

Determinants of Digital Transaction Frequency among Semi-Urban Consumers in Rajasthan: Evidence from a 150-Respondent Survey

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Abstract: *India's digital payment ecosystem has expanded rapidly; however, regular consumer usage remains uneven despite widespread access. This study investigates the determinants of digital transaction frequency among 150 semi-urban consumers from four districts of Rajasthan using a structured questionnaire administered between January and March 2026. Descriptive statistics, chi-square analysis, and exploratory binary logistic regression were employed. While smartphone ownership and UPI adoption exceeded 96%, only 54.7% of respondents conducted digital transactions at least weekly. UPI as the primary payment channel and mobile banking usage significantly increased the likelihood of frequent transactions, whereas higher age was associated with lower transaction frequency. Internet banking exhibited a negative association with routine retail transactions, suggesting differences in channel usage rather than reduced digital adoption. The findings indicate that improving active digital engagement requires age-sensitive support, practical digital financial literacy, and greater alignment between digital channels and consumer needs. Owing to purposive sampling and geographical concentration, the findings should be interpreted as exploratory rather than representative of the wider population.*

Keywords: Digital banking; Digital payments; Unified Payments Interface (UPI); Financial inclusion; Consumer behaviour; Digital financial literacy; Rajasthan; Transaction frequency

JEL Classification: G21, G23, O16, O33

1. Introduction

Digital banking has shifted routine financial activity from branch counters to mobile phones, payment applications, cards and internet platforms. Unified Payments Interface (UPI) has become the most visible element of this transformation because it enables instant account-to-account payments through interoperable applications. NPCI's monthly statistics show that UPI processed more than 22.7 billion transactions in June 2026, illustrating the scale of India's retail payment transition (National Payments Corporation of India [NPCI], 2026b). Scale, however, does not automatically imply inclusive or regular use. Consumers may own an account and a smartphone yet remain occasional users because of age, confidence, perceived risk, network quality or a mismatch between the channel and the purpose of transaction.

The distinction between access and usage is important for financial inclusion. The Global Findex India brief reported high account ownership but also substantial inactivity and lower digital-payment use than the average for developing economies (Klapper et al., 2022). The Reserve Bank of India's National Strategy for Financial Inclusion 2025-30 similarly treats digital infrastructure, literacy, consumer protection and appropriate products as interdependent elements of inclusion (Reserve Bank of India [RBI], 2026). Semi-urban markets provide a useful setting because they combine branch banking, cash habits, smartphone-based payments and assisted service points.

Rajasthan's expanding towns include salaried households, small traders, farmers, homemakers and students with different levels of digital exposure. Prior adoption research

emphasises perceived usefulness, ease of use, trust, security and facilitating conditions (Davis, 1989; Venkatesh et al., 2003; Kajol et al., 2022). Meta-analytic evidence also shows that technological and security dimensions jointly shape adoption (Neves et al., 2023). Yet relatively little consumer-level evidence isolates the frequency of actual digital transactions in semi-urban Rajasthan. This paper addresses that gap using a doctoral survey dataset of 150 consumers.

2. Literature Review and Hypothesis Development

2.1 From access to active use

Financial inclusion is multidimensional. Account ownership represents access, while transaction frequency captures actual engagement. Digital platforms can reduce travel time and transaction cost, but they may also create new forms of exclusion through device requirements, connectivity, fraud exposure and low digital capability (Ozili, 2018; Tay et al., 2022). Therefore, a consumer who has a bank account or UPI application should not automatically be classified as an active digital-finance user.

2.2 Technology acceptance and channel fit

The Technology Acceptance Model and UTAUT propose that usefulness, ease of use, social influence and facilitating conditions shape technology adoption (Davis, 1989; Venkatesh et al., 2003). Mobile-payment studies further highlight compatibility with daily routines and the intention to recommend as important outcomes (Oliveira et al., 2016). In semi-urban markets, UPI is compatible with small merchant payments and person-to-person transfers, whereas

internet banking may remain associated with statements or larger formal transactions. Channel fit may therefore explain frequency more effectively than simple access.

2.3 Age, literacy and digital capability

Digital financial literacy combines financial understanding with practical capability, awareness of risks, and self-protection from scams (Alliance for Financial Inclusion, 2021; Morgan et al., 2019). Recent evidence shows that digital literacy is associated with adoption and the benefits obtained from digital services (Pak et al., 2026). Age may influence frequency because older users can face interface, confidence and support barriers even when they possess accounts and cards. Education and income can also matter, although their effects may weaken when smartphones and UPI access are already widespread.

2.4 Hypotheses

- H1: Consumers who identify UPI as their primary digital service are more likely to transact weekly or more often.
- H2: Mobile-banking use is positively associated with weekly or more frequent digital transaction use.
- H3: Higher age categories are negatively associated with weekly or more frequent digital transaction use.
- H4: Education and income remain positive predictors after controlling for channel use and demographics.

3. Research Methodology

The study used a descriptive and analytical cross-sectional design. Data were drawn from a structured survey of 150 consumers in semi-urban locations of Alwar, Khairthal-Tijara, Dausa and Kotputli-Behror districts. The survey period was 5 January to 23 March 2026. Respondents were selected through purposive and convenience sampling because the research required participants with exposure to banking and the ability to answer questions on digital services. This design supports exploratory analysis of relationships but does not produce a probability-based estimate for the whole state.

The dependent variable was weekly or more frequent digital transaction use. Daily, several-times-a-week and weekly responses were coded 1; monthly, rarely and never were coded 0. Predictors were gender, ordinal age, education, income, primary service (UPI versus ATM/debit card), mobile-banking use and internet-banking use. Descriptive percentages and Pearson chi-square tests were calculated. A binary logistic regression estimated adjusted odds ratios with 95% confidence intervals. Statistical significance was

assessed at the 5% level. The model was exploratory because some service variables had unbalanced distributions.

The sample size of 150 respondents was considered adequate for the exploratory objective of the study because the model used a limited number of predictors and was intended to identify broad directional relationships rather than population-level estimates. Predictor coding was kept parsimonious to reduce sparse-cell problems. Before interpretation, the model was reviewed through cross-tabulation of categorical predictors, inspection of standard errors for instability, and goodness-of-fit indicators including the likelihood-ratio test and McFadden pseudo R².

The questionnaire also included Likert-scale items on awareness, network availability, affordability, trust, safety, support and inclusion. These perception items were used descriptively and were not included in the main regression to avoid over-parameterisation. All respondents recorded consent, and the dataset excluded sensitive credentials.

4. Results

Table 1: Selected profile of respondents

Sample characteristic	n	%
Male	117	78.0
Female	33	22.0
Age 18-25	25	16.7
Age 26-35	63	42.0
Age 36-45	51	34.0
Age 46-55	11	7.3
Alwar district	81	54.0
Other three districts	69	46.0
Graduate or higher	45	30.0
Up to Class 12	105	70.0

Note. $N = 150$. Percentages may not total exactly 100 because of rounding.

The sample was predominantly male (78.0%) and concentrated in the 26-45 age range (76.0%). Alwar accounted for 54.0% of respondents. Farmers, salaried consumers, self-employed persons and homemakers formed the largest occupational groups, which is consistent with a mixed semi-urban consumer profile.

Table 2: Digital access and usage indicators

Indicator	n	%
Mobile number linked to bank account	143	95.3
Owens smartphone	146	97.3
Debit/ATM card	146	97.3
Uses UPI application	145	96.7
Uses mobile banking	70	46.7
Uses internet banking	22	14.7
Transacts weekly or more often	82	54.7

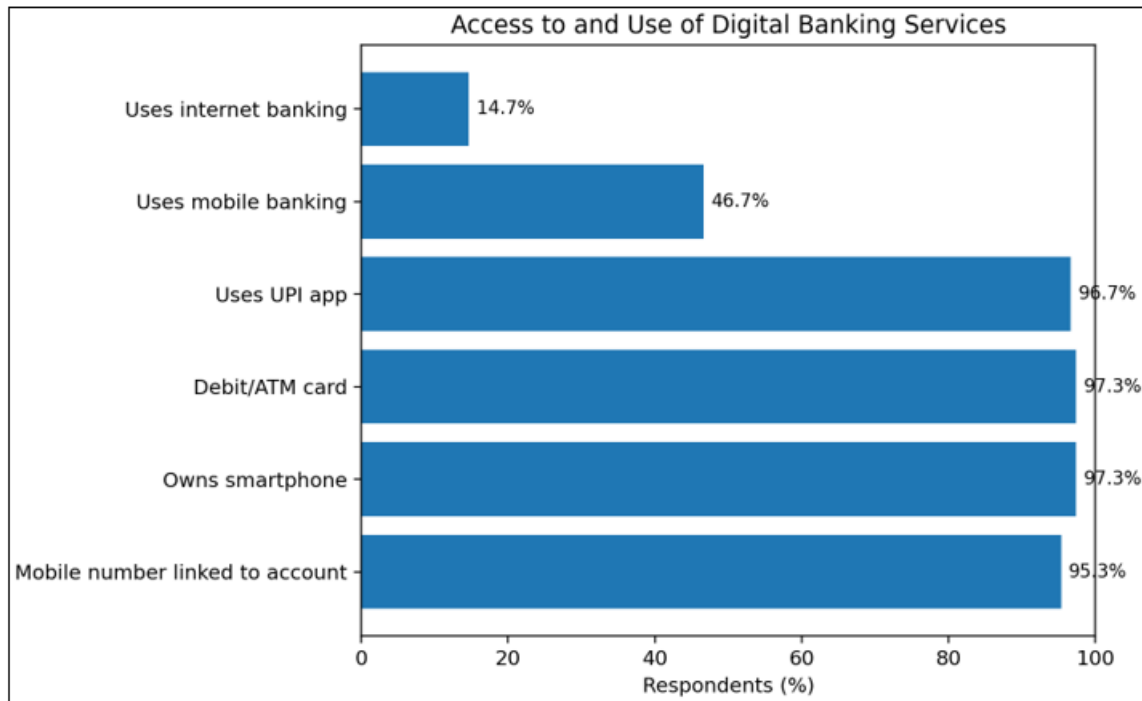


Figure 1: Access to and use of digital banking services

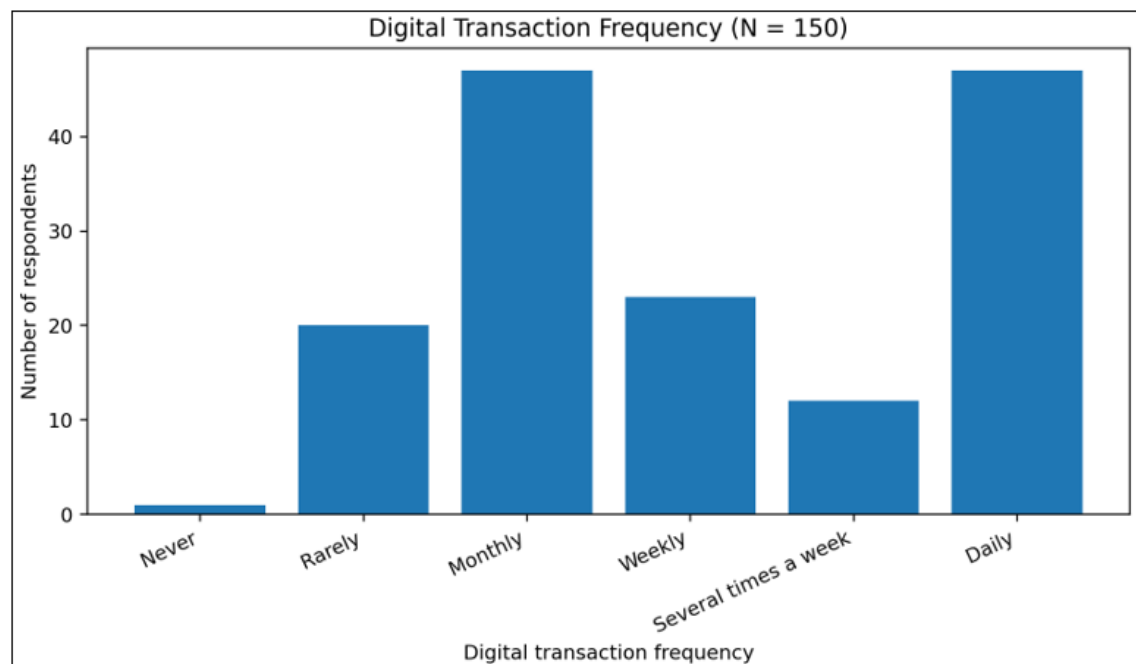


Figure 2: Distribution of digital transaction frequency

Access indicators were high, but the depth of usage was lower. Nearly all respondents had smartphones, cards and UPI access, while fewer than half used mobile banking and only 14.7% used internet banking. The difference between near-universal UPI access and 54.7% weekly or more frequent use confirms that adoption should be measured through behaviour rather than availability alone.

Table 3: Logistic regression predicting weekly or more frequent digital transaction use

Predictor	B	Odds ratio	95% CI	p
Female	0.464	1.59	0.60-4.19	0.348
Age group (ordinal)	-0.748	0.47	0.29-0.77	0.003
Education (ordinal)	0.260	1.30	0.85-1.97	0.222
Income (ordinal)	0.157	1.17	0.70-1.95	0.547
UPI as primary service	1.608	5.00	2.04-12.23	<.001
Mobile-banking user	0.887	2.43	1.04-5.68	0.041
Internet-banking user	-3.487	0.03	0.00-0.27	0.002

Model likelihood-ratio $p < .001$; McFadden pseudo $R^2 = .271$. Reference categories: male, ATM/debit card as primary service, non-user of mobile banking, and non-user of internet banking.

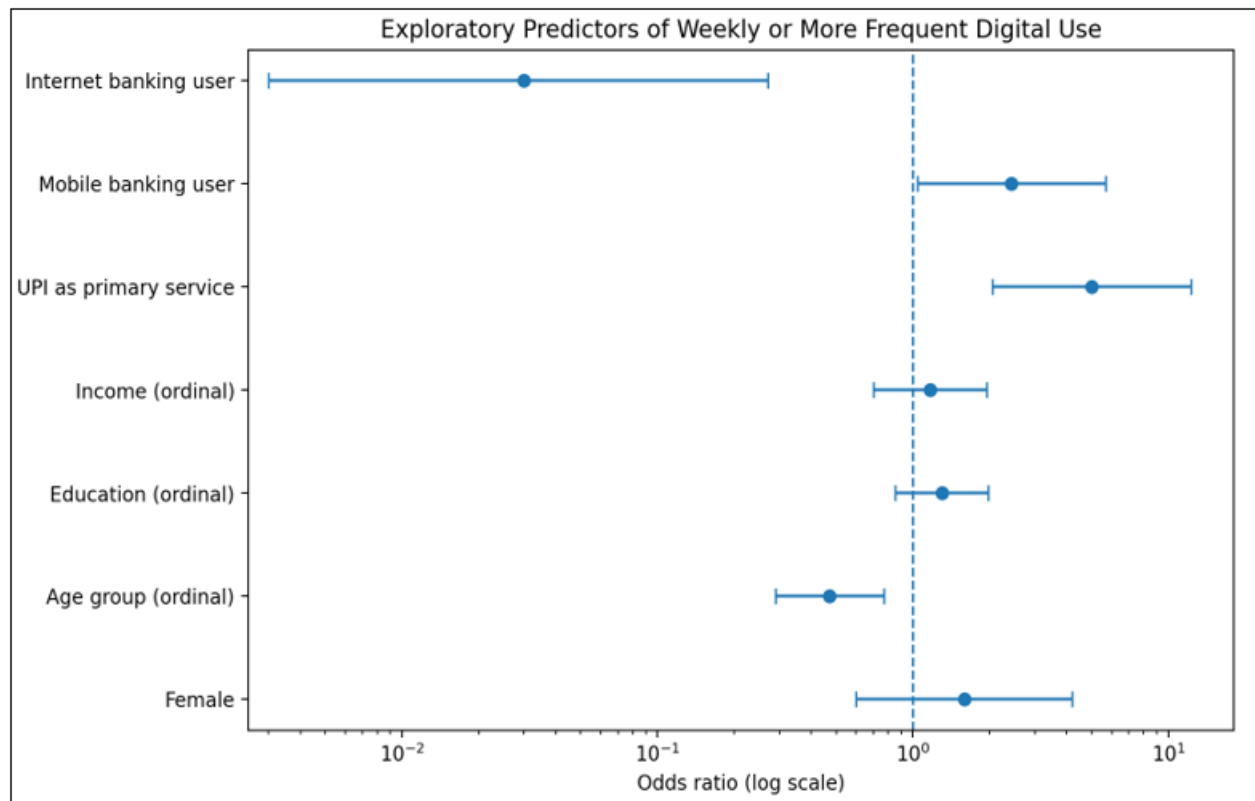


Figure 3: Adjusted odds ratios for weekly or more frequent digital transaction use.

The model was jointly significant. UPI-primary consumers had approximately five times the odds of weekly or more frequent use compared with ATM/debit-card-primary consumers, holding the other variables constant. Mobile-banking users had 2.43 times the odds of frequent use. Each movement to a higher age category was associated with a 53% reduction in the odds of frequent use. Education and income were positive but statistically non-significant.

The negative coefficient for internet-banking use should not be read as evidence that internet banking suppresses digital adoption. In this dataset, internet-banking users were concentrated among consumers who used browser-based banking mainly for less frequent formal transactions. The result therefore indicates channel segmentation: internet banking may complement, rather than substitute for, frequent retail payment tools. The cross-sectional design does not establish causality.

5. Discussion

The findings support H1, H2 and H3 but not H4. UPI's strong association with frequent use is consistent with the platform's compatibility with everyday merchant and person-to-person payments. The result also aligns with evidence that digital public infrastructure can strengthen financial inclusion when payment systems are integrated with bank accounts (Chopra et al., 2026). Mobile banking contributed positively, suggesting that consumers who move beyond a single payment application develop a broader digital relationship with their bank.

The age effect indicates that access expansion alone is insufficient. Older consumers may require assisted onboarding, local-language interfaces, step-by-step

transaction confirmation and visible grievance support. Digital financial literacy should therefore include practical operation and scam protection rather than only general financial knowledge (Pak et al., 2026). The non-significant education and income effects may reflect the diffusion of low-cost smartphones and simple UPI interfaces across socio-economic groups, but this interpretation should be tested with a larger probability sample.

A further contribution is the distinction between high access and moderate frequency. Almost all respondents possessed the technical prerequisites for digital banking, yet nearly half did not transact weekly. This access-usage gap is consistent with the wider inclusion challenge identified by the Global Findex, where account ownership can coexist with inactivity (Klapper et al., 2022). Banks and policy agencies should therefore monitor active usage, failed transactions, complaint resolution and service diversity, not merely account or app registration.

6. Policy and Managerial Implications

- Banks should create age-sensitive digital onboarding sessions in branches, business-correspondent points, educational institutions and local market associations.
- UPI safety messages should be paired with practical demonstrations of checking the payee name, protecting the PIN, reporting fraud and documenting failed transactions.
- Mobile-banking applications should simplify navigation and use local-language prompts so that UPI users can progress to statements, savings, deposits, insurance and credit information.

- Performance dashboards should distinguish registered users, monthly active users and weekly active users to identify dormant or shallow adoption.
- Internet banking should be treated as a complementary formal channel; training should explain which tasks are best completed through UPI, mobile banking, internet banking and assisted banking.

7. Limitations and Future Research

The study is based on purposive and convenience sampling, is male-heavy, and is concentrated in selected districts. Several access variables show limited variation, which reduces statistical precision. Transaction frequency was self-reported and converted into a binary indicator for the main model. Future research should use stratified sampling, verified transaction histories where consent permits, and longitudinal designs that track movement from registration to active use. Separate models for women, older adults, small traders and farmers would improve policy relevance.

8. Conclusion

This study demonstrates that widespread digital access does not necessarily translate into frequent digital transaction behaviour among semi-urban consumers in Rajasthan. UPI usage, mobile banking adoption, and younger age were the strongest determinants of regular digital transactions, whereas education and income did not significantly predict transaction frequency after accounting for channel use. These findings suggest that future financial inclusion initiatives should prioritise active digital engagement through practical digital financial literacy, age-sensitive assistance, and improved alignment between digital banking channels and everyday consumer needs. Although the findings are exploratory because of the sampling design, they provide useful evidence for policymakers, financial institutions, and researchers seeking to strengthen sustainable digital financial inclusion.

Declarations

Funding: The study received no external funding.

Conflict of interest: The author declares no conflict of interest.

Ethics and consent: Participation was voluntary, consent was recorded, responses were analysed in aggregate, and no OTP, PIN, CVV, password or complete bank-account number was collected.

Data availability: The anonymised respondent-level dataset is maintained by the author as part of the doctoral research record. Access may be provided subject to participant confidentiality, university policy and reasonable request.

Related manuscripts statement: The same doctoral dataset is used in companion manuscripts on primary-channel comparison and consumer barriers. The present paper is limited to transaction-frequency determinants and uses a distinct dependent variable, hypotheses and analytical model.

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