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Sustaining Merchant Fintech Adoption: Empirical Insights Into Retailer Satisfaction With UPI And Mobile Payment Ecosystems

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Abstract- The growth of the real-time digital payment ecosystem has changed the way commercial transactions have been conducted in India, largely thanks to the acceptance of the Unified Payments System (UPI). In this environment, retailers are the linchpins whose acceptance of and satisfaction with cashless payments are essential to keeping it alive. The determinants and level of merchant satisfaction towards mobile payment application is an empirical study in the Coimbatore city which is a leading industrial and commercial city in the state of Tamilnadu. A structured questionnaire that allowed the use of a Likert scale was used to collect primary data from 96 active retailers from January to February 2026. The overall degree of merchant satisfaction is high, with 71.9% of them indicating high satisfaction level, as revealed by the statistical evaluation using Cronbach's Alpha, Simple Percentage Analysis, Chi-Square Testing and the Weighted Average Method. Transaction ease (mean score: 4.39) and operational efficiency (mean score: 4.25) are the major determinants of satisfaction and satisfaction scores are similar across enterprises based on workforce size ($\chi^2 = 6.12$, df = 6, $p > 0.05$). While Google Pay (40.6%), PhonePe (20.8%) and Paytm (19.8%) have strong platform preference, there is some network instability, transaction settlement delays and perceived security risks at the time of using these platforms. The study ends with practical recommendations for the FinTech service providers and the policymakers to improve the grievance redressal and backend resiliency of the merchants.

Keywords: Unified Payments Interface (UPI), Merchant Satisfaction, Digital Payment Ecosystems, FinTech Adoption, Retail Commerce, Financial Inclusion

I. INTRODUCTION

Over the past ten years, the india retail industry has changed dramatically from being cash-based to being interoperable and real-time digital transactions. The unified payments interface (upi), launched by the national payments corporation of india (npci), has revolutionized the landscape of digital payments by making it accessible to everyone, even those who were previously unable to access digital payments due to complex onboarding processes, and providing them with the opportunity to make instant, zero- or low-cost transfers to merchants. This makes mobile payment applications – such as google pay, phonepe, paytm and bhim – increasingly indispensable for the day-to-day operations of micro, small, and medium retail businesses.

Although the adoption of mobile wallets and upi apps by consumers is well documented, it is also important to understand the merchant side of the two-sided market to ensure the long-term success of cashless retail. Merchant satisfaction controls continued platform use, willingness to deal with some operational inefficiencies and encouragement of the use of digital payment at checkouts. But there are operational challenges with the adoption. Retailers are up against unstable cellular networks, pending transaction statuses throughout busy trading hours and worry about digital fraud. As these applications are gradually gaining popularity in rapidly expanding tier-2 commercial centres like coimbatore, it is important to assess their experience from the merchants' perspective to understand how mature and sustainable india's digital public infrastructure is.

Mobile payment apps are seen in almost every in-city retail outlet, but the experience for individual merchants is very different. When there are connectivity issues, delayed bank settlement, and customer disputes around debits not being confirmed, it can cause disruptions to billing queues and loss of customer trust. Understanding the service dimensions that lead to customer satisfaction and the areas of potential customer vulnerability is a crucial step in improving merchant-facing fintech solutions.

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1. Objectives of the Study

- To find out the overall satisfaction level of retail merchants towards the use of digital payment applications in coimbatore city.
- To study the relationship between the scale of retail business and the satisfaction level of the retailers.
- To find out and rate the key operational and technical issues that affect the satisfaction of merchants.

2. Review of Literature

The literature on mobile payment ecosystems emphasizes the role played by the technical reliability, user experience, and institutional trust:Mobile retail applications were shown to increase user satisfaction through functional efficiency, brand alignment and experiential value as shown by iyer et al. (2018). Their results support the theory that satisfaction serves as an important mediator between application usefulness and re-patronage intentions.Alwi et al. (2019) Identified service quality, information transparency, usability and privacy of information, as the factors that influence user satisfaction by Analyzing The competitive payment platforms for fintech. Notably, security and privacy were the strongest predictors, highlighting the needfor comprehensive security measures to maintain user trust.Drivers of satisfaction and friction: Smolarczyk (2018) Suggests that user experience with mobile payment is rooted in their speed, convenience, and perceived security. On the other hand, complexity of the interfaces and inefficiency in processing are the main sources of user dissatisfaction.

While mobile payment research has picked up pace due to the proliferation of the smartphone, the academic research continues to be strongly influenced by the merchant perspective gap, which lee et al. (2019) Noted. They highlighted the need for a set of empirical investigations involving merchant-side acceptances to provide a comprehensive picture of payment ecosystems.

Fitriani et al. (2020) Studied The determinants of mobile payments adoption in the small and medium Retailers Market in indonesia, and revealed that regulatory support, brand value, network externalities and platform trust have significant effect on merchants' intention to use mobile payments, where platform trust is the key determinant that drives the continued adoption.

3. Research Gap

Existing research has extensively studied the adoption and overall satisfaction of consumer with financial technology and product satisfaction across the world, however, the existing studies with a specific focus on retail merchants in tier-2 industrial cities in india after the success of upi are limited. This study fills that gap by studying the satisfaction of the merchants in different sizes of business in coimbatore.

II. RESEARCH METHODOLOGY

The method used in this study is structured quantitative method which is appropriate for the study in research involving perceptions in the retail industry, in order to obtain results of this study to be empirical, reliable and replicable.

1. Research Design

A descriptive research design was used, as it is a process of capturing and evaluating the merchant satisfaction level systematically without altering any operational variables. It is appropriate for user perceptions in real world settings in commercial applications.

2. Sources of Data and instrumentation

The research is mostly empirical as questionnaires were used to collect data directly from the retail merchants. A standardized 5-point likert scale was used to measure satisfaction constructs from highly dissatisfied (1) to highly satisfied (5). Secondary information was obtained from peer-reviewed journals, reserve bank of india (rbi) bulletins and npci statistical reports.

3. The sampling framework and study period.

This target population includes retail shops in coimbatore city which accept digital payments. A convenience sampling technique was used, because of logistical ease and merchants time constraint during business hours. A total of 100 questionnaires were distributed and 96 complete and valid questionnaires were retained for final statistical analysis, which equates to 96% valid response rate.

4. Research Hypotheses

The following hypotheses were formulated by drawing on the empirical test of whether a retail enterprise scale affects satisfaction with digital payment platforms:

- Alternative hypothesis (h_1): the level of merchant satisfaction about the use of the digital payment applications differs depending on the size of retail businesses according to their workforce number.
- Alternative hypothesis (h_1): retail business size (workforce scale) has a statistically significant association with the level of merchant satisfaction towards digital payment applications.

5. Analytical Framework

Four complementary statistical techniques were used to process and analyse collected data:

- To confirm the internal consistency and scale reliability: cronbach's alpha.
- Simple percentage analysis: to illustrate platform preferences and demographic distributions.

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- To test the statistical independence between size of the retail business and satisfaction level at 5% significance level ($\alpha = 0.05$), The following chi-square (χ^2) test is performed.
- Weighted average method: this method was used to determine the relative importance of the individual service dimensions to overall satisfaction.

III. DATA ANALYSIS AND INTERPRETATION

1 Scale Reliability and Internal Consistency

Prior to hypothesis testing, the internal consistency of the four-item satisfaction construct (covering ease of transaction, business efficiency, customer acceptance, and transaction security) was evaluated using cronbach's alpha.

Table 1: Reliability Statistics of the Merchant Satisfaction Scale

Construct Dimension	Number of Items	Cronbach's Alpha (α)	Internal Consistency
Merchant Satisfaction Scale	4	0.812	Good / Reliable

2. *Source: Primary Data*

As shown in table 1, the computed cronbach's alpha coefficient of 0.812 Comfortably surpasses the standard psychometric threshold of 0.70. This confirms strong internal coherence across the survey items and validates the instrument for further inferential analysis.

3. Merchant Preference for Payment Applications

To understand platform concentration at retail points of sale, respondents identified their primary digital payment application.

Table 2 Distribution of Primary Payment Applications Used by Retailers

Payment Application	Number of Respondents (n)	Percentage (%)
Google Pay	39	40.6
PhonePe	20	20.8
Paytm	19	19.8
Apple Pay*	6	6.3
Others (BHIM, Bank UPI, etc.)	12	12.5
Total	96	100.0

*Source: primary data. *Note: self-reported usage in premium retail outlets reflects nfc/international card tap-to-pay or respondent conflation with ios wallet interfaces.*

Table 2 illustrates a clear dominance of upi-enabled third-party applications. Google pay leads merchant adoption at 40.6%, Followed by phonepe (20.8%) And paytm (19.8%), Collectively accounting for 81.2% Of primary usage. This distribution reflects strong network externalities: merchants gravitate toward platforms most frequently carried by incoming shoppers, Prioritizing seamless bank account integration and customer familiarity over platform exclusivity.

4. Hypothesis Testing: Business Size and Satisfaction Level

To test h_0 and determine whether larger retail establishments derive greater operational value from payment applications than micro-enterprises, a chi-square test of independence was conducted across four workforce categories.

Table 3 Cross-Tabulation of Business Size and Retailer Satisfaction Level

Business Size (Workforce)	Low Satisfaction	Medium Satisfaction	High Satisfaction	Row Total
Sole Proprietor	1	10	27	38
2–5 Employees	1	7	22	30
6–10 Employees	1	4	11	16
Above 10 Employees	0	3	9	12
Total	3 (3.1%)	24 (25.0%)	69 (71.9%)	96 (100.0 %)

Source: primary data. Note: calculated $\chi^2 = 6.12$; Degrees of freedom (Df) = (4 − 1)(3 − 1) = 6; Table critical value (α = 0.05) = 12.59; Result = not significant (h_0 accepted).

Overall, 71.9% Of surveyed merchants report high satisfaction, while only 3.1% Express low satisfaction. For the 4 × 3 contingency matrix (Df = 6), The calculated chi-square value ($\chi^2 = 6.12$) Is well below the critical table value of 12.59 At the 5% level of significance ($p > 0.05$). Consequently, the null hypothesis (h_0) is accepted, confirming that there is no statistically significant association between enterprise size and satisfaction level. Whether operated by a sole proprietor or a team exceeding ten employees, retail businesses experience comparable satisfaction. This demonstrates the inclusive architecture of upi-based payment tools, which deliver uniform utility without requiring expensive point-of-sale hardware.

5. Ranking of Factors Influencing Retailer Satisfaction

Using the weighted average method on five-point likert responses, four core service dimensions were ranked to

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determine their relative weight in shaping merchant satisfaction.

Table 4 Weighted Mean Scores and Ranking of Merchant Satisfaction Factors

Satisfaction Factor	Weighted Mean Score	Rank
Ease of transaction	4.39	I
Business efficiency	4.25	II
Customer convenience	4.13	III
Transaction security	4.08	IV

6. ***Source: Primary Data***

As detailed in table 4, ease of transaction ranks first (mean score: 4.39), Confirming that frictionless qr scanning, instant audio/visual confirmation, and intuitive interfaces are the foremost drivers of merchant approval. Business efficiency ranks second (4.25), Reflecting time saved in cash handling, reduced petty-change shortages, and automated digital bookkeeping. Customer convenience places third (4.13). Notably, while transaction security Achieves a strong positive score (4.08), It ranks fourth relative to operational benefits—Signaling That merchants remain slightly cautious regarding cyber fraud, spoofed payment screens, and failed-transaction reversals.

7. Discussion

When contextualised with the existing literature on fintech, the empirical findings of this investigation provide useful theoretical and practical insights. Second, the 81.2% Share of merchant use in the top three applications, namely google pay, phonepe, and paytm, confirms the network externalities framework suggested by fitriani et al., (2020) And the reciprocal adoption framework suggested by lee et al., (2019). Coimbatore retailers choose payment platforms that are most commonly used by their customers, further establishing a self-contained two-sided payment platform market.

Second, the factor ranking shows an important "contextual" difference between the consumer-based and merchant-based assessments. While security and privacy are cited as the most important factors in consumer satisfaction for malaysian mobile payment services (mps) by alwi et al. (2019), Coimbatore retailers consider the ease of transaction (4.39) And business efficiency (4.25) As more important than transaction security (4.08). In line with iyer et al. (2018) And Smolarczyk (2018), The creators of positive user experience are functional utility and checkout speed. For retailers with high turnover, small savings from avoiding petty-cash queues and accelerating the flow of them provide real economic return right away. But the lesser institutional rank of transaction security suggests that lingering uncertainties about network drops, pending settlements, and payment screenshots highlight that uncertainty remains about trust.

Ultimately, the statistical acceptance of h_0 ($\chi^2 = 6.12$; Df = 6; P > 0.05) Offers a strong supporting argument for technological democratization. Qr-based upi applications provide almost the same satisfaction levels for both small and big retailers, compared with legacy card-based point-of-sale (Pos) Terminals, which charged merchants with hardware rental fees and merchant discount rates more proportionate to the size of businesses.

The findings are summarized as follows:

Coimbatore retailers high adoption satisfaction (71.9%) Is driven by transaction speed and ease of routine operations of digital payment apps.

There is no significant difference in satisfaction between micro- and larger business sizes ($\chi^2 = 6.12$, Df = 6, Critical value = 12.59, P > 0.05), Which indicates that the mobile payment platforms are equally effective for micro- and larger business sizes.

Retail is dominated by the platforms that are interoperable and more familiar to consumers – google pay (40.6%), Phonepe (20.8%) And paytm (19.8%).

Operational drivers vs. Security apprehension: ease of transaction (4.39) And business efficiency (4.25) Are the two top positive catalysts, though network failures at times and settlement uncertainty slightly hinder transaction security (4.08).

8. Recommendations

1. Enhance backend resilience and offline capabilities: payment service providers and banking partners should increase server capacity and deploy offline/lite upi payment protocols, to reduce transaction timeouts during the peak hours of the retail trade and during poor cellular connectivity.

Reduce checkout friction by having priority in-app merchant grievance redressal, with guaranteed turnaround time for stuck or failed merchant settlements.

Increase targeted digital & fraud-prevention literacy: local trade associations, banks, and payment providers should run quick conferences on how to know the difference between genuine upi notifications, using soundboxes properly and to prevent scams of social engineering in the small merchants.

Incorporate merchant loyalty and micro-credit incentives: by allowing for integration of consistent digital transaction histories with low-interest working capital loans, fee waivers or cashback incentives, merchant engagement can be

increased through the long-term for micro and small enterprises.

IV. CONCLUSION

Mobile wallets are no longer just an added convenience, but a vital part of the retail operating systems for merchants in coimbatore city. The ease of transactions, enhanced billing efficiencies and alignment with consumer payment preferences are the main drivers of high merchant satisfaction. Moreover, if the size of the businesses is not a major factor, it further highlights the democratic and inclusive nature of the upi ecosystem in india. However, there are occasional network instability and security fears yet to prevent frictionless perfection. Ensuring the reliability of backends and strengthening merchant-centric support structures will play a crucial role in building lasting trust and sustainable growth in cashless transactions throughout the retail landscape.

1. Limitations and scope for further research.

The study has been restricted to 96 retail outlets in coimbatore city by using the convenience sampling method, so that the study results may not be statistically generalized to the rural or semi-urban area. Further, low cell counts in the 'dissatisfied' category indicate that further research with larger probability samples in different districts may use ordinal logistic regression or fisher's exact tests to gain greater multivariate understanding. An approach that accounts for both the merchant and consumer perspective (or a longitudinal study that follows the merchant perspective over the life cycle of upi credit lines and soundbox technologies) would contribute further to understanding digital payment sustainability.

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