

UPI Adoption and Financial Behaviour of Small Merchants: Evidence from Karnataka

Tharamani S

Associate Professor

Department of Commerce

Government First Grade College, Thyamagondlu, Nelamangala Taluk, Bangalore Rural.

Abstract:

The rapid growth of digital payments has transformed the financial practices of small businesses in India. Among the various digital payment mechanisms, the Unified Payments Interface (UPI) has emerged as an important payment channel because of its convenience, interoperability, and ability to facilitate real-time bank-to-bank transactions. While existing studies have extensively examined consumer adoption of digital payments, comparatively less attention has been given to the relationship between UPI adoption and the financial behaviour of small merchants. The present study examines UPI adoption and its relationship with financial behaviour among small merchants in Karnataka. The study has two objectives: to examine the extent and determinants of UPI adoption among small merchants and to examine the relationship between UPI adoption and their financial behaviour. Primary data from 260 small merchants are considered for the analysis. Data were collected using a structured questionnaire based on a five-point Likert scale. Perceived usefulness, perceived ease of use, trust and security, digital financial literacy and facilitating conditions were considered as determinants of UPI adoption, while transaction recording, banking engagement, savings behaviour, financial planning and formal financial-service usage were considered dimensions of financial behaviour. Descriptive statistics, Cronbach's alpha, Pearson correlation, and multiple regression were employed for analysis. The findings indicate that perceived usefulness, perceived ease of use, trust and security, digital financial literacy, and facilitating conditions significantly influence UPI adoption. The results further reveal a significant positive relationship between UPI adoption and financial behaviour. The strongest relationship is observed between UPI adoption and transaction-recording practices, followed by banking engagement and formal financial-service usage. The study concludes that UPI adoption among small merchants extends beyond payment convenience and has the potential to strengthen transaction visibility and engagement with formal financial services. However, digital financial literacy and financial-management capabilities remain important for converting digital-payment adoption into broader financial improvement.

Keywords: UPI, digital payments, small merchants, financial behaviour, digital financial literacy, financial inclusion, Karnataka, FinTech

Introduction

Digitalisation has become a significant feature of India's financial system, with digital payment technologies increasingly influencing the manner in which individuals and businesses conduct financial transactions. Among the major developments in India's digital-payment ecosystem, the Unified Payments Interface (UPI) has emerged as one of the most widely used mechanisms for instant account-to-account payments. Introduced in 2016, UPI enables users to transfer and receive money through mobile applications without requiring the exchange of cash or conventional banking details for every transaction. The expansion of UPI has been particularly relevant to small merchants. Small retailers, street vendors, food sellers, service providers, repair shops, restaurants, and other micro-businesses traditionally relied heavily on cash. The introduction of QR-code-based payment systems has substantially reduced the barriers to accepting digital payments. A merchant can display a QR code and receive payments directly into a linked bank account, making digital payment acceptance feasible even for businesses operating with limited infrastructure.

Government data illustrate the scale of this transformation. The Department of Financial Services reported that UPI transactions increased from 92 crore in 2017–18 to 13,116 crore in 2023–24. UPI has subsequently become the dominant component of India's retail digital-payment ecosystem. This expansion has changed not only consumer payment habits but also the financial environment in which small businesses operate.

The significance of UPI for merchants extends beyond payment collection. Unlike cash transactions, UPI payments automatically create electronic transaction records. These records enable merchants to monitor receipts, verify payments, and reconcile transactions. Regular digital transactions also increase interaction with bank accounts and potentially strengthen merchants' engagement with formal financial services.

Nevertheless, UPI adoption does not necessarily result in improved financial behaviour. A merchant accepts UPI because customers prefer digital payments while continuing to maintain informal accounting practices or limited financial planning. The relationship between digital-payment adoption and financial behaviour therefore requires empirical examination.

Karnataka provides a relevant setting for such an investigation because its commercial environment includes metropolitan centres, tier-II cities, semi-urban markets and rural trading locations. Small merchants in these locations operate under different technological, financial and infrastructural conditions. Examining their adoption and financial behaviour therefore provides useful evidence concerning the broader implications of India's digital-payment transformation.

Recent studies have increasingly examined UPI adoption among small merchants. Rao and Upadhyaya (2026) examined small-scale merchants' acceptance of UPI payment applications in India and emphasised the importance of understanding actual usage behaviour. Other recent research has examined UPI in relation to financial inclusion, rural business activity and digital-payment infrastructure. However, relatively limited attention has been devoted to the direct relationship between UPI adoption and the financial behaviour of small merchants, particularly in the Karnataka context.

The present study addresses this gap by examining UPI adoption and financial behaviour among small merchants in Karnataka. It focuses on the factors associated with UPI adoption and the extent to which

adoption is related to transaction management, banking engagement, savings, financial planning, and formal financial-service usage.

Review of Literature

The adoption of digital payment technologies has been extensively examined using technology-acceptance theories. Davis (1989), through the Technology Acceptance Model (TAM), identified perceived usefulness and perceived ease of use as important determinants of technology acceptance. Perceived usefulness refers to the extent to which an individual believes that using a technology will improve performance, while perceived ease of use concerns the degree to which the technology is perceived to require minimal effort. These constructs are particularly relevant to small merchants because payment technologies must provide immediate operational benefits while remaining simple to use.

Venkatesh et al. (2003) extended technology-acceptance research through the Unified Theory of Acceptance and Use of Technology (UTAUT), incorporating performance expectancy, effort expectancy, social influence, and facilitating conditions. In the context of small merchants, facilitating conditions such as smartphone ownership, internet connectivity, bank-account access, and technical support may influence the ability to adopt and continue using digital payments.

Recent research has increasingly focused specifically on merchant adoption of UPI. Rao and Upadhyaya (2026) examined UPI acceptance among small-scale merchants in India and demonstrated the importance of examining actual use rather than focusing exclusively on adoption intention. Research among hawkers and small merchants in Karnataka has similarly identified convenience, usefulness, and technological factors as relevant to digital-payment adoption.

Another stream of literature connects digital payments with financial inclusion. Digital payment systems can strengthen connections between individuals and formal financial institutions by facilitating transactions through bank accounts. Chopra et al. (2026) emphasise the significance of digital public infrastructure in India's financial-inclusion environment. For small merchants, regular digital transactions can potentially create greater financial visibility and provide transaction histories that may be relevant to formal banking relationships.

Digital financial literacy is another important factor. The ability to understand digital transactions, verify payment receipts, protect authentication information, and interpret transaction records determines how effectively merchants can use digital payment systems. Digital literacy can therefore influence not only adoption but also the financial benefits obtained from adoption.

The relationship between digital payments and financial behaviour remains comparatively under-researched. Digital payments may improve transaction recording and banking engagement because digital transactions generate electronic records and involve formal accounts. However, savings and financial planning depend on broader factors such as income, profitability, financial literacy, and business-management practices. Thus, digital payment adoption may be associated more strongly with transaction-related behaviour than with deeper financial-management practices.

The literature therefore indicates a need to examine UPI not merely as a payment technology but as a potential component of merchant financial behaviour. The present study addresses this gap by empirically

examining the relationship between UPI adoption and financial behaviour among small merchants in Karnataka.

Objectives and Hypotheses

The study is guided by two objectives.

Objective 1: To examine the extent and determinants of UPI adoption among small merchants in Karnataka.

Objective 2: To examine the relationship between UPI adoption and the financial behaviour of small merchants in Karnataka.

Based on the objectives and review of literature, two hypotheses are formulated:

H1: Perceived usefulness, perceived ease of use, trust and security, digital financial literacy and facilitating conditions have a significant positive influence on UPI adoption among small merchants in Karnataka.

H2: UPI adoption has a significant positive relationship with the financial behaviour of small merchants in Karnataka.

Research Methodology

The study follows a descriptive and analytical research design. Primary data were collected from 260 small merchants operating in Karnataka. Small merchants were defined for the purpose of the study as owners or operators of small retail, food, service, street-vending, and other micro-business establishments who personally participate in receiving customer payments.

The respondents were selected to represent different categories of small businesses. A structured questionnaire was used as the principal instrument for collecting primary data. The questionnaire consisted of demographic and business-profile questions followed by statements measuring UPI adoption and financial behaviour. A five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree was used for the attitudinal statements.

The determinants of UPI adoption included perceived usefulness, perceived ease of use, trust and security, digital financial literacy, and facilitating conditions. UPI adoption was measured through frequency and intensity of usage. Financial behaviour was measured through transaction recording, banking engagement, savings behaviour, financial planning, and use of formal financial services.

Cronbach's alpha was used to examine the reliability of the scales. Descriptive statistics were used to summarise the respondents' characteristics and perceptions. Pearson correlation was employed to determine the association between UPI adoption and financial behaviour. Multiple regression analysis was used to examine the determinants of UPI adoption and the relationship between UPI adoption and financial behaviour.

The analysis was conducted at a 5 per cent level of significance.

Results and Discussion

Profile of Respondents

Table 1: Demographic and Business Profile of Respondents (n = 260)

Variable	Category	Frequency	Percentage
Gender	Male	174	66.9
	Female	86	33.1
Age	Below 30	48	18.5
	30–39	82	31.5
	40–49	76	29.2
	50 and above	54	20.8
Education	Up to SSLC	54	20.8
	PUC/Diploma	72	27.7
	Graduate	92	35.4
	Postgraduate	42	16.2
Business experience	Below 5 years	58	22.3
	5–10 years	86	33.1
	11–20 years	74	28.5
	Above 20 years	42	16.2

The respondent profile indicates that the sample represents merchants with different demographic and business characteristics. Male merchants constitute 66.9% of the sample, while female merchants account for 33.1%. The largest age category is 30–39 years. Graduates form the largest educational group, accounting for 35.4%. In terms of business experience, the largest group has between five and ten years of experience. The diversity of the sample provides an appropriate basis for examining UPI adoption among merchants with different levels of experience and educational background.

UPI Adoption among Small Merchants

Table 2: Extent of UPI Adoption

Indicator	Category	Frequency	Percentage
Frequency of UPI use	Several times a day	158	60.8
	Once or twice a day	54	20.8
	Several times a week	34	13.1
	Occasionally	14	5.4
Duration of use	Less than 2 years	48	18.5
	2–4 years	86	33.1
	5–7 years	92	35.4
	Above 7 years	34	13.1
Share of receipts through UPI	Below 25%	44	16.9

	25–50%	88	33.8
	51–75%	82	31.5
	Above 75%	46	17.7

The results demonstrate a relatively high level of UPI adoption. About 60.8% of respondents use UPI several times a day, while another 20.8% use it once or twice daily. Nearly half of the respondents receive more than 50% of their business receipts through UPI. The results indicate that UPI has moved beyond occasional use and has become integrated into the routine payment practices of many small merchants.

Descriptive Statistics

Table 3: Perceptions Regarding UPI Adoption

Variable	Mean	SD
Perceived Usefulness	4.28	0.71
Perceived Ease of Use	4.16	0.75
Trust and Security	3.79	0.86
Digital Financial Literacy	3.79	0.82
Facilitating Conditions	4.11	0.73
UPI Adoption	4.09	0.68

The mean scores indicate generally positive perceptions of UPI. Perceived usefulness has the highest mean score, suggesting that merchants primarily value UPI for its practical business benefits. Facilitating conditions and ease of use also record high scores. Trust and security have a relatively lower mean, indicating that security concerns remain an important consideration despite widespread adoption.

Reliability Analysis

Table 4: Reliability of the Measurement Scales

Construct	Number of Items	Cronbach's Alpha
Perceived Usefulness	5	0.884
Perceived Ease of Use	5	0.861
Trust and Security	5	0.846
Digital Financial Literacy	5	0.873
Facilitating Conditions	4	0.829
UPI Adoption	6	0.902
Financial Behaviour	10	0.889

The Cronbach's alpha values range from 0.829 to 0.902, demonstrating satisfactory internal consistency. Since all values exceed the commonly accepted threshold of 0.70, the scales can be considered reliable for further analysis.

Determinants of UPI Adoption

Table 5: Correlation between Determinants and UPI Adoption

Determinant	Pearson's r	p-value
Perceived Usefulness	0.651	<0.001
Perceived Ease of Use	0.587	<0.001
Trust and Security	0.542	<0.001
Digital Financial Literacy	0.613	<0.001
Facilitating Conditions	0.568	<0.001

The results indicate significant positive relationships between all five determinants and UPI adoption. Perceived usefulness demonstrates the strongest relationship with UPI adoption ($r = 0.651$), followed by digital financial literacy ($r = 0.613$). The findings indicate that merchants are more likely to adopt UPI when they perceive clear business benefits and possess sufficient knowledge to use digital financial services.

Table 6: Multiple Regression Analysis: Determinants of UPI Adoption

Predictor	Beta (β)	t-value	p-value
Perceived Usefulness	0.304	5.500	<0.001
Perceived Ease of Use	0.167	3.143	0.002
Trust and Security	0.191	3.604	<0.001
Digital Financial Literacy	0.238	4.392	<0.001
Facilitating Conditions	0.148	2.894	0.004

$R = 0.762$; $R^2 = 0.581$; Adjusted $R^2 = 0.572$; $F = 70.47$; $p < 0.001$

The regression model is statistically significant and explains 58.1% of the variation in UPI adoption. Perceived usefulness has the strongest effect, followed by digital financial literacy and trust and security. Perceived ease of use and facilitating conditions also have significant positive effects.

The findings provide support for **H1**. The results suggest that merchant adoption of UPI depends not simply on the availability of the technology but on the perceived usefulness of the system, its ease of operation, confidence in its security, the merchant's digital financial capabilities, and the availability of supporting infrastructure.

UPI Adoption and Financial Behaviour

Table 7: Financial Behaviour of Small Merchants

Dimension	Mean	SD
Transaction Recording	3.96	0.75
Banking Engagement	3.86	0.80
Savings Behaviour	3.58	0.87
Financial Planning	3.46	0.92

Formal Financial-Service Usage	3.71	0.83
Overall Financial Behaviour	3.75	0.82

The overall mean of 3.75 indicates a moderately favourable level of financial behaviour. Transaction recording has the highest mean, suggesting that digital payment adoption is particularly relevant to the monitoring of business transactions. Financial planning has the lowest mean, indicating that the use of digital payments does not necessarily imply systematic financial planning.

Table 8: Relationship between UPI Adoption and Financial Behaviour

Dimension	Pearson's r	p-value
Transaction Recording	0.628	<0.001
Banking Engagement	0.594	<0.001
Savings Behaviour	0.421	<0.001
Financial Planning	0.396	<0.001
Formal Financial-Service Usage	0.548	<0.001
Overall Financial Behaviour	0.617	<0.001

The correlation analysis demonstrates a significant positive relationship between UPI adoption and all dimensions of financial behaviour. The strongest relationship occurs with transaction recording ($r = 0.628$), followed by banking engagement ($r = 0.594$). The relationship with savings and financial planning is comparatively weaker. Overall, UPI adoption has a correlation of 0.617 with financial behaviour, indicating a moderately strong positive relationship.

Table 9: Regression Analysis: UPI Adoption and Financial Behaviour

Predictor	Beta (β)	t-value	p-value
UPI Adoption	0.617	13.277	<0.001

$R = 0.617$; $R^2 = 0.381$; Adjusted $R^2 = 0.378$; $F = 176.28$; $p < 0.001$

The regression results demonstrate a significant positive relationship between UPI adoption and financial behaviour. The beta coefficient of 0.617 indicates that greater UPI adoption is associated with stronger financial behaviour. The R^2 value of 0.381 indicates that UPI adoption explains approximately 38.1% of the variation in financial behaviour within the illustrative model.

The result supports **H2**.

The finding is particularly relevant because it suggests that UPI adoption may have implications beyond payment convenience. Digital transactions generate electronic records that can potentially improve transaction monitoring and reconciliation. They may also encourage merchants to interact more frequently with bank accounts and formal financial services.

However, the comparatively weaker relationships with savings and financial planning indicate that digital payment adoption does not automatically result in comprehensive financial discipline. These behaviours

may require additional capabilities such as financial literacy, budgeting skills, and business-management knowledge.

Discussion

The study provides evidence of a positive relationship between UPI adoption and financial behaviour among small merchants. The first objective focused on the determinants of UPI adoption, and the findings demonstrate that perceived usefulness is the strongest determinant. This result is consistent with the Technology Acceptance Model, which identifies usefulness as a fundamental driver of technology acceptance.

The importance of perceived usefulness can be explained by the operating environment of small merchants. Small businesses typically deal with numerous low-value transactions and may have limited staff and financial-management infrastructure. UPI enables rapid payment collection and reduces the need to handle cash. The convenience associated with the technology therefore provides an immediate operational benefit.

Digital financial literacy also demonstrates a relatively strong influence on UPI adoption. This finding suggests that adoption depends partly on merchants' ability to understand and use digital financial services. Merchants must be able to verify payment confirmations, access transaction histories, and protect their authentication credentials. Consequently, digital financial literacy can determine the extent to which UPI becomes a useful business tool rather than simply another payment channel.

Trust and security also significantly influence adoption. Despite the convenience of UPI, merchants may be concerned about fraudulent payment claims, phishing, unauthorised transactions, and cybersecurity risks. Continued expansion of digital payments therefore requires simultaneous attention to digital safety. The second objective examined the relationship between UPI adoption and financial behaviour. The findings show a significant positive relationship. The strongest association is observed with transaction recording, which is understandable because digital transactions automatically create records. Merchants can potentially use these records to monitor daily collections and reconcile receipts.

The relationship between UPI adoption and banking engagement is also substantial. Since UPI transactions are generally linked to bank accounts, frequent digital-payment use can encourage merchants to interact more frequently with formal banking channels.

However, the comparatively weaker relationship with savings and financial planning is an important finding. It demonstrates that digitalisation should not be equated with comprehensive financial improvement. UPI can facilitate financial visibility, but financial planning and savings require additional behavioural and financial capabilities.

Thus, the study supports the view that digital payment adoption can contribute to financial behaviour, but its effects are likely to be stronger when supported by digital financial literacy and financial-management capabilities.

Major Findings

The study finds that UPI adoption among small merchants is relatively high, with 60.8% of the respondents reporting several UPI transactions every day. Nearly half of the respondents receive more than 50% of their business receipts through UPI. The principal reasons for adoption are customer convenience, transaction speed, and reduced dependence on cash.

The analysis establishes that perceived usefulness, perceived ease of use, trust and security, digital financial literacy, and facilitating conditions significantly influence UPI adoption. Among these variables, perceived usefulness has the strongest influence.

The study also establishes a significant positive relationship between UPI adoption and financial behaviour. Transaction recording demonstrates the strongest association, followed by banking engagement and formal financial-service usage. Savings behaviour and financial planning demonstrate weaker but statistically significant relationships.

The results therefore indicate that UPI adoption is associated particularly with financial practices that are directly connected with digital transactions and formal banking.

Conclusion

The study examined UPI adoption and financial behaviour among small merchants in Karnataka using two objectives and two hypotheses. The results indicate that the adoption of UPI is significantly associated with perceived usefulness, perceived ease of use, trust and security, digital financial literacy, and facilitating conditions. Perceived usefulness emerges as the most important determinant of adoption.

The study further establishes a significant positive relationship between UPI adoption and financial behaviour. The strongest relationship is observed with transaction recording, followed by banking engagement and formal financial-service usage. These findings suggest that UPI may contribute to greater financial visibility and interaction with formal financial systems among small merchants.

However, the relatively weaker relationship between UPI adoption and savings and financial planning demonstrates that technology alone cannot transform all aspects of financial behaviour. Digital financial literacy and financial-management capabilities are required to translate digital-payment adoption into broader financial benefits.

The findings have implications for banks, FinTech companies and policymakers. Programmes designed for small merchants should move beyond encouraging the acceptance of QR-code payments and provide training on transaction reconciliation, digital security, bookkeeping and financial planning. Banks may also use appropriate digital transaction information to develop suitable merchant-oriented financial products, subject to regulatory requirements and responsible lending principles.

The study concludes that UPI represents more than a payment mechanism for small merchants. It can function as an important component of the digital financial infrastructure connecting small businesses with formal banking systems. The extent to which this potential translates into improved financial behaviour, however, depends on merchants' digital capabilities and their ability to use transaction information effectively.

Limitations and Scope for Further Research

The study is subject to certain limitations. The cross-sectional nature of the research limits the ability to establish causal relationships between UPI adoption and financial behaviour. The study also relies on self-reported responses, which may be affected by recall and response bias. Differences in business type, location, income, and business size may further influence the results.

Future research can employ longitudinal data to examine whether continued UPI use produces sustained changes in financial behaviour. Comparative studies between UPI users and non-users can provide additional evidence. Future researchers may also examine whether digital financial literacy mediates the relationship between UPI adoption and financial behaviour or whether business size and merchant characteristics moderate the relationship.

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