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Merchant Fees and the Sustainability of UPI Adoption among Small Retailers in India: A Conceptual Framework and Panel Research Design

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Abstract
The Unified Payments Interface (UPI) has become the dominant retail payment rail in India, helped in large part by a long period in which person-to-merchant transactions carried no merchant discount rate (MDR). With the introduction of a capped, threshold-based MDR on higher-value person-to-merchant transactions from 15 October 2026, India has entered a new phase in which the cost structure of digital acceptance is changing. Existing research explains well why merchants adopt digital payments, but it says little about whether adoption is sustained once fees appear. This paper develops a conceptual framework that links merchant fee exposure to the continuity of UPI acceptance among small retailers, with trust, reliability, settlement experience and tax-visibility concerns as moderating factors. Building on gaps identified in recent reviews of the literature, namely the shortage of longitudinal evidence, the focus on large firms, and regional inequality in digital capability, the paper proposes five testable hypotheses and a panel-based research design that follows the same retailers before and after the fee change. The paper contributes a theoretically grounded agenda for studying fee introduction as a natural experiment, and it offers practical guidance for payment providers and policymakers on phasing charges without eroding acceptance.

Keywords: UPI, merchant discount rate, digital payments, small retailers, technology continuance, emerging economies

1. Introduction

1.1 Background

In less than a decade, UPI has moved from an urban convenience to the core retail payment infrastructure of India. Recent literature documents its rapid growth in transaction volume and value, its dominant share of retail digital payments, and the expansion of acceptance infrastructure into smaller towns (Parekh & Dholakia, 2026; Reserve Bank of India, 2025a; PIB, 2026). This growth has been supported by public

investment in identity and account access through the JAM trinity (PIB, 2024), by interoperability across banks and importantly, by an extended period of zero merchant fees on most person-to-merchant transactions (Reserve Bank of India, 2025).

In September 2026 the Government of India announced that, from 15 October 2026, a 0.4% MDR would apply to person-to-merchant UPI transactions above ₹2,000, with a cap of ₹300 on transactions of ₹75,000 or more, shared among banks, payment service providers and app providers rather than passed to customers. Small merchants receiving up to ₹1 lakh per month through UPI QR were reported to remain exempt (Business Today, 2026; Syed, 2026).

1.2 Problem Statement

The adoption of literature is large, but most of it asks why businesses start using digital payments. A different question becomes urgent when pricing changes: do businesses keep using the system once a cost is attached? Parekh and Dholakia (2026) describe the fee change as a real-time test of the idea that merchant behaviour depends on cost predictability as much as on the absolute fee, and they note that the coming months will show whether a capped charge preserves or weakens confidence built under zero MDR. This paper takes up that observation and converts it into a structured research agenda.

1.3 Objectives

1. To synthesise the theoretical and empirical literature on merchant adoption and continued use of digital payments in emerging economies.
2. To develop a conceptual framework explaining how merchant fee exposure affects the continuity of UPI acceptance among small retailers.
3. To propose testable hypotheses and a panel-based research design for evaluating the fee change.
4. To draw out implications for payment providers and policymakers on the design and sequencing of merchant charges.

1.4 Scope and Contribution

The paper is conceptual and methodological. It does not report new primary data; any figures cited are drawn from the secondary sources listed in the references. Its contribution is threefold: it shifts attention from initial adoption to continuance under changing prices; it integrates technology-acceptance, risk-perception and collective-action perspectives in a single framework; and it specifies a research design that addresses the lack of longitudinal evidence repeatedly noted in earlier work.

2. Review of Literature

2.1 Technology Acceptance and Organisational Adoption

Two families of models dominate research on technology adoption. The Technology Acceptance Model emphasises perceived usefulness and perceived ease of use (Davis, 1989), and the Unified Theory of Acceptance and Use of Technology adds social influence and facilitating conditions (Venkatesh et al., 2003). In studies of small and medium enterprises, the Technology–Organisation–Environment perspective is often used to group determinants into technological, organisational and environmental factors. Reviews of SME technology adoption highlight organisational readiness, ICT competence and resource availability as important organisational drivers, while competition, customer preference and government support are the principal environmental pressures (Adams, 2022; Kalita, 2024; Lucian Dimoso & Utonga, 2024; Saxena, 2018).

2.2 Determinants of UPI Adoption by Merchants

Studies specific to UPI point to convenience, speed and perceived security as leading reasons for use,

ahead of cashback and promotional incentives (Vaibhav & Baag, 2025). A systematic review of retailer-focused UPI research organises the evidence into infrastructure and reliability, trust and dispute resolution, human processes and onboarding, cost economics, process integration, customer demand and the institutional environment, and argues that dependable transaction confirmation operates as a precondition for any other benefit to matter (Bhutani & Pahal, 2025). Trust is also treated as an antecedent of usage, with behavioural intention mediating the link between performance expectancy, trust and actual use (Saha & Kiran, 2022).

2.3 Barriers: Risk, Literacy and Demand-Side Constraints

Research using the Extended Valence Theory finds that perceived financial, security and operational risk are the main inhibitors of UPI adoption among unorganised retailers, while perceived usefulness, ease of use, social influence and facilitating conditions act as enablers (Giri & Biswas, 2025). Work in semi-urban settings such as Varanasi reports persistent gaps in digital skills, connectivity and cybersecurity even where uptake is already widespread (Yadav, 2024). A large survey of small merchants in Jaipur found little support for the view that infrastructure, bank accounts, smartphones or fees explained low adoption; weak uptake was instead associated with perceived lack of customer demand and with fear that a digital sales trail would raise tax liabilities (Ligon et al., 2019).

2.4 The Merchant-Acceptance Gap as a Collective Action Problem

Recent analysis argues that the binding constraint in many emerging markets has moved from consumer access to merchant acceptance. Onboarding, device and servicing costs for very small merchants can exceed the revenue they generate for providers, and because the benefits of wider acceptance accrue to the whole economy while the cost falls on one provider, individual firms under-invest (Ardic & Perez-Galindo, 2026). This view is directly relevant to fee design: charges that improve provider economics may fund wider acceptance, yet the same charges may weaken merchant incentives at the margin.

2.5 Habit, Policy Shocks and Persistence

Evidence from demonetisation shows that attachment to cash can dampen the shift to digital payments even when cash is temporarily scarce (Sivathanu, 2019). Quasi-experimental evidence suggests that demonetisation produced limited persistent change in digital uptake once outcomes were benchmarked against the money supply, whereas the COVID-19 lockdowns had a stronger and longer-lasting effect (Yadav & Das, 2025). Together these studies imply that behaviour changes most when sustained friction accompanies a policy change, which is a useful lens for a fee that applies only above a threshold.

2.6 Economic Consequences for Small Firms

Studies generally associate digital payment adoption with streamlined transactions, improved financial tracking and wider customer reach, but they report that the size of revenue gains varies widely by setting and is not consistently observed (Lucian Dimoso & Utonga, 2024; Parekh & Dholakia, 2026). Retention effects appear harder to isolate than revenue effects, and early technical failures may harm customer trust disproportionately (Saha & Kiran, 2022).

3. Research Gaps

Three gaps motivate this study. First, literature is dominated by cross-sectional surveys and perception-based measures taken at one point in time, and panel evidence that follows the same firms through changes in conditions is scarce (Parekh & Dholakia, 2026). Second, empirical attention to micro and small retailers lags work on consumers and large firms (Bhosale et al., 2026; Parekh & Dholakia, 2026). Third, aggregate indicators hide regional differences in connectivity, bandwidth, payment failures and digital literacy,

particularly outside metropolitan areas (Parekh & Dholakia, 2026). A further gap concerns pricing: the evidence on zero-fee adoption is substantial, but the behavioural response to a capped, threshold-based fee has had little opportunity to be studied.

4. Conceptual Framework and Hypotheses

4.1 Framework

The framework treats continued UPI acceptance as the outcome of a merchant's ongoing cost–benefit assessment rather than a one-time adoption decision. The independent construct is fee exposure, defined as the share of a merchant's UPI receipts that fall in fee-bearing transaction bands. Three groups of moderators shape how fee exposure translates into behaviour:

- **Reliability and trust:** confidence that payments will be confirmed and disputes resolved (Bhutani & Pahal, 2025; Saha & Kiran, 2022).
- **Risk perception and tax visibility:** perceived financial, security and operational risk, and concern that digital records increase tax burden (Giri & Biswas, 2025; Ligon et al., 2019).
- **Capability and context:** digital literacy, connectivity, firm size, location tier and the presence of customer demand for digital payment (Yadav, 2024; Vaibhav & Baag, 2025).

The outcomes are (a) continued acceptance, (b) steering of customers toward cash for fee-bearing transactions (partial substitution), and (c) discontinuation of UPI for high-value sales.

4.2 Hypotheses

H1. Higher fee exposure is associated with a higher likelihood of steering high-value transactions toward cash, relative to merchants with lower fee exposure.

H2. The effect in H1 is weaker for merchants who report high confidence in transaction confirmation and dispute resolution, because reliability lowers the perceived cost of using the system.

H3. The effect in H1 is stronger for merchants with high tax-visibility concerns, because the fee compounds an existing reason to avoid digital records.

H4. Merchants below the monthly exemption threshold show no meaningful change in acceptance behaviour attributable to the fee change, while indirect effects may arise from expectations that exemptions may narrow in future.

H5. The behavioural response to the fee is larger in lower-connectivity, lower-literacy locations, because reduced margin for error amplifies perceived operational risk.

The hypotheses are directional and are designed to be falsifiable. A null or reverse result for H1 would itself be informative, suggesting that cost predictability and a capped, low-rate matter more than the existence of a charge.

5. Research Methodology

5.1 Design

The proposed study is a longitudinal, mixed-methods design with a quantitative panel at its core and qualitative interviews to explain mechanisms. The effective fee date of 15 October 2026 provides a clear intervention point. Data collection waves are proposed at baseline (before or immediately around the change), and at approximately three, six and twelve months afterward.

5.2 Sampling

A stratified purposive sample of small retailers (for example, groceries, vegetable vendors, pharmacies, apparel and electronics shops) is proposed across metropolitan, Tier-2/3 and semi-urban or rural locations.

Because the policy exempts merchants below a monthly receipts threshold and applies only above a per-transaction threshold, the sample should be stratified so that exempt and non-exempt merchants, and merchants with differing shares of transactions above ₹2,000, are adequately represented.

5.3 Measures

Construct	Proposed measurement	Basis
Fee exposure	Share of monthly UPI receipts in fee-bearing bands, from merchant records or app statements	Policy design
Reliability and trust	Multi-item Likert scale on confirmation reliability, dispute resolution and trust	Saha & Kiran (2022); Bhutani & Pahal (2025)
Perceived risk	Financial, security and operational risk items	Giri & Biswas (2025)
Tax-visibility concern	Items on fear of increased tax burden from digital records	Ligon et al. (2019)
Digital literacy and connectivity	Self-reported skills plus observed network quality	Yadav (2024)
Continued acceptance	Share of sales accepted digitally; QR displayed; refusal or steering of UPI	Study-specific
Customer retention proxy	Repeat-customer share reported by merchant	Study-specific

5.4 Analysis

Quantitative analysis would use a difference-in-differences or event-study framework comparing merchants with higher and lower fee exposure over time, with merchant fixed effects and controls for location tier, firm size and sector. Moderation hypotheses (H2, H3, H5) would be tested through interaction terms. Heterogeneity by exemption status would address H4. Qualitative interview data would be coded thematically to clarify how merchants talk about fees, customer reactions and trust. Robustness checks would include placebo tests on pre-change waves and alternative measures of acceptance.

6. Expected Contributions and Implications

6.1 Theoretical Contribution

The framework extends adoption theory toward continuance under price change, and it connects individual-level risk perception with system-level collective action arguments. If supported, the findings would indicate that merchant retention of digital payments depends on how trust, predictability and capability interact with cost, rather than on cost alone.

6.2 Implications for Payment Providers

Providers could use the findings to sequence charges, communicate thresholds clearly, and invest in reliability and dispute resolution in locations where merchants are most sensitive. Because reliable confirmation appears to be a precondition for merchants to weigh other benefits (Bhutani & Pahal, 2025), investment in uptime and settlement clarity may protect acceptance more effectively than discounts.

6.3 Implications for Policymakers

Policy designers should consider that supply-side measures alone may fail where reluctance is demand-side or tax-related (Ligon et al., 2019). Monitoring should track not only headline volumes but also the share of high-value transactions that remain digital, since aggregate figures may hide shifts at the margin. Evidence from other countries should be applied cautiously, because India's experience combined a long

zero-fee period, interoperability and earlier investment in identity and account access (Parekh & Dholakia, 2026).

7. Limitations

The paper is conceptual, so none of the hypotheses have yet been tested. Policy details, particularly thresholds and exemptions, may be adjusted after implementation and should be rechecked. Findings from small local surveys cited in the literature may not generalise nationally (Parekh & Dholakia, 2026), and results from India may not transfer to telecom-led systems such as mobile money in other emerging markets. Measuring merchant behaviour through self-report risks social desirability bias, which the proposed use of transaction records and observation is intended to mitigate.

8. Conclusion

UPI's growth was built on a combination of interoperability, public digital infrastructure and, for a long time, free acceptance by merchants. As charges are introduced, the central question becomes whether trust and routine use built under zero pricing survive a modest, capped fee. This paper has proposed a framework, five hypotheses and a panel design to answer that question rigorously. The expected insight is that the sustainability of digital payments in small retail depends on aligning price, reliability, trust and local capability, and that this alignment should be monitored with longitudinal evidence rather than inferred from national totals.

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