Other education, income, age, and distance categories were not statistically significant. These non-significant results suggest that their independent effects were weaker after controlling for awareness and related variables, rather than implying that they are substantively unimportant.

Hypothesis decision (H01): Rejected. The results show that selected socio-economic, demographic, and digital-access variables significantly influenced adoption.

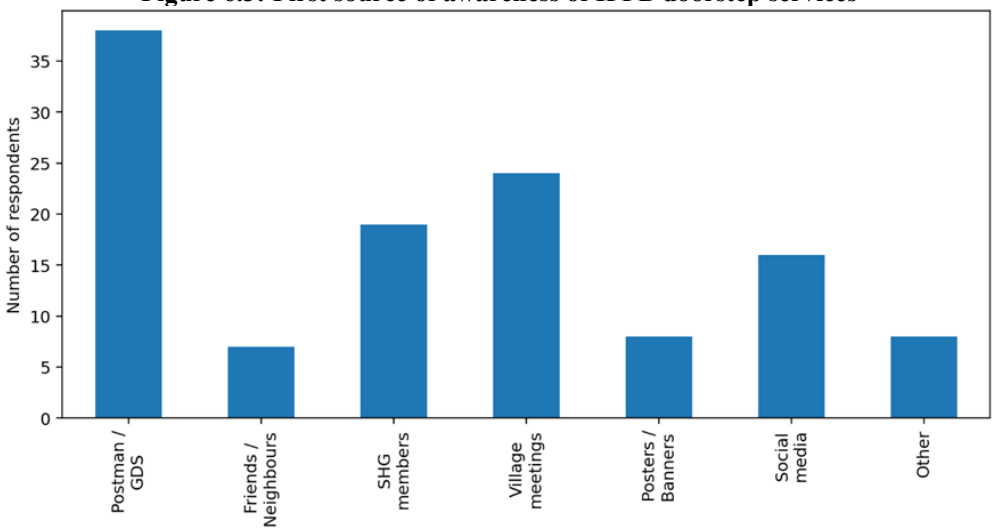
Table 6.3: First source of awareness of IPPB doorstep services

Source	N	%
Postman / Gramin Dak Sevak	38	31.7
Friends / Neighbours	7	5.8
SHG members	19	15.8
Village meetings / Gram Panchayat	24	20.0
Posters / Banners	8	6.7
Social media	16	13.3
Other	8	6.7

Interpretation

The descriptive results strongly suggest that doorstep banking is highly relevant in this context because it addresses both physical access barriers and low digital self-sufficiency. In a population where most respondents lived far from post offices and lacked household internet access, doorstep delivery appears structurally well-suited to improving inclusion.

Figure 6.3: First source of awareness of IPPB doorstep services



Determinants of adoption

An extended binary logistic regression model incorporating awareness and barrier scores showed substantially improved explanatory power (Pseudo R^2 = .814). The awareness score and the barrier score were both highly significant (p = .001). Because the signs depend on the scales' coding direction, the interpretation should follow the instrument's scoring. Income was also significant (p = .041), while gender and distance were not significant. These results suggest that adoption is shaped more directly by awareness and perceived barriers than by demographic characteristics alone.

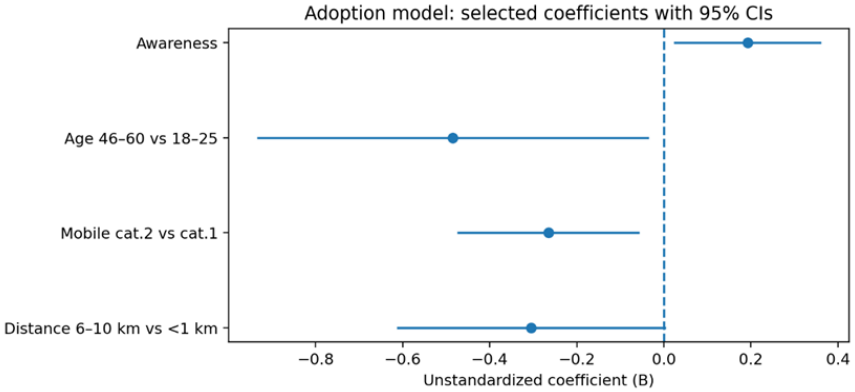
Table 6.4: Multiple regression predicting adoption score

Predictor	*B*	*SE*	*t*	*p*	95% CI
Age 26–35 vs. 18–25	-0.03	0.24	-0.12	.907	[-0.50, 0.45]
Age 36–45 vs. 18–25	-0.32	0.23	-1.42	.159	[-0.77, 0.13]
Age 46–60 vs. 18–25	-0.48	0.23	-2.14	.035*	[-0.94, -0.04]
Age > 60 vs. 18–25	-0.39	0.24	-1.61	.111	[-0.87, 0.09]
Primary vs. no formal education	-0.09	0.18	-0.53	.597	[-0.45, 0.26]
Secondary vs. no formal education	-0.34	0.18	-1.91	.059	[-0.69, 0.01]
Senior secondary vs. no formal education	-0.17	0.18	-0.90	.370	[-0.53, 0.20]
Graduate vs. no formal education	-0.34	0.24	-1.44	.153	[-0.81, 0.13]
Postgraduate+ vs. no formal education	-0.20	0.27	-0.73	.466	[-0.75, 0.34]
₹10k–25k vs. <₹10k	0.17	0.15	1.14	.255	[-0.13, 0.47]

₹25k–50k vs. <₹10k	0.24	0.15	1.58	.117	[-0.06, 0.55]
₹50k–75k vs. <₹10k	-0.09	0.21	-0.43	.669	[-0.51, 0.33]
>₹75k vs. <₹10k	0.12	0.20	0.63	.528	[-0.27, 0.51]
Mobile category 2 vs. 1	-0.27	0.11	-2.51	.014*	[-0.48, -0.06]
Distance 1–5 km vs. <1 km	0.02	0.15	0.15	.881	[-0.27, 0.32]
Distance 6–10 km vs. <1 km	-0.30	0.16	-1.96	.053†	[-0.61, 0.00]
Distance >10 km vs. <1 km	-0.00	0.14	-0.02	.981	[-0.28, 0.27]
Awareness	0.19	0.09	2.26	.026*	[0.02, 0.36]

Model fit: R^2 = .262, adjusted R^2 = .131, $F(18, 101) = 1.99$, p = .017.
NOTE: † p < .10. * p < .05.

FIGURE 6.4: A summary of construct means



These findings suggest that adoption was shaped more by informational and access-related conditions than by income or education alone. Awareness was the strongest positive predictor in the model, which is substantively important in a rural service context where information often determines whether a service becomes meaningful in everyday financial behaviour.

Extended model with perceptual factors

Respondents reported relatively high mean scores for adoption (M = 3.83), usage (M = 3.82), accessibility (M = 3.82), affordability (M = 3.77), financial inclusion (M = 3.79), and satisfaction/continuous use (M = 3.82). By contrast, availability (M = 2.41) and barriers (M = 2.06) were lower, while perceived quality was moderate (M = 2.93). Overall, the pattern indicates favourable perceptions of service use and inclusion outcomes, but less favourable assessments of service availability and quality.

Table 6.5: Binary logistic regression for adoption: extended model

Predictor	B	SE	z	p	Odds ratio
Age group	0.994	0.595	1.669	0.095	2.702
Gender	1.414	1.006	1.405	0.160	4.111
Income	-1.189	0.581	-2.046	0.041	0.304
Distance	-0.761	0.499	-1.524	0.128	0.467
Awareness score (AW)	-10.767	3.139	-3.430	0.001	0.000
Barrier score (BA)	-7.044	2.076	-3.393	0.001	0.001

Model statistics: Pseudo R^2 = 0.814

Interpretation

Once awareness and barriers were entered, the model's explanatory power rose sharply. The barrier score was strongly and negatively associated with adoption, meaning that respondents with higher recorded barriers were much less likely to adopt.

Income turned negative and significant in the extended model, suggesting that after accounting for awareness and barriers, lower-income households may have been more likely to adopt the assisted public service model. Overall, the logistic analysis indicates that adoption was shaped by a combination of demographic characteristics, awareness formation, and perceived barriers, rather than by location alone.

Descriptive statistics of the study constructs

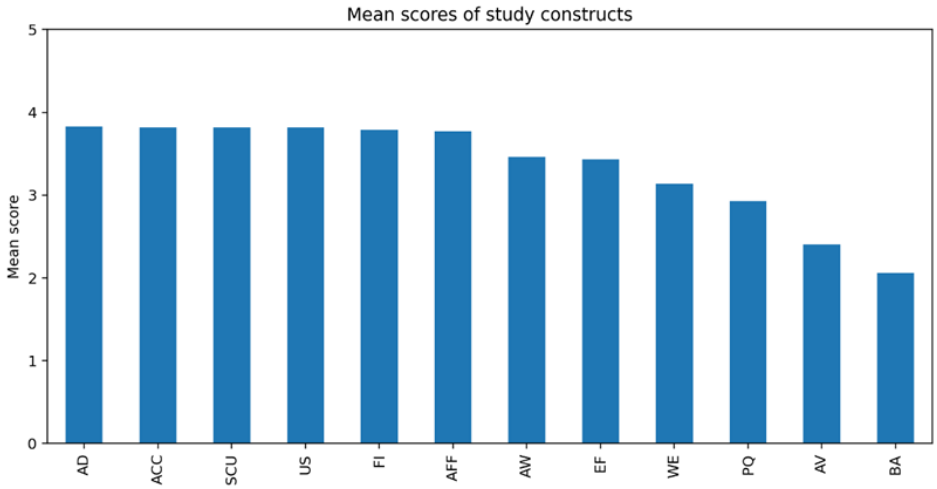
Group comparisons across age, education, income, and distance did not reveal statistically significant differences in usage. Although descriptive variation existed across categories, these differences were not sufficient to support the conclusion that usage systematically differed among respondent groups in the sample.

Hypothesis decision (H02): Not rejected. No significant group differences in adoption and usage were observed across the categories examined.

TABLE 6.6: Descriptive statistics of the study constructs

Construct	*M*	*SD*
Awareness (AW)	3.46	0.62
Adoption (AD)	3.83	0.55
Usage (US)	3.82	0.53
Availability (AV)	2.41	0.54
Accessibility (ACC)	3.82	0.46
Affordability (AFF)	3.77	0.39
Financial Inclusion (FI)	3.79	0.54
Welfare (WE)	3.14	1.03
Barriers (BA)	2.06	0.64
Enabling Factors (EF)	3.43	0.82
Perceived Quality (PQ)	2.93	1.05
Satisfaction and Continuous Use (SCU)	3.82	0.40

FIGURE 6.6: A coefficient plot for the most substantively relevant estimates



This pattern suggests that while respondents were generally favourable toward the service and its inclusion outcomes, they still perceived unevenness in service presence and quality.

Financial inclusion model

A multiple regression model was estimated with financial inclusion as the dependent variable and adoption, usage, accessibility, affordability, and awareness as predictors. The model was statistically significant ($F(5,114) = 18.93$, $p < .001$), with $R^2 = .454$ and adjusted $R^2 = .430$. Accessibility ($B = 0.28$, $p = .008$), affordability ($B = 0.34$, $p = .012$), and awareness ($B = 0.16$, $p = .012$) were significant positive predictors. Adoption showed a positive but marginal effect ($B = 0.17$, $p = .088$), whereas usage was not significant ($B = 0.07$, $p = .510$).

These findings indicate that financial inclusion is influenced more by whether the service is accessible, affordable, and understood than by usage frequency alone. The non-significant usage coefficient should therefore be interpreted with caution: usage may matter, but its independent effect is diminished once broader service conditions are taken into account.

Hypothesis decision (H03): Rejected. Adoption-related service factors significantly influenced financial inclusion, especially accessibility, affordability, and awareness.

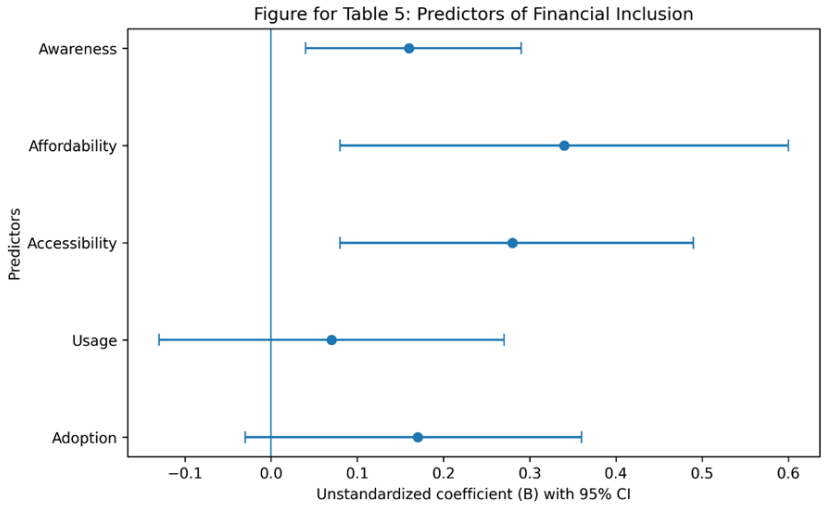
TABLE 6.7: Multiple regression predicting financial inclusion

PREDICTOR	*B*	*SE*	*B*	*T*	*P*	*95% CI*
ADOPTION	*0.17*	*0.10*	*.17*	*1.72*	*.088†*	*[-0.03, 0.36]*
USAGE	*0.07*	*0.10*	*.07*	*0.66*	*.510*	*[-0.13, 0.27]*
ACCESSIBILITY	*0.28*	*0.11*	*.24*	*2.71*	*.008***	*[0.08, 0.49]*
AFFORDABILITY	*0.34*	*0.13*	*.25*	*2.56*	*.012**	*[0.08, 0.60]*
AWARENESS	*0.16*	*0.06*	*.19*	*2.56*	*.012**	*[0.04, 0.29]*

MODEL FIT: $R^2 = .454$, ADJUSTED $R^2 = .430$, $F(5, 114) = 18.93$, $P < .001$.

NOTE: † $P < .10$. * $P < .05$. ** $P < .01$.

FIGURE 6.7: A coefficient plot for the financial inclusion model



The pattern is theoretically meaningful. Financial inclusion was more strongly associated with the conditions that make the service workable, accessibility, affordability, and awareness than with usage frequency alone. That is, simply using the service more often did not predict higher inclusion once respondents' access experience and awareness were taken into account. This suggests that financial inclusion is influenced more by how accessible and understandable the service is than by how frequently it is used.

Logistic robustness check: high financial inclusion

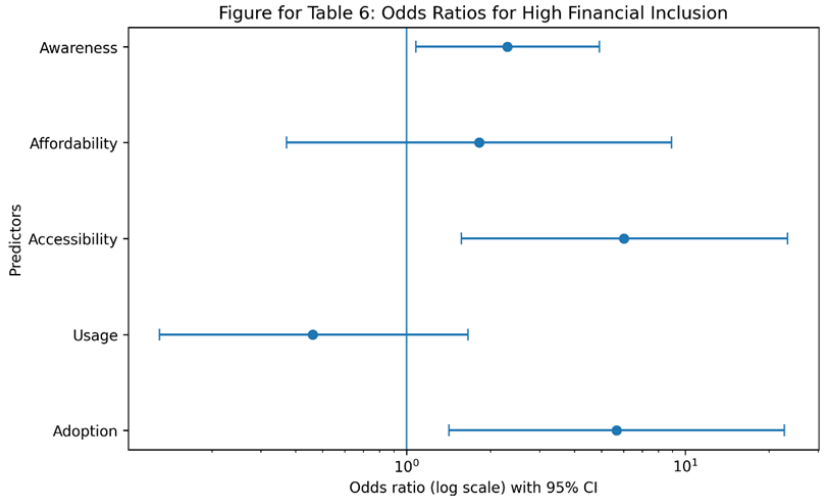
A logistic regression model predicting high financial inclusion was estimated as a robustness check. The model was significant (LR test $p < .001$), with Pseudo $R^2 = .242$ and classification accuracy of 71.7%. Adoption (OR = 5.67, p = .014), accessibility (OR = 6.03, p = .009), and awareness (OR = 2.30, p = .031) significantly increased the likelihood of high financial inclusion. Usage and affordability were not significant in this specification. This confirms that stronger adoption, awareness, and accessibility are the most important correlates of higher financial inclusion.

TABLE 6.8: Logistic regression predicting high financial inclusion

Predictor	*B*	*SE*	z	*p*	OR	95% CI for OR
Adoption	1.74	0.71	2.45	.014*	5.67	[1.42, 22.66]
Usage	-0.77	0.65	-1.19	.236	0.46	[0.13, 1.66]
Accessibility	1.80	0.69	2.61	.009**	6.03	[1.57, 23.26]
Affordability	0.60	0.81	0.74	.461	1.82	[0.37, 8.95]
Awareness	0.83	0.39	2.16	.031*	2.30	[1.08, 4.91]

Model fit: pseudo-$R^2 = .242$, LR test $p < .001$, classification accuracy = 71.7%.
NOTE: OR = odds ratio. * $p < .05$. ** $p < .01$.

FIGURE 6.8: A summary of odds ratios



This robustness analysis sharpened the main conclusion. Respondents were more likely to fall into the high-financial-inclusion group when they had stronger adoption, better accessibility, and greater awareness. Again, the strongest effects were not associated with usage frequency but with the conditions that support meaningful service uptake and integration.

VII. Discussion And Conclusion

Discussion

The findings show that IPPB doorstep digital banking contributes to financial inclusion mainly through awareness, accessibility, and affordability rather than through usage frequency alone. As the results indicate, "awareness was the most consistent predictor across the models," while "accessibility and affordability significantly improved financial inclusion." This suggests that the inclusive value of doorstep banking lies less in repeated transactions by themselves and more in whether the service is understandable, reachable, and manageable for rural households.

Awareness emerged as the strongest and most consistent factor in the analysis. It significantly improved adoption and also showed a positive association with financial inclusion. This result is consistent with the descriptive finding that awareness was generated mainly through the postman or Gramin Dak Sevak, village meetings, and self-help groups. The finding supports earlier studies showing that low awareness remains a major barrier to digital financial adoption in rural India and that service knowledge is essential for meaningful participation in formal finance (Ponnuraj & Nagabhushanam, 2017; Mohapatra et al., 2020; Azeez & Akhtar, 2021). It also aligns with evidence that digital financial literacy and awareness are especially important for the adoption of India Post Payments Bank services in rural settings (Bhasme & Karthikeyan, 2025).

Accessibility was another major result. It significantly improved financial inclusion in both the linear and logistic models. This is highly plausible in the study setting, where most respondents lacked internet access at home, and many lived far from the nearest post office. The finding is therefore consistent with the branchless and agent-assisted banking literature, which argues that reducing distance and access difficulty is central to extending financial services to underserved groups (Dermish et al., 2011). It also supports more recent work on post-office and payment-bank models, which emphasises the importance of last-mile service delivery for rural inclusion (Mondal, 2022; Tejasmayee et al., 2025).

Affordability also had a significant positive effect on financial inclusion in the continuous regression model. This suggests that rural households are more likely to experience inclusive outcomes when services are perceived as financially manageable. The result is in line with broader arguments that financial inclusion depends not only on availability but also on low transaction costs and practical usability for low-income populations (Ozili, 2021; Dermish et al., 2011). In the present context, affordability likely reflects reduced travel costs, lower service burden, and easier engagement with formal finance.

The role of adoption was positive but somewhat mixed across models. Adoption showed only a marginal effect in the linear financial inclusion model, but it significantly increased the odds of belonging to the high-financial-inclusion group in the logistic model. This suggests that adoption matters, but that its effect may overlap with awareness and accessibility. This interpretation is consistent with earlier work showing that access or registration alone does not automatically produce deeper inclusion unless service use is supported and meaningful (Ray et al., 2020; Mangani et al., 2019).

An important and somewhat unexpected finding is that usage frequency was not a significant predictor of financial inclusion after accounting for awareness, accessibility, and affordability. This may appear counterintuitive, but it is broadly consistent with studies showing that adoption and meaningful inclusion are not the same. Rural users may use financial services occasionally for narrow purposes, such as receiving transfers or making basic transactions, without necessarily achieving broader inclusion in savings, security, or sustained formal financial engagement (Ray et al., 2020; Thulani et al., 2014; Mangani et al., 2019). Thus, the present study adds nuance by showing that how often the service is used may matter less than whether the surrounding service environment enables meaningful use.

Some socio-economic variables, including education and income, were not consistently significant in the main adoption model. This should not be read as evidence that these factors are irrelevant. Rather, their effects may be indirect and may operate through awareness, digital readiness, trust, and perceived barriers. This interpretation is consistent with previous studies showing that education, age, income, and digital access often shape financial behaviour through mediating mechanisms such as digital literacy and institutional trust (Azeez & Akhtar, 2021; Yadav & Kalluru, 2024; Afzal et al., 2024). Similarly, the absence of significant group differences in usage across age, education, income, and distance categories may indicate either that assisted doorstep services are broadly relevant across rural groups or that small group differences could not be clearly detected in a modest sample.

The extended adoption model also produced findings that require careful interpretation. Awareness and barrier scores were highly significant, but the signs of their coefficients depend on the scale's coding direction.

This highlights the need to report coding clearly. Income became significant in the extended model, suggesting that after accounting for awareness and barriers, lower-income households may have been relatively more likely to adopt the assisted public-service model. This is a meaningful result, as it suggests that IPPB may be especially relevant for economically constrained households, which is consistent with the literature on post-office-based inclusion and low-threshold public financial services (Anson et al., 2013; Singh & Yadav, 2023).

Overall, the discussion suggests that IPPB doorstep digital banking should not be assessed only through service uptake or transaction frequency. Its deeper contribution lies in reducing the practical barriers that keep rural households away from formal finance. In this respect, the findings support a broader understanding of financial inclusion as engagement with financial services that is supported, affordable, and sustainable, rather than mere account use.

Conclusion

This study examined the determinants of adoption of IPPB doorstep digital banking services and their relationship with financial inclusion among rural households in Bangalore Rural District. The results show that awareness, accessibility, and affordability were the strongest and most consistent factors associated with better financial inclusion outcomes. Awareness significantly supported adoption and also contributed directly to financial inclusion, while accessibility and affordability improved the extent to which rural households could engage meaningfully with formal financial services. Adoption showed a positive effect, particularly in distinguishing respondents with higher levels of financial inclusion. In contrast, usage frequency alone was no longer a significant predictor once broader service conditions were taken into account.

Overall, the findings suggest that the inclusive value of IPPB doorstep digital banking lies not simply in how often the service is used, but in whether it is understandable, reachable, and financially manageable for rural households. In a rural context marked by limited internet access, low smartphone readiness, and considerable distance from post offices, assisted doorstep banking appears to be a practical and relevant instrument for strengthening financial inclusion.

Policy Implications

The findings have clear implications for policy and implementation. First, awareness-building should be strengthened through the channels that rural households already trust and use. Since the descriptive results showed that awareness often came through postmen, Gramin Dak Sevaks, village meetings, and local community channels, awareness campaigns should be designed around these field-level networks rather than relying heavily on digital promotion alone.

Second, assisted service delivery should be improved and expanded. The study found that smartphone ownership and internet access were limited, suggesting that many rural users may rely on supported rather than fully self-operated digital banking. Strengthening doorstep assistance, improving staff responsiveness, and ensuring consistent local service presence can therefore make adoption more meaningful.

Third, policy attention should be given to reducing hidden transaction and access costs. Even when formal services are available, travel burden, waiting time, small service charges, and indirect costs may discourage low-income households from active participation. The positive role of affordability in the financial inclusion model suggests that reducing these burdens can improve inclusive outcomes.

Fourth, low-digital-literacy households should be explicitly targeted. Since the study setting was characterised by older respondents, modest education levels, and limited digital readiness, inclusion strategies should include simplified service communi, $p < .001$), with a Pseudo $R^2 = .242$ and a cation, local demonstrations, repeated hand-holding support, and practical user education. In this context, rural financial inclusion is likely to improve most when service delivery is not only digital but also assisted, localised, and easy to understand.

Limitations of the Study

This study has some limitations that should be acknowledged. First, the analysis is based on a cross-sectional design, so the results indicate association rather than definite causation. Second, the study used a sample of 120 respondents from Bangalore Rural District, which limits the extent to which the findings can be generalised to other rural settings. Third, the district-specific focus is analytically useful, but the results may reflect local institutional and socio-economic conditions that differ from those of other regions. Fourth, the study relied on self-reported survey responses, which may be affected by recall errors, perception bias, or socially desirable responses. These limitations mean that the findings should be interpreted as evidence of important empirical relationships rather than universal causal conclusions.

Future Research

Future research can extend this study in several ways. Longitudinal research would be useful to examine whether the adoption of doorstep digital banking produces sustained changes in financial inclusion over time.

Comparative studies across districts or states could test whether the present findings hold in different rural contexts. Further work may also include larger samples and more detailed measures of digital literacy, trust, cyber-risk perception, and service quality. In addition, future studies could combine survey evidence with qualitative interviews to better understand why some households adopt the service but do not translate that adoption into deeper financial inclusion outcomes.

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