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Factors Influencing the Adoption and Continuity of Digital Payments in Tier-II Cities: A Structural Trust, Usage-Depth and Resilience Perspective

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ABSTRACT

Despite rapid growth in digital payment transactions in urban India, their adoption in Tier-II cities is far from complete. This study looks into how structural trust, infrastructure friction, digital literacy, and behavioral resilience affect the level of depth of digital payment usage and the continuity of digital payment behavior of consumers in a Tier-II city, as well as the role of usage depth in mediating these effects. The primary data were gathered via a structured questionnaire survey of 244 valid respondents using reliability analysis, exploratory factor analysis, Pearson correlation, multiple regression, and bootstrapped mediation analysis. The findings show that structural trust, digital literacy, and behavioral resilience are significant positive predictors of usage depth, but infrastructure friction exhibits a positive but insignificant relationship. Structural trust and behavioral resilience turn out to be the two most important direct determinants of payment continuity, while usage depth fails to significantly mediate these relationships. Results show that in Tier-II regions, it is the confidence and resiliency of digital payment behavior rather than its usage across different transactions that leads to its continuity. Implications of the study from theoretical and managerial perspectives for banks, financial technology companies, and policy makers who aim to expand digital payment adoption beyond metropolitan areas are also elaborated on.

***Keywords**: Digital Payments, Tier-II Cities, Structural Trust, Usage Depth, Infrastructure Friction, Digital Literacy, Behavioral Resilience, Payment Continuity.*

Introduction

The digital payments ecosystem in India has seen a shift in its structure in the past decade because of factors such as demonetization, introduction of Unified Payments Interface (UPI), COVID-19 pandemic, and various efforts made by the government through the Digital India initiative. The number of monthly UPI transactions has moved from a few millions to billions, and digital payments have become an integral part of the economy, both in metros and increasingly in smaller cities (Cornelli et al., 2025; Mathew et al., 2025). Yet, in most academic studies analyzing digital payment adoption in India, only metro and Tier-I cities receive sufficient attention (Gupta et al., 2022; Asha & Shilpa, 2022), while Tier-II cities remain understudied despite their large share of digital users in the country.

The users of Tier-II cities fall into a transition zone where they are neither as digital natives as the early adopters in metropolitan cities nor are they as restricted as those living in rural areas who lack access to banking services (Vishwakarma et al., 2025; Ravikumar et al., 2024). In this context, adoption can be seen as a gradual process that evolves from using the service infrequently and for lower value to using the technology extensively and habitually as a replacement to cash(Bordoloi, 2025; Trivedi, 2025).

The two behavioral results can be distinguished analytically, namely: the extent of penetration of digital payments — how far the digital payments have penetrated into the consumer's transactional experience; and the continuity of this penetration through time, especially under conditions of friction. The consumer may have deep penetration into digital payments but leave it behind after only a few transaction attempts, whereas the consumer with less penetration may have continuity of the behavior

owing to the trust/resilience. Many existing frameworks like TAM and UTAUT have been well-used for the study of the intention to adopt (Balakrishnan & Gan, 2023; Yadav et al., 2025), but there is less literature available on the effects of trust, friction, literacy, and resilience on this penetration-continuity chain other than metropolitan India.

The study aims to fill this research gap through formulating and validating a model where structural trust, infrastructure friction, digital literacy, and behavioral resilience serve as the antecedents for usage depth, which, in turn, is expected to impact payment continuity along with other pathways from the antecedents to continuity. The study makes use of primary survey data collected from 244 participants in a Tier-II city and makes use of reliability analysis, exploratory factor analysis, correlation, multiple regression analysis, and bootstrapped mediation analysis to validate ten hypotheses. Contribution of this study can be listed as: (i) Differentiation of usage depth and payment continuity as distinct constructs; (ii) Behavioral resilience as a formal antecedent and not just an afterthought; and (iii) Data from a Tier-II city(Yadav et al., 2025; Nayyar & Bhandari, 2025).

This is an important distinction, in practice, as a consumer that uses digital payments extensively but stops using them due to one transactional problem represents fragile adoption of such technology, whereas a consumer who does not give up on transactions despite some friction is more resilient adoption and a more valuable one for banks, fintechs, and policymakers who want to make consumers less reliant on cash.

The rest of this paper is organized as follows: literature review (Section 2), statement of research gap and objectives (Section 3), conceptual framework and hypotheses (Section 4), methodology (Section 5), results (Section 6), discussion of results (Section 7), and conclusion (Sections 8-10).

Literature Review

Growth of digital payments in India. In Trivedi (2025), India's progress towards an increasingly cashless economy through ATMs and cards, and then through UPI payments is discussed, mentioning that the usage of cash persists owing to infrastructural, awareness, and trust-related barriers. In Rayabharam (2021), the adoption of a cashless economy is seen as a long and gradual process, limited by point of sale shortcomings and security risks. In Raut (2025) and in Uma & Jagannarayan (2025), fast development of UPI infrastructure due to the Digital India initiative and Aadhaar based banking services is mentioned, despite some issues persisting along with growing volumes. Exponential growth of UPI and IMPS payments is shown in Mathew et al. (2025) and in Paramasivan & Surya (2025). Cornelli et al. (2025) credit UPI scale up to its open system and public-private partnership. Copestake et al. (2025) show that interoperability helps adoption.

Trust, security, and perceived risk. The construct of trust is also evident in the literature although through a different approach. According to Sharma et al. (2023), adoption of cash on delivery is fueled by the perception of security arising from trust and privacy. This is a reverse situation that shows how lack of trust in digital infrastructure enables cash alternatives. The research by Ramtiyal et al. (2022) highlights the variation in perceived risks associated with mobile payment adoption in different retail settings, while Zehra et al. (2024) indicate trust in security distinguishes consumer loyalty. Shah and Zala (2021) identify wide awareness of digital payments after demonetization in Gujarat, although it should be noted that awareness does not translate to trust. Bordoloi (2025) identifies continued expectation-satisfaction gap based on technological problems and lack of support. It is therefore clear that structural trust is multi-dimensional and encompasses the following elements.

Infrastructure friction. However, Kaur & Kaur (2025) observe the unexplored potential of e-commerce hampered by infrastructural issues. Vishwakarma et al. (2025) conclude that rural challenges related to adoption reveal digital literacy and security as major constraints, whereas Gupta et al. (2022) reveal that awareness and security issues continue to be obstacles in metro cities, and further research is needed on the same in Tier-II cities and rural areas. Beena & Parvathi (2025) indicate that absence of customer support impedes the process of translating adoption into usage. Mishra & Kumar (2025) conclude that cash usage continues despite increase in digital payments due to socio-economic and habitual reasons.

Digital literacy, usage depth, and resilience. Digital literacy, which means being capable, competent, and confident in using, solving, and navigating digital payment platforms, is frequently highlighted as one of the key prerequisites for continued usage. Maheswari (2025) claims that adoption among the informal sector happened due to necessity post-demonetization, and further usage will depend on usability, trust, and literacy, while Singh (2025) and Mula (2025) suggest that literacy barriers

are key hindrances to achieving financial inclusion through the use of UPI. Regarding usage depth and continuity, Chakraborty et al. (2024) highlight convenience, speed, and trust as the factors that make people satisfied and increase their intentions of continuing usage of online food delivery service, which is analogous to the usage depth to continuation process described in this research. As far as the behavioral resilience dimension is concerned, that is continuing usage even in face of difficulties, although it has not been explicitly discussed in the literature, it is implicit in disruption response studies: Yadav and Das (2025) show that lockdown due to COVID-19, rather than demonetization, led to adoption of new channels of payments, while Devmurari (2025) reveals increased usage in connection with more impulsive purchases because of decreased "pain of paying."

Tier-II contexts. Sarkar (2023) mentions that the level of fintech adoption is rather low in the case of Tier-II cities as well as among MSMEs. One of the few studies addressing Tier-II populations specifically, Yadav et al. (2025) conclude that social influence is the key determinant of adoption intention among Tier-II students. Another study by Jiwankar and Kapgate (2025) focusing on a retailer from Nagpur concludes that mobile-first approach to shopping and increasing confidence in digital payments have an effect on consumer choice behavior. From the methodological perspective, the studies of Yadav et al. (2025) and Ungratwar et al. (2025) provide justification for this research's use of mediation analysis.

Synthesis. The literature reveals four recurring antecedents: trust, infrastructural friction, digital literacy, and resilience to disruption, yet usually considers them in respect to a single and homogeneous dependent variable. There are few studies that address usage depth and payment continuity as two distinct variables simultaneously based on primary survey data from a Tier-II city.

Research Gap and Objectives

The following three gaps continue to exist. First, the primary data researches done on the use of digital payments in India are limited to metropolitans (Asha & Shilpa, 2022; Lakshmi & Nandini, 2022; Nayyar & Bhandari, 2025), thereby ignoring Tier-II cities. Second, the previous studies fail to separate the outcomes of "adoption" or "continuance intentions" from the breadth and depth of their behavior. Third, even though "infrastructural friction" and "digital literacy" have been identified as barriers for adoption, very few researchers have tested behavioral resilience as an antecedent construct.

Building on these gaps, the study pursues five objectives:

- To examine the structural trust determinants of digital payment behavior in a Tier-II city.
- To analyze the depth of digital payment usage as an outcome distinct from initial adoption.
- To evaluate the influence of infrastructure friction on payment continuity.
- To assess the role of digital literacy in shaping transaction confidence and usage.
- To investigate behavioral resilience during payment disruptions and its influence on continued usage.

Conceptual Framework and Hypotheses

According to this study, there is a conceptual framework that postulates how four constructs, which are considered to be exogenous variables, including structural trust, infrastructure friction, digital literacy, and behavioral resilience affect the depth of usage and payment continuity (which are outcomes). Structural trust entails the belief in the reliability, security, and organizational support of transactions. Infrastructure friction involves perceptions regarding connectivity issues, failed transactions, lateness, and lack of support. Digital literacy involves knowledge and ability to use digital payments while behavioral resilience includes persistence in spite of all these challenges.

H1a: Structural trust has a significant positive effect on usage depth.

H1b: Structural trust has a significant positive effect on payment continuity.

H2: Usage depth has a significant positive effect on payment continuity.

H3a: Infrastructure friction has a significant negative effect on usage depth.

H3b: Infrastructure friction has a significant negative effect on payment continuity.

H4a: Digital literacy has a significant positive effect on usage depth.

H4b: Digital literacy has a significant positive effect on payment continuity.

H5a: Behavioral resilience has a significant positive effect on usage depth.

H5b: Behavioral resilience has a significant positive effect on payment continuity.

H6a–d: Usage depth mediates the relationship between (a) structural trust, (b) infrastructure friction, (c) digital literacy, and (d) behavioral resilience, and payment continuity.

Research Methodology

- **Research Design**

This research involves quantitative, cross-sectional, descriptive and causal research design that can help to test hypothesis about latent behavioral constructs through primary survey data collection (Sekaran & Bougie, 2016). The research is conducted in line with the normal procedure in survey research which entails assessing reliability, construct validity through exploratory factor analysis, description and profiling, bivariate correlations, multiple regressions, and mediation analysis. This study involved voluntary participation in which no personal identifiable information apart from the name and email address was collected. The data used in the analysis was de-identified while analysis was conducted using construct and demographic data.

- **Sampling and Data Collection**

Primary data was obtained using a structured online questionnaire that was sent to digital payment users in an Indian Tier-II city using non-probability convenience sampling. This sampling technique is used widely for exploring consumer behavior (Lakshmi & Nandini, 2022; Asha & Shilpa, 2022). Out of 246 responses obtained, 244 were included, which represents a response rate of 99.2%, where the final sample size was N = 244.

- **Measures**
  - The questionnaire consisted of two parts. Part A gathered the demographic data of age, occupation, monthly income, and frequency of use of the digital payment services. Part B assessed five factors using five-item, five-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree):
  - Structural Trust (TRUST1–5): transaction accuracy, money security, large transaction comfort, institution protection, reliability during peak usage time.
  - Usage Depth (USE1–5): daily use, preference of digital over cash payments, transactions of different kinds, high value transactions, lower cash usage.
  - Infrastructure Friction (FRIC1–5): connectivity problems, failed transactions, delay, lack of assistance, switching to cash.
  - Digital Literacy (LIT1–5): minor problem solving ability, independent transaction, safety practice knowledge, fraud recognition, confidence due to the knowledge.
  - Behavioral Resilience (RES1–5): continued use despite failed transaction, retry instead of reverting to cash, resistant to temporary issues, continued trust despite minor problems, willingness to continue without cashback incentives.

The continuous payment measure, which is the distal measure, was operationalized by self-reported usage frequency on a scale of Daily to Rarely, which was recoded into an ordinal scale of five points ranging from Daily (5) to Rarely (1) since continuous usage and the highest frequency usage are a manifestation of continuity.

- **Data Analysis Techniques**

The analyses were carried out using Python (pandas, statsmodels, pingouin, factor_analyzer): (1) reliability analysis via Cronbach's Alpha; (2) KMO test for sampling adequacy and Bartlett's sphericity test, then EFA (Principal Axis Factoring and Varimax rotation); (3) descriptive statistics and frequency tables for demographics; (4) correlations between composite scores; (5) two OLS regressions: Model 1 using trust, friction, literacy, and resilience as independent variables and depth of use as dependent variable; Model 2 used the same predictors but also depth of use as independent and continuity of payments as dependent variable; and (6) mediation analysis using bootstrapping technique (5,000 samples) to test usage depth as mediator between antecedents and continuity. Composite scores were the average of five questions of each construct; VIF was checked for any issues with multicollinearity.

Data Analysis and Results

- **Demographic Profile**

The majority (57.0%) of the surveyed people were between the ages of 18-25; 46.7% were students and 32.0% were salaried professionals; 32.4% had no income source while 23.4% earned less

than Rs. 25,000 per month (refer to Table 1 for complete details). Usage rate-wise, 48.8% used digital payments daily while 35.2% used it several times a week, indicating that 84.0% of them are frequent, near.

Table 1: Demographic Profile of Respondents (N = 244)

Variable	Category	Frequency	Percentage
Age	18–25 1 26–35 4 36–45 3 46–55 1 Student Salaried Employee Self-employed / Business Other No Income Below ₹25,000 ₹25,000–₹50,000 4 ₹50,000–₹1,00,000 4 Above ₹1,00,000 Daily Several times a week Once a week Occasionally Rarely	39 5 8 1 8 1 9 7 114 78 33 19 79 57 3 1 0 1 25 119 86 11 13 15	7.0% 9.7% 5.6% .8% 46.7% 32.0% 13.5% 7.8% 32.4% 23.4% 7.6% 6.4% 10.2% 48.8% 35.2% 4.5% 5.3% 6.1%

- **Reliability Analysis**

Structural Trust (α = 0.681) and Behavioral Resilience (α = 0.685) approached the conventional 0.70 threshold; Usage Depth (α = 0.625) and Infrastructure Friction (α = 0.587) were acceptable-to-marginal, while Digital Literacy (α = 0.549) fell below the exploratory threshold. No items were removed; the modest values are noted as a limitation and likely reflect sample heterogeneity rather than measurement flaw.

Table 2: Reliability Statistics

Construct	Items	Cronbach's Alpha	95% CI
Structural Trust (TRUST) Usage Depth (USE) Infrastructure Friction Digital Literacy (LIT) Behavioral Resilience	5 5 5 5 5	0.681 0.625 0.587 0.549 0.685	[0.613, 0.740] [0.546, 0.695] [0.499, 0.663] [0.453, 0.633] [0.618, 0.744]

- **Validity: KMO, Bartlett's Test, and EFA**

The sampling adequacy was high (KMO = 0.797, "meritorious") and Bartlett's test was significant ($\chi^2 = 1408.20$, $p < .001$), indicating suitability for factor analysis. Principal Axis Factor Analysis with Varimax rotation using 25 variables resulted in five factors having eigenvalues either equal to or greater than 1.0 (5.42, 1.95, 1.53, 1.42, 1.23) that are generally similar to the conceptual framework, even though the cumulative percentage of variance explained was low (33.3%) and some items cross-loaded with values above 0.30 – which is quite common in the beginning stage of developing attitudinal scales related to one broader construct (Hair et al., 2010). As the five composite scores were distinctly identifiable (as seen from correlations below), they were used further.

- **Descriptive Statistics**

Behavioral Resilience (M = 3.88, SD = 0.68) and Structural Trust (M = 3.88, SD = 0.72) recorded the highest mean agreement; Infrastructure Friction recorded the lowest (M = 3.43, SD = 0.70). Payment Continuity recorded a mean of 4.15 (SD = 1.13), consistent with the high share of daily/near-daily users.

Table 3: Descriptive Statistics (N = 244)

Construct M	ean S	D M	in M	ax
Structural Trust Usage Depth	3.88 3.63	0.72 0.72	1.6 1.0	5.0 5.0
Infrastructure Friction Digital Literacy	3.43 3.65	0.70 0.63	1.4 2.0	5.0 5.0
Behavioral Resilience Payment Continuity	3.88 4.15	0.68 1.13	1.4 1.0	5.0 5.0

- **Correlation Analysis**

All constructs correlated significantly and positively ($p < .05$), except Infrastructure Friction and Payment Continuity ($r = 0.037$, ns). Usage Depth correlated most strongly with Structural Trust ($r = 0.497$) and Digital Literacy ($r = 0.499$); Payment Continuity correlated most strongly with Behavioral Resilience ($r = 0.385$) and Structural Trust ($r = 0.364$). Notably, Infrastructure Friction was positively — not negatively — correlated with Usage Depth ($r = 0.249$), a counter-intuitive finding discussed in Section 7.

Table 4: Pearson Correlation Matrix

	Trust	Usage Depth	Friction	Literacy	Resilience	Continuity
Trust Usage Depth Friction Literacy Resilience Continuity	1.000 0.497 ***0.211*** *0.451***0.518*** *0.364***	1.000 0.249 ***0.499*** 0.422 ***0.270***				

Note.p < .05, ***p < .01,*** p < .001; ns = not significant.

- **Regression Analysis**

Model 1 (Usage Depth): significant, F(4, 239) = 33.48, p < .001, R^2 = 0.359 (Adj. R^2 = 0.348). Structural trust (β = 0.280, p < .001), digital literacy (β = 0.324, p < .001), and behavioral resilience (β = 0.142, p = .035) were significant positive predictors; infrastructure friction was positive but non-significant (β = 0.086, p = .127).

Model 2 (Payment Continuity): significant, F(5, 238) = 11.54, p < .001, R^2 = 0.195 (Adj. R^2 = 0.178). Structural trust (β = 0.347, p = .003) and behavioral resilience (β = 0.454, p < .001) were significant positive predictors; usage depth (β = 0.153, p = .185), infrastructure friction (β = −0.071, p = .477), and digital literacy (β = −0.145, p = .272) were not significant. VIFs in Model 2 ranged from 1.13 to 1.62, well below the threshold of 5, indicating multicollinearity did not distort estimates.

Table 5: Summary of Regression Results

Predictor	Model 1: Usage Depth (β)	p	Model 2: Payment p Continuity (β)	
Structural Trust Infrastructure Friction Digital Literacy Behavioral Resilience Usage Depth R^2 Adjusted R^2 F-statistic	0.280 0.086	<.001*** .127 (ns)	0.347 −0.071	.003** .477 (ns)

Note.p < .05, ***p < .01,*** p < .001; ns = not significant.

- **Mediation Analysis**

Bootstrapped mediation (5,000 resamples, 95% CIs) tested usage depth as mediator between each antecedent and continuity. None of the four indirect effects were significant, as all CIs contained zero: trust, 0.043 [−0.022, 0.131]; friction, 0.013 [−0.011, 0.050]; literacy, 0.049 [−0.025, 0.157]; resilience, 0.022 [−0.018, 0.069]. This is consistent with the non-significant b-path (usage depth → continuity, β = 0.153, p = .185): usage depth could not statistically transmit the antecedents' effects onto continuity, even though three of the four significantly predicted usage depth in Model 1.

Table 6: Bootstrapped Mediation Analysis (Usage Depth as Mediator)

Antecedent (IV)	a-path	b-path	Indirect Effect (a×b)	95% CI D E (	irect M ffect S c′)	ediation upported?
Structural Trust Infrastructure Friction Digital Literacy Behavioral Resilience	0.280 0.086	0.153 0.153	0.043 0.013	[−0.022, 0.131] [−0.011, 0.050]	0.347** −0.071 ns	No No

- **Summary of Hypothesis Testing**

Of ten hypotheses, five were supported (H1a, H1b, H4a, H5a, H5b) and five were not (H2, H3a, H3b, H4b, H6a–d). Structural trust and behavioral resilience were the most consistent predictors of both outcomes; digital literacy predicted usage depth but not continuity; friction predicted neither; and usage depth mediated none of the antecedent–continuity relationships.

Table 7: Summary of Hypothesis Testing

Hypothesis	Path	Result	Decision
H1a H1b H2 H3a H3b H4a H4b H5a H5b H6a–d	Trust → Usage Depth Trust → Continuity Usage Depth → Continuity Friction → Usage Depth (neg.) Friction →	β = 0.280, p<.001 β = 0.347, p=.003 β = 0.153, p=.185 β = 0.086, p=.127 β =	Supported Supported Not Supported Not Supported Not Supported Supported

	Continuity (neg.) Literacy → Usage Depth Literacy → Continuity Resilience → Usage Depth Resilience → Continuity Usage Depth mediates IV–Continuity	−0.071, p=.477 β = 0.324, p<.001 β = −0.145, p=.272 β = 0.142, p=.035 β = 0.454, p<.001 All 95% CIs incl. 0	Not Supported Supported Supported Not Supported

Discussion

The findings both align with and depart from metropolitan-focused Indian studies. Consistent with prior literature (Sharma et al., 2023; Zehra et al., 2024; Cornelli et al., 2025), structural trust robustly predicted both usage depth and payment continuity, reinforcing that confidence in transactional accuracy, fund safety, and institutional protection remains foundational regardless of city tier — echoing Bordoloi's (2025) observation that expectation–experience gaps shape continued usage.

Digital literacy's positive influence on usage depth corroborates prior findings that self-efficacy supports broader, habitual usage (Maheswari, 2025; Singh, 2025). Its non-significant, directionally negative relationship with continuity is more unexpected; one plausible explanation is that the highest-literacy respondents are already near-ceiling on continuity, while some lower-literacy respondents report high continuity out of necessity or habit rather than confidence — consistent with Prasad and Chaudhery's (2021) observation that pandemic-driven urgency, rather than literacy, drove continuity surges in under-served segments.

The most distinctive finding is the strong effect of behavioral resilience on payment continuity (β = 0.454) alongside its more modest effect on usage depth (β = 0.142), suggesting that in a Tier-II context the capacity to tolerate and recover from disruptions is a more powerful driver of sustained behavior than breadth of usage itself, extending the continuance literature (Chakraborty et al., 2024) by suggesting resilience operates somewhat independently of usage depth.

The non-significant — and unexpectedly positive — relationship between infrastructure friction and usage depth may reflect a "friction tolerance" habituation effect: broader users, by transacting more, encounter more friction, producing a positive raw association even if friction discourages usage at the margin — consistent with Mishra and Kumar's (2025) finding that cash demand persists via habit amid rising digital volumes. The friction scale may also have captured perceived frequency of problems more than their behavioral consequence, a distinction future research should address with transaction-log-based measures.

The lack of any meaningful mediating effect via usage depth (H6a–d) suggests that continuity of payments depends on direct effects from trust and resilience and not through usage breadth; increasing the variety of uses might not be sufficient to ensure continuity on its own.

With regards to demographics, the fact that 57.0% of the sample falls between 18 and 25 years old and 84.0% using the service every day, means that the findings might be more relevant to sustained usage than adoption. Future research will provide a clearer idea on whether this holds true for other samples.

Implications

- **Theoretical:** The empirical separation of usage depth and payment continuity as distinct, although related, outcomes which are not linked through any simple mediating mechanism is made here; furthermore, resilience is introduced, previously an implicit concept within continuance research, as a quantifiable predictor of continuation behavior separate from trust, literacy, and friction. The surprising results regarding friction raise questions as to whether friction is a static concept or rather an experience-based one.
- **Practical and managerial:** In the case of banks and other financial technology providers, trust-building activities, such as visible transaction confirmations, a transparent dispute redress mechanism, and discussions about institutional safeguards, will most likely generate payoffs both in terms of usage depth and continuity. Considering the large contribution of resilience, providers need to ensure quick recovery from any failures, proactively solve failed transactions, and provide instant help during disruption. Literacy programs are beneficial in terms of increasing the transaction range but need to be combined with building trust and resilience if sustaining usage is desired. For policy-makers, the small impact of friction does not imply a lack

of urgency in infrastructure development; instead, it indicates that current gaps have been tolerated long enough to generate a payoff in trust-building and dispute handling.

- **Segment-specific strategy:** As the antecedents of usage depth and continuity differ from each other partially, providers need to take different actions for different objectives rather than develop a general adoption campaign: literacy programs to widen transaction range and designing resilience into the process and trust-building communication to avoid churning back to cash upon disruption — a more crucial outcome.

Limitations and Future Research Directions

Sampling method used was the non-probability convenience sampling and was done from one Tier-II city only hence limiting generalization of results. Some of the reliabilities of constructs measured were below the conventional cut-off levels, for example Digital Literacy (α = 0.549). Cross-sectional design used does not allow causal relationship inference. Payment continuity relied on a single self-reported frequency item rather than a validated multi-item scale or transaction-log data, and the EFA's cross-loadings suggest confirmatory factor analysis or SEM on a larger sample would more rigorously test discriminant validity. Future research could extend this model to additional Tier-II and Tier-III cities, test moderators such as age, income, and gender, and measure infrastructure friction via objective, transaction-log-based indicators.

Conclusion

This study examined how structural trust, infrastructure friction, digital literacy, and behavioral resilience influence the depth and continuity of digital payment usage among 244 consumers in a Tier-II Indian city. Structural trust and behavioral resilience emerged as the most consistent and powerful predictors of both outcomes; digital literacy expands usage depth without securing continuity; infrastructure friction plays a weaker, more ambiguous role than hypothesized; and usage depth does not significantly mediate the antecedent–continuity relationship. As digital payments continue penetrating Tier-II India, sustaining that penetration will depend less on broadening transactional use cases and more on cultivating institutional trust and behavioral resilience to the disruptions that inevitably accompany a still-maturing infrastructure. For scholars, banks, fintech firms, and policymakers alike, adoption and continuity — while related — are governed by partially distinct behavioral logics warranting separate attention.

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