

DIGITAL WALLET ADOPTION AND ITS EFFECT ON SMALL BUSINESS GROWTH IN INDIA

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ABSTRACT

The rapid proliferation of digital payment systems in India has fundamentally reshaped how businesses conduct financial transactions, particularly within the small and medium enterprise segment. This study examines the adoption of digital wallets and its effect on the growth of small businesses in Karnataka, India. The research is grounded in established technology adoption frameworks, specifically the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovation (DOI) theory. A descriptive and analytical research design was employed, with primary data collected from 150 small business owners across urban, semi-urban, and rural regions of Karnataka using a structured questionnaire administered through both online and offline modes. The study investigates the influence of key adoption factors—ease of use, perceived security, transaction cost, and customer demand—on business growth indicators including sales, profitability, customer base expansion, and operational efficiency. Data analysis was conducted using descriptive statistics, Cronbach's Alpha reliability testing, Pearson's correlation analysis, multiple regression analysis, ANOVA, and independent sample t-tests. The findings reveal that digital wallet adoption has a statistically significant positive impact on small business growth ($R^2 = 0.335$, $p < 0.001$). Ease of use ($\beta = 0.273$) and perceived security ($\beta = 0.199$) emerged as the strongest predictors of business growth, followed by customer demand ($\beta = 0.133$). Notably, transaction cost did not exert a significant influence on business growth. The study further demonstrates that ease of use positively influences customer satisfaction ($\beta = 0.437$, $p < 0.001$). ANOVA and t-test results confirm that the impact of digital wallet adoption on business growth is consistent across different geographical locations and demographic groups. These findings offer practical implications for small business owners, fintech service providers, and policymakers in designing strategies that promote digital financial inclusion and support the sustainable growth of small enterprises.

Keywords: Digital Wallets, Small Business Growth, Technology Adoption, UPI, Karnataka, TAM, UTAUT, Customer Satisfaction

1. INTRODUCTION

The rapid evolution of financial technology has significantly transformed the global financial ecosystem, particularly in the manner in which transactions are conducted and managed. In India, the digital payments landscape has undergone a remarkable shift over the past decade, driven by technological advancements, government initiatives, and increasing smartphone

penetration. The introduction of the Unified Payments Interface (UPI), along with policy measures such as demonetization in 2016 and the broader push towards a cashless economy, has accelerated the adoption of digital payment systems across multiple sectors of the economy. Among these innovations, digital wallets also referred to as e-wallets have emerged as one of the most widely adopted and convenient modes of financial transaction.

Digital wallets enable users to store money electronically and perform transactions such as payments, transfers, and bill settlements through mobile applications. Platforms such as PhonePe, Google Pay, and Paytm have gained widespread acceptance due to their user-friendly interfaces, instant transaction capabilities, and seamless integration with banking systems. These platforms have not only simplified financial transactions for consumers but have also opened new avenues for businesses, especially small and medium enterprises, to streamline their operations and enhance customer engagement.

Small businesses play a crucial role in the Indian economy, contributing significantly to employment generation, income creation, and overall economic development. In states like Karnataka, which is recognized as a major hub for technology and innovation, small businesses are increasingly embracing digital solutions to remain competitive in a rapidly evolving business environment. The adoption of digital wallets by small business owners holds the potential to reduce dependency on cash-based transactions, improve transparency, and enable faster and more efficient payment processes. The COVID-19 pandemic further accelerated this shift, as concerns regarding physical contact and hygiene led to a marked surge in contactless payment methods, making digital wallets an essential tool for both consumers and businesses during periods of restriction.

Despite the increasing adoption of digital wallets, the extent to which they contribute to measurable small business growth remains a subject of ongoing investigation. While digital payment systems offer numerous advantages such as convenience, speed, and improved record-keeping, small business owners may simultaneously face challenges including transaction costs, cybersecurity risks, and insufficient digital literacy. Furthermore, existing research has predominantly focused on consumer adoption behavior, with limited empirical evidence linking digital wallet adoption to tangible business performance indicators such as sales growth, profitability, customer base expansion, and operational efficiency.

A critical review of the literature reveals that most studies examine adoption factors in isolation without integrating them with business performance outcomes. There is a notable absence of comprehensive models that simultaneously analyse the relationship between adoption drivers and business growth metrics. Additionally, region-specific empirical studies focusing on Karnataka a state with a diverse economic landscape encompassing urban, semi-urban, and rural areas remain limited. This diversity presents an opportunity to explore disparities in adoption and outcomes across different business environments.

The present study addresses these gaps by investigating the relationship between digital wallet adoption and small business growth in Karnataka. The research is grounded in well-established technology adoption theories, namely the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovation (DOI) theory. TAM posits that perceived usefulness and perceived ease of use are the primary determinants of technology adoption. UTAUT extends this by incorporating performance expectancy, effort expectancy, social influence, and facilitating conditions. DOI theory explains how innovations diffuse across populations over time, considering factors such as relative advantage, compatibility, and complexity. By integrating these frameworks,

the study establishes a robust conceptual foundation for analysing both the behavioural and technological determinants of adoption and their subsequent impact on business performance.

The study is guided by three core research objectives: first, to examine the influence of digital wallet adoption on small business growth in Karnataka; second, to analyse the impact of key adoption factors such as ease of use, security, and cost on digital wallet usage among small business owners; and third, to evaluate the relationship between digital wallet usage and customer-related outcomes such as satisfaction, retention, and expansion of the customer base. Five hypotheses are formulated to test these relationships empirically, providing a structured framework for data analysis and interpretation.

2. LITERATURE REVIEW

The existing body of literature on digital wallet adoption and digital payment systems offers substantial insights into user behaviour, technology acceptance, and the broader impact of fintech on financial inclusion. Several scholars have examined the determinants of adoption using theoretical frameworks such as TAM and UTAUT. Razi-ur-Rahim (2024) investigated UPI adoption among Indian users by extending the UTAUT model and found that performance expectancy and ease of use significantly influence adoption, while social influence also plays a crucial role. Rashid et al. (2025) explored consumer intention to adopt e-wallets in rural India and reported that trust and perceived security are the most significant determinants, while limited digital literacy acts as a barrier. Baxi (2024) applied the Task-Technology Fit model and demonstrated that the alignment between technology features and user requirements significantly enhances satisfaction and adoption intention.

Research on the impact of digital payments on small business performance has yielded consistent findings. Sharma (2025) conducted a comparative study of retail firms in India and found that digital payment adoption led to a significant increase in sales volume and transaction transparency. Kumar (2025) analysed UPI payments and small business growth, reporting that digital adoption enhances business transactions, reduces cash handling issues, and improves financial management. Devi (2025) specifically examined the impact of digitization on small informal businesses and concluded that digital payments significantly improve transaction efficiency, customer convenience, and overall business performance. Similarly, González-Varona et al. (2024) demonstrated that digital transformation significantly enhances operational efficiency and business performance among SMEs in emerging economies, while Ogbari et al. (2024) confirmed that digital payment systems improve productivity and reduce operational delays.

From a consumer behaviour perspective, Medpalliwar (2025) investigated UPI and mobile wallet adoption among millennials and found that convenience, speed, and rewards significantly drive usage. Singh (2019) identified perceived usefulness, ease of use, and trust as significant predictors of adoption, while perceived risk negatively impacts user intention. Sentanu et al. (2020) conducted a benefit-risk analysis and confirmed that perceived benefits positively influence adoption whereas security concerns negatively affect user intention.

Security and trust have been consistently identified as critical factors. Patel (2024) reported that security perceptions significantly affect user trust and adoption intention. Kumar (2025) found that trust positively influences adoption while perceived risk negatively affects usage. These findings underscore the importance of building confidence in digital payment platforms for sustained adoption.

The theoretical foundations for the present study draw from the seminal works of Davis (2019) on TAM, Venkatesh et al. (2018) on UTAUT, and Dwivedi et al. (2021) who

advocated for integrating multiple theoretical models for a more comprehensive explanation of adoption behaviour. The macro-level context is supported by studies examining UPI growth trends (Kumar & Singh, 2024), the diffusion of digital payments through policy interventions (Gupta, 2024), and the broader digital transaction ecosystem (Mehta, 2025). Tang et al. (2024) further highlighted that digital inclusive finance reduces financial constraints and promotes innovation among SMEs.

Despite these contributions, the literature reveals several gaps. Most studies focus on consumer-level adoption behaviour rather than measuring the direct impact on business performance. Region-specific research focusing on Karnataka remains limited, and there is a lack of integrated models that simultaneously examine adoption drivers and business growth outcomes. The present study addresses these gaps by providing empirical evidence on the relationship between digital wallet adoption factors and measurable business performance indicators within the context of Karnataka.

3. METHODOLOGY

The present study adopts a descriptive and analytical research design to examine the adoption of digital wallets and its effect on small business growth in Karnataka. The descriptive component captures the characteristics, behaviour, and usage patterns of digital wallet adoption among small business owners, while the analytical component tests the relationships between independent and dependent variables through hypothesis testing.

The study follows a quantitative research approach, relying on primary data collected from small business owners through a structured questionnaire. The questionnaire comprises close-ended items, primarily using a five-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree," along with multiple-choice items capturing demographic and business-related information. The instrument was administered through both online (Google Forms) and offline modes to ensure broad accessibility.

The target population includes small business owners operating in Karnataka, encompassing retail shopkeepers, local vendors, service providers, and small-scale entrepreneurs who actively use or are aware of digital payment systems. A non-probability sampling approach, combining convenience and snowball sampling, was adopted due to practical constraints of time and accessibility. A total of 150 valid responses were collected, constituting the final sample for analysis.

The independent variables include ease of use, perceived security, cost of transactions, customer demand, and awareness/digital literacy. The dependent variables are sales growth, profitability, customer base expansion, operational efficiency, and customer satisfaction. Control variables include type of business, business size, and geographical location (urban, semi-urban, or rural).

Data analysis was conducted using Python-based statistical tools. The analytical techniques employed include descriptive statistics (mean, standard deviation, frequency, and percentage distributions), reliability analysis using Cronbach's Alpha, Pearson's correlation analysis, multiple regression analysis, one-way ANOVA, and independent sample t-tests. The research is cross-sectional in nature, capturing data at a single point in time.

4. DATA ANALYSIS AND IMPLICATIONS

5.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the key variables measured in the study.

Table 1: Descriptive Statistics of Key Variables

Variable	Mean	Std. Deviation
Ease of Use	3.83	0.61
Security	3.80	0.66
Trust	3.72	0.66
Cost	3.04	0.61
Customer Preference	3.78	0.63
Sales	4.06	0.57
Customer Satisfaction	3.98	0.62
Business Growth	3.97	0.36

The mean values for most variables exceed 3.5, indicating a generally positive perception among respondents towards digital wallets. Ease of use (M = 3.83), security (M = 3.80), and trust (M = 3.72) all recorded high levels of agreement, suggesting that small business owners perceive digital wallets as user-friendly and reliable. The cost variable recorded a moderate mean (M = 3.04), indicating that some respondents perceive transaction charges as a concern. Notably, sales recorded the highest mean (M = 4.06), suggesting that respondents perceive a strong positive relationship between digital wallet usage and revenue generation. Business growth (M = 3.97) and customer satisfaction (M = 3.98) also reflect highly favourable perceptions.

4.2 Reliability Analysis

Table 2: Cronbach's Alpha Results

Variable Group	Cronbach's Alpha
Ease of Use	0.357
Security	0.401
Business Growth	0.485

The reliability analysis reveals that the Cronbach's Alpha values for ease of use (0.357) and security (0.401) fall below the conventional threshold of 0.70, indicating limited internal consistency among the measurement items. Business growth demonstrated a moderately better score (0.485). These lower values may be attributable to variations in respondent perceptions, differences in business types, and varying levels of digital experience. Despite these limitations, the data remains suitable for exploratory analysis and provides meaningful insights into adoption behaviour.

4.3 Correlation Analysis

Table 3: Correlation Matrix

Variables	Ease of Use	Security	Cost	Customer Demand	Business Growth	Customer Satisfaction
Ease of Use	1.000	0.396	0.098	0.270	0.474	0.308
Security	0.396	1.000	0.123	0.260	0.450	0.265
Cost	0.098	0.123	1.000	0.059	0.103	-0.016
Customer Demand	0.270	0.260	0.059	1.000	0.333	0.153
Business Growth	0.474	0.450	0.103	0.333	1.000	0.351
Customer Satisfaction	0.308	0.265	-0.016	0.153	0.351	1.000

The correlation analysis reveals that ease of use ($r = 0.474$) and security ($r = 0.450$) exhibit moderate positive correlations with business growth, indicating that improvements in usability and trust directly relate to enhanced business performance. Customer demand also demonstrates a positive relationship with business growth ($r = 0.333$), underscoring the importance of market-driven adoption. In contrast, cost shows a very weak correlation with business growth ($r = 0.103$), confirming its limited influence. Customer satisfaction is positively correlated with ease of use ($r = 0.308$) and business growth ($r = 0.351$), indicating that usable digital payment systems enhance customer experience.

4.4 Regression Analysis Business Growth Model

Table 4: Regression Results Business Growth

Variable	Coefficient (β)	t-value	p-value
Constant	1.634	5.577	0.000
Ease of Use	0.273	4.188	0.000
Security	0.199	3.678	0.000
Cost	0.017	0.413	0.680
Customer Demand	0.133	2.445	0.016

$R^2 = 0.335$; Adjusted $R^2 = 0.317$; $F = 18.26$; $p < 0.001$

The regression model is statistically significant ($F = 18.26$, $p < 0.001$), with the independent variables explaining approximately 33.5% of the variance in business growth. Ease of use is the strongest predictor ($\beta = 0.273$, $p < 0.001$), followed by security ($\beta = 0.199$, $p < 0.001$) and customer demand ($\beta = 0.133$, $p = 0.016$). Cost does not significantly influence business growth ($\beta = 0.017$, $p = 0.680$). These results support hypotheses H1, H2, H3, and partially H4, confirming that user-friendly and secure digital payment systems, combined with customer-driven demand, significantly enhance small business performance.

4.5 Regression Analysis Customer Satisfaction Model

Table 5: Regression Results Customer Satisfaction

Variable	Coefficient (β)	t-value	Result
Constant	2.329	5.501	Significant
Ease of Use	0.437	3.940	Significant

$R^2 = 0.095$; Adjusted $R^2 = 0.089$; $F = 15.52$; $p < 0.001$

The model confirms that ease of use significantly and positively influences customer satisfaction ($\beta = 0.437$, $p < 0.001$), supporting hypothesis H5. However, the R^2 value of 0.095 indicates that digital wallet usage explains only a modest portion of customer satisfaction, suggesting that additional factors such as service quality, pricing, and overall customer experience also play substantial roles.

4.6 ANOVA and T-Test Results

Table 6: ANOVA Results (Location vs. Business Growth)

Source	Sum of Squares	df	F-value	p-value
Location	0.665	2	2.330	0.101
Residual	20.972	147		

The ANOVA results ($F = 2.330$, $p = 0.101$) indicate no statistically significant difference in business growth across urban, semi-urban, and rural locations. The independent sample t-test

($t = 0.343$, $p = 0.733$) similarly reveals no significant group-based differences. These findings suggest that the impact of digital wallet adoption on business growth is consistent across geographical regions and demographic categories, reflecting the widespread penetration of digital payment systems in Karnataka.

4.7 Hypothesis Summary

Hypothesis	Statement	Result
H1	Digital wallet adoption has a significant positive impact on small business growth	Supported
H2	Ease of use has a significant positive influence on digital wallet adoption	Supported
H3	Perceived security has a significant positive effect on digital wallet adoption	Supported
H4	Cost of transactions has a significant influence on digital wallet adoption	Not Supported
H5	Digital wallet usage has a significant positive impact on customer satisfaction	Supported

5. DISCUSSION AND CONCLUSION

The findings of this study provide robust empirical evidence that digital wallet adoption significantly contributes to small business growth in Karnataka. The regression analysis confirms that ease of use, perceived security, and customer demand are the most influential predictors of business growth, while transaction cost does not exert a meaningful influence. These findings are consistent with the theoretical propositions of the Technology Acceptance Model (TAM), which emphasises perceived usefulness and ease of use as key determinants of technology adoption, and the Unified Theory of Acceptance and Use of Technology (UTAUT), which incorporates social influence and facilitating conditions as additional determinants.

The prominence of ease of use as the strongest predictor of both business growth and customer satisfaction reinforces the theoretical assertion that technological simplicity drives adoption and effective utilisation. When digital payment platforms are intuitive and require minimal learning effort, business owners are more inclined to integrate them into daily operations, leading to improved transaction efficiency and enhanced revenue generation. The significant role of perceived security aligns with the growing body of literature emphasising trust as a prerequisite for sustained digital adoption. The finding that customer demand significantly influences adoption reflects the social influence dimension of UTAUT, wherein businesses respond to market pressures and evolving consumer preferences.

The non-significance of transaction cost as a predictor challenges the traditional assumption that financial considerations constitute a major barrier to technology adoption. This finding suggests that small business owners in Karnataka perceive the operational benefits of digital wallets such as improved efficiency, expanded customer reach, and reduced cash handling as outweighing the marginal costs associated with digital transactions.

The consistency of results across urban, semi-urban, and rural locations, as evidenced by ANOVA and t-test analyses, indicates that digital wallet technology has reached a level of maturity and diffusion that transcends geographical boundaries. This finding supports the Diffusion of Innovation theory, suggesting that digital wallets have moved beyond the early adoption phase and are approaching mainstream acceptance across Karnataka's diverse economic landscape.

However, the study acknowledges several limitations. The sample size of 150 respondents, while adequate for the statistical techniques employed, limits the generalisability of findings to the broader population. The reliance on self-reported data introduces the possibility of response bias. The low Cronbach's Alpha values for certain constructs suggest that the measurement instrument requires refinement for future applications. Furthermore, the cross-sectional design captures data at a single point in time, precluding the analysis of longitudinal trends.

In conclusion, this study demonstrates that digital wallet adoption is a significant driver of small business growth in Karnataka. Ease of use, security, and customer demand collectively shape adoption behaviour and translate into tangible business outcomes. The findings carry practical implications for multiple stakeholders: small business owners should prioritise the adoption of user-friendly and secure digital payment platforms; fintech service providers should invest in simplifying interfaces and enhancing security features; and policymakers should continue to strengthen digital infrastructure and promote financial literacy initiatives, particularly in semi-urban and rural regions.

6. FUTURE SCOPE FOR THE RESEARCH

The present study opens several avenues for future investigation. First, subsequent research can expand the scope by increasing the sample size and including respondents from multiple states or regions across India to enhance the generalisability of findings. A larger and more diverse sample would also enable more robust statistical modelling and subgroup analyses.

Second, longitudinal research designs can be adopted to examine how digital wallet adoption evolves over time and to assess its long-term impact on business performance. Such designs would enable researchers to track behavioural changes, identify adoption trajectories, and measure sustained outcomes.

Third, future studies can incorporate additional variables such as financial literacy, government policy effectiveness, and the quality of technological infrastructure to develop more comprehensive models of digital payment adoption and business growth. Comparative analyses across different types of digital payment systems including mobile banking, credit cards, and emerging technologies such as blockchain-based payments would further enrich the understanding of digital financial ecosystems.

Fourth, methodological advancements can be achieved by employing Structural Equation Modelling (SEM) to test complex, multi-variable relationships and mediating effects that multiple regression may not fully capture. The integration of qualitative methods, such as in-depth interviews and case studies, would complement quantitative findings and provide richer contextual insights into the lived experiences of small business owners navigating digital transformation.

Finally, the intersection of artificial intelligence, machine learning, and digital payment systems represents a particularly promising frontier. Research exploring how intelligent automation, predictive analytics, and AI-driven financial tools influence business decision-making and growth outcomes would be highly relevant in the context of India's rapidly advancing digital economy.

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