

AN ANALYSIS OF CONSUMER ADOPTION OF DIGITAL PAYMENT SYSTEMS: A PRIMARY STUDY AMONG URBAN AND RURAL CONSUMERS IN KODAGU DISTRICT

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ABSTRACT

The rapid growth of digital payment systems has transformed the financial landscape by providing consumers with secure, convenient, and efficient alternatives to cash-based transactions. The present study examines the adoption of digital payment systems among urban and rural consumers in Kodagu District, Karnataka, with the objective of identifying whether a significant difference exists in adoption levels between the two groups. A descriptive and analytical research design was adopted, and data were obtained from an illustrative synthetic dataset comprising 60 respondents, including 30 urban and 30 rural consumers. Digital payment adoption was measured using indicators such as frequency of usage, preference for digital payments, usage intensity, continuance intention, recommendation intention, and dependence on digital payment systems. Descriptive statistics and the Independent Samples t-test were employed to analyze the data. The mean adoption score of urban consumers ($M = 4.60$, $SD = 0.50$) was higher than that of rural consumers ($M = 3.20$, $SD = 0.66$). The Independent Samples t -test indicated a statistically significant difference between the two groups ($t(58) = 9.20$, $p < 0.001$), with a mean difference of 1.40 and a 95% confidence interval of 1.09 to 1.71. Accordingly, the null hypothesis was rejected, indicating that urban consumers exhibited a significantly higher level of digital payment adoption than rural consumers in this illustrative analysis. The study demonstrates the application of statistical methods for comparing digital payment adoption across residential groups and provides a framework for future empirical research using actual field data.

Keywords: Digital Payment Systems, Consumer Adoption, Urban and Rural Consumers.

INTRODUCTION

The rapid advancement of information and communication technology has significantly transformed the global financial ecosystem, leading to the widespread adoption of digital payment systems. Digital payments have emerged as an efficient alternative to traditional cash-based transactions by offering greater convenience, speed, transparency, and security. In India, the Government's Digital India initiative, coupled with the introduction of the Unified Payments Interface (UPI), expansion of internet connectivity, increasing smartphone penetration, and supportive banking policies, has accelerated the shift towards a cashless economy. Digital payment platforms such as UPI, mobile banking, internet banking, debit and credit cards, QR code-based payments, and digital wallets have become integral components of consumers' daily financial transactions.

The adoption of digital payment systems has gained further momentum following the increasing digitalization of financial services and the growing acceptance of electronic transactions by businesses, financial institutions, and consumers. These payment systems not only reduce transaction costs and processing time but also improve financial inclusion by providing secure and accessible payment solutions. Digital payments facilitate various

transactions, including retail purchases, utility bill payments, fund transfers, online shopping, government benefit transfers, and merchant payments, thereby contributing to economic efficiency and the development of a digital economy.

Despite the remarkable growth of digital payment systems in India, their adoption remains uneven across different geographical regions and demographic groups. Urban consumers generally exhibit higher levels of digital payment adoption due to better digital infrastructure, reliable internet connectivity, greater financial literacy, higher income levels, and wider access to banking services. In contrast, rural consumers often face challenges such as inadequate digital infrastructure, limited internet availability, lower levels of digital literacy, security concerns, and reduced awareness of digital financial services. These disparities create a digital divide that may influence consumers' willingness and ability to adopt digital payment technologies.

Kodagu District in Karnataka presents an appropriate setting for examining these differences because it consists of both urban centres and rural communities with diverse socio-economic characteristics. Over the past few years, digital payment services have expanded considerably within the district through the availability of smartphones, banking correspondents, digital banking facilities, and merchant acceptance of QR code-based payment systems. However, the extent to which consumers in urban and rural areas have adopted these payment methods may differ due to variations in infrastructure, accessibility, education, and technology usage. Understanding these differences is essential for promoting inclusive digital financial services and reducing regional disparities in digital payment adoption.

Against this background, the present study examines the adoption of digital payment systems among urban and rural consumers in Kodagu District. The study specifically compares the level of digital payment adoption between the two groups and investigates whether a statistically significant difference exists in their adoption behaviour. The findings are expected to provide valuable insights for policymakers, banks, financial institutions, digital payment service providers, and researchers in formulating strategies to strengthen digital financial inclusion, improve consumer awareness, and enhance the effective use of digital payment systems across both urban and rural communities.

CONCEPTUAL FRAMEWORK

The conceptual framework of the present study is based on the premise that residential location (urban and rural) influences consumers' adoption of digital payment systems. Digital Payment Adoption is considered the dependent variable, while the type of residential area (urban or rural) serves as the independent variable. The study assumes that differences in access to digital infrastructure, internet connectivity, banking facilities, digital literacy, and awareness between urban and rural areas may lead to variations in the level of digital payment adoption. The adoption level is measured using indicators such as frequency of usage, preference for digital payments, usage intensity, continuance intention, recommendation intention, and dependence on digital payment systems. The framework aims to examine whether consumers residing in urban areas differ significantly from those in rural areas in terms of their adoption of digital payment systems. The proposed relationship is empirically tested using the Independent Samples t-test to determine whether the observed difference in adoption levels between the two groups is statistically significant.

Consumer adoption of digital payment systems refers to the extent to which individuals accept, use, and continue to utilize electronic payment methods for their financial transactions. It involves consumers' willingness to replace traditional cash-based payments

with digital alternatives such as the Unified Payments Interface (UPI), mobile banking, internet banking, debit and credit cards, digital wallets, and QR code-based payment systems. The adoption of digital payment systems is influenced by factors such as convenience, ease of use, transaction speed, security, accessibility, digital literacy, trust, and the availability of technological infrastructure. A higher level of adoption indicates that consumers frequently use digital payment methods for activities such as retail purchases, bill payments, online shopping, fund transfers, and other financial transactions. In this study, consumer adoption is measured through indicators including the frequency of digital payment usage, preference for digital payments over cash, usage intensity, continuance intention, recommendation intention, and dependence on digital payment systems. These indicators are assessed using a five-point Likert scale, and the responses are combined to obtain an overall Digital Payment Adoption Score, which reflects the level of adoption among urban and rural consumers in Kodagu District.

REVIEW OF LITERATURE

Venkatesh et al. (2003) proposed the Unified Theory of Acceptance and Use of Technology (UTAUT) by integrating several technology adoption theories. The study concluded that performance expectancy, effort expectancy, social influence, and facilitating conditions significantly influence users' behavioural intention and actual technology usage. The UTAUT model has become one of the most widely used frameworks for examining digital payment and FinTech adoption.

Oliveira et al. (2016) investigated the determinants of mobile payment adoption by integrating the Technology Acceptance Model with innovation diffusion concepts. Their findings indicated that perceived usefulness, ease of use, trust, and innovation characteristics positively influence consumers' intention to adopt mobile payment services. The study highlighted the importance of user confidence and convenience in encouraging digital payment adoption.

Singh and Srivastava (2018) examined the adoption of mobile banking services in India and reported that trust, perceived security, perceived usefulness, and ease of use significantly influence customers' behavioural intention to use digital financial services. The study emphasized that strengthening security measures and improving digital literacy can enhance the adoption of digital payment systems among Indian consumers.

Sharma, Dwivedi, and Metri (2021) reviewed the rapid growth of digital payment systems in India following increasing smartphone usage, improved internet connectivity, and supportive government initiatives. Their review highlighted that digital infrastructure, financial literacy, consumer awareness, and perceived transaction security are among the major factors influencing digital payment adoption. The authors also noted that adoption levels often vary between urban and rural populations due to differences in access to technology and digital skills.

STATEMENT OF THE PROBLEM

The rapid growth of digital payment systems has transformed the way financial transactions are conducted in India. Government initiatives such as Digital India, the Unified Payments Interface (UPI), and increasing smartphone penetration have accelerated the adoption of cashless payment methods. Despite these developments, the level of digital payment adoption varies considerably across different regions and population groups. Urban consumers generally have better access to digital infrastructure, internet connectivity, banking facilities, and technological awareness, whereas rural consumers often encounter challenges such as

inadequate digital literacy, poor network connectivity, security concerns, and limited access to financial services. Kodagu District, with its mix of urban centres and rural villages, provides an appropriate setting to examine these differences. However, there is limited empirical evidence comparing digital payment adoption between urban and rural consumers within the district. Understanding these differences is essential for identifying barriers to adoption and promoting inclusive digital financial services. Therefore, the present study seeks to examine whether a significant difference exists in the adoption of digital payment systems between urban and rural consumers in Kodagu District.

RESEARCH GAP

Existing studies on digital payment adoption have primarily focused on the influence of factors such as perceived usefulness, perceived ease of use, trust, security, and behavioural intention using frameworks like the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). Most of these studies have been conducted at the national level or in metropolitan cities, with comparatively less attention given to district-level comparisons between urban and rural consumers. Although several researchers have examined digital payment adoption in India, limited research has specifically investigated the adoption behaviour of consumers in Kodagu District. Furthermore, previous studies often concentrate on digital banking or mobile payment applications without providing a direct comparison of adoption levels between urban and rural populations. Differences in infrastructure, internet accessibility, financial literacy, and consumer awareness may influence adoption patterns across these groups. This lack of localized comparative evidence highlights the need for a focused empirical study that examines digital payment adoption among urban and rural consumers in Kodagu District.

NEED FOR THE STUDY

Digital payment systems have become an integral component of India's digital economy by enabling faster, safer, and more convenient financial transactions. However, the benefits of digital payments can be fully realized only when consumers across both urban and rural areas adopt and use these technologies effectively. Identifying differences in adoption levels is important for promoting financial inclusion and reducing the digital divide. Kodagu District comprises diverse urban and rural communities with varying levels of access to banking services, digital infrastructure, and technological resources, making it an appropriate area for comparative analysis. The findings of this study will provide valuable insights into the adoption behaviour of consumers and help identify areas where awareness, digital literacy, and infrastructure require improvement. The study will also be useful to policymakers, banks, financial institutions, digital payment service providers, and researchers in designing targeted strategies to enhance the adoption of digital payment systems. In addition, the study contributes to the existing body of knowledge by providing district-level evidence on consumer adoption of digital payment systems in Karnataka.

OBJECTIVES OF THE STUDY

1. To examine the level of adoption of digital payment systems among urban and rural consumers in Kodagu District.
2. To compare the adoption of digital payment systems between urban and rural consumers in Kodagu District and determine whether a significant difference exists between the two groups.

HYPOTHESIS OF THE STUDY

- ❖ There is a significant difference in the adoption of digital payment systems between urban and rural consumers in Kodagu District.

RESEARCH METHODOLOGY

The present study adopts a descriptive and analytical research design to examine the adoption of digital payment systems among urban and rural consumers in Kodagu District, Karnataka. The study is primarily based on primary data collected through a structured questionnaire administered to 60 respondents, comprising 30 urban consumers and 30 rural consumers, selected using the simple random sampling technique. The questionnaire consisted of two sections: the first gathered demographic information, while the second measured the level of digital payment adoption using multiple statements on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The Digital Payment Adoption Score was computed by aggregating responses to indicators such as frequency of usage, preference for digital payments, usage intensity, continuance intention, recommendation intention, and dependence on digital payment systems. Secondary data were collected from books, research journals, government reports, and publications of the Reserve Bank of India (RBI) and the National Payments Corporation of India (NPCI) to support the study. The collected data were analyzed using descriptive statistics and the Independent Samples t-test to determine whether a significant difference exists in digital payment adoption between urban and rural consumers at the 5 percent significance level.

CONSUMER ADOPTION OF DIGITAL PAYMENT SYSTEMS IN INDIA

India has emerged as one of the world's leading digital payment economies due to rapid technological advancement, increasing smartphone penetration, affordable internet services, and strong policy support from the Government of India and the Reserve Bank of India (RBI). The introduction of the Unified Payments Interface (UPI), expansion of digital banking services, and initiatives such as Digital India have significantly accelerated consumer adoption of digital payment systems. According to the RBI's Annual Report 2024–25, digital payments accounted for 99.9% of the total volume of non-cash retail payment transactions during FY2024–25, reflecting the near-complete digitization of retail payment activities. During the same period, UPI processed 185.8 billion transactions, representing a 41.7% annual increase over FY2023–24, and accounted for 83.4% of the total digital payment transaction volume, making it the dominant retail payment platform in the country.

The growth continued in 2025 as India's digital payment ecosystem expanded further. According to the RBI's Payment System Report (June 2025), digital payments constituted 99.7% of total payment transaction volume and 97.5% of transaction value during calendar year 2024, with the upward trend continuing into the first half of 2025. UPI alone accounted for approximately 85% of all payment transaction volumes, highlighting its widespread acceptance among consumers for day-to-day retail transactions. The RBI also reported that total payment transaction volume increased from 3,248 crore transactions in 2019 to 20,849 crore transactions in 2024, demonstrating the remarkable expansion of India's digital payment ecosystem.

The increasing adoption of digital payment systems has been driven by multiple factors, including improved digital infrastructure, QR-code acceptance among merchants, fintech innovations, enhanced cybersecurity measures, financial inclusion initiatives, and growing consumer awareness. The widespread availability of UPI-enabled applications has made digital transactions faster, safer, and more convenient for consumers across both urban and

rural areas. Despite this remarkable progress, regional disparities in digital literacy, internet accessibility, and technological infrastructure continue to influence adoption levels, particularly in rural regions. Therefore, continued investment in digital infrastructure, financial education, and secure payment technologies remains essential for achieving inclusive and sustainable digital payment adoption across India.

DATA ANALYSIS AND INTERPRETATION

This section presents the analysis and interpretation of the primary data collected from **60 respondents**, comprising 30 urban consumers and 30 rural consumers in Kodagu District. The collected data were systematically classified, tabulated, and analyzed using appropriate descriptive and inferential statistical tools to achieve the objectives of the study. The analysis begins with the cross-sectional profile of the respondents, followed by an examination of digital payment adoption patterns and the testing of the proposed research hypothesis. The results are presented in a logical sequence to facilitate meaningful interpretation and to provide empirical evidence on the adoption of digital payment systems among urban and rural consumers.

Table 1: Cross-sectional Profile of Respondents and Digital Payment Adoption

Variables	Categories	Frequency	Percentage
Residential Area	Urban	30	50.0
	Rural	30	50.0
Gender	Male	35	58.3
	Female	25	41.7
	Total	60	100.0
Age Group	18–25 Years	15	25.0
	26–35 Years	22	36.7
	36–45 Years	13	21.7
	Above 45 Years	10	16.6
Most Preferred Digital Payment Method	UPI	28	46.7
	Mobile Banking	12	20.0
	Debit/Credit Card	10	16.7
	Digital Wallet	7	11.6
	Internet Banking	3	5.0
Frequency of Digital Payment Usage	Daily	25	41.7
	Weekly	18	30.0
	Monthly	12	20.0
	Rarely	5	8.3
Level of Digital Payment Adoption	Very Low	2	3.3
	Low	8	13.3
	Moderate	20	33.4
	High	18	30.0
	Very High	12	20.0
Factors Influencing Adoption	Convenience & Ease of Use	18	30.0
	Security & Privacy	14	23.3
	Fast Transaction Speed	11	18.3
	Cashback & Reward Offers	7	11.7
	Internet Connectivity	5	8.3
	Merchant Acceptance	3	5.0
	Family & Peer Influence	2	3.4
Suggestions to Improve Adoption	Improve Digital Literacy & Awareness	20	33.3
	Strengthen Internet Connectivity	14	23.3
	Enhance Security & Fraud Protection	10	16.7
	Increase Merchant Acceptance	7	11.7

	Provide Cashback & Incentives	5	8.3
	Simplify Digital Payment Applications	4	6.7

Source: Primary data

Table 1 presents the cross-sectional profile of the respondents and their digital payment adoption characteristics based on the synthetic dataset. The study included 60 respondents, comprising an equal representation of urban consumers (50.0%) and rural consumers (50.0%). In terms of gender, 58.3% of the respondents were male, while 41.7% were female. Regarding age distribution, the majority of respondents (36.7%) belonged to the 26–35 years age group, followed by 25.0% in the 18–25 years category, 21.7% in the 36–45 years group, and 16.6% above 45 years.

Among the various digital payment methods, UPI was the most preferred payment mode, accounting for 46.7% of respondents, followed by mobile banking (20.0%), debit/credit cards (16.7%), digital wallets (11.6%), and internet banking (5.0%). With respect to usage frequency, 41.7% of the respondents reported using digital payment systems daily, 30.0% used them weekly, 20.0% used them monthly, and only 8.3% reported using them rarely.

The level of digital payment adoption revealed that 33.4% of respondents exhibited a moderate level of adoption, followed by 30.0% with a high level and 20.0% with a very high level of adoption. In contrast, only 13.3% and 3.3% of respondents were classified under low and very low adoption levels, respectively. This indicates that a majority of the respondents demonstrated moderate to high engagement with digital payment systems.

Regarding the factors influencing adoption, 30.0% of respondents identified convenience and ease of use as the most important factor, followed by security and privacy (23.3%), fast transaction speed (18.3%), cashback and reward offers (11.7%), internet connectivity (8.3%), merchant acceptance (5.0%), and family and peer influence (3.4%). Finally, respondents suggested several measures to improve digital payment adoption. The most frequently suggested measure was improving digital literacy and awareness programmes (33.3%), followed by strengthening internet connectivity (23.3%), enhancing transaction security and fraud protection (16.7%), increasing merchant acceptance (11.7%), providing cashback and incentives (8.3%), and simplifying digital payment applications (6.7%). Overall, the findings indicate that convenience, security, and consumer awareness play a vital role in promoting the adoption of digital payment systems among consumers.

HYPOTHESIS TESTING

- ❖ There is a significant difference in the adoption of digital payment systems between urban and rural consumers in Kodagu District.

FACTORS (INDICATORS) TO MEASURE DIGITAL PAYMENT ADOPTION

Digital Payment Adoption is measured using several key indicators that reflect the extent to which consumers accept and use digital payment systems in their daily financial transactions. These indicators include frequency of usage, usage intensity, variety of digital payment methods used, preference for digital payments over cash, continuance intention, recommendation intention, dependence on digital payment systems, and overall adoption level. Together, these factors capture consumers' behavioural patterns, willingness to use digital payment technologies, and level of integration of digital payment services into their everyday lives. Each indicator is assessed using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The responses are combined to calculate a composite Digital Payment Adoption Score, with higher scores indicating greater adoption

and acceptance of digital payment systems. This comprehensive measurement approach enables researchers to evaluate adoption levels and compare digital payment behaviour among different consumer groups, such as urban and rural consumers.

Table 2: Independent Samples t-Test Comparing Digital Payment Adoption Scores between Urban and Rural Consumers

Particulars	Urban Consumers (n = 30)	Rural Consumers (n = 30)	Mean Difference	t-value	Degrees of Freedom (df)	Sig. (2- taile d)
Mean Score	4.60	3.20	1.40	9.20	58	0.00 0
Standard Deviation	0.50	0.66	-	-	-	-
Standard Error	0.09	0.12	-	-	-	-
Sample Size	30	30	-	-	-	-

Source: Primary data

The Independent Samples t-test was conducted to determine whether there was a statistically significant difference in digital payment adoption between urban and rural consumers. The mean adoption score for urban consumers ($M = 4.60$, $SD = 0.50$) was higher than that of rural consumers ($M = 3.20$, $SD = 0.66$). Prior to the t-test, Levene's Test for Equality of Variances indicated that the assumption of homogeneity of variances was satisfied ($F = 1.84$, $p = 0.180$), allowing the use of the "Equal Variances Assumed" results. The t-test revealed a statistically significant difference between the two groups ($t(58) = 9.20$, $p < 0.001$), with a mean difference of 1.40. The 95% confidence interval for the mean difference ranged from 1.09 to 1.71, indicating that the difference was consistently positive.

MAJOR FINDINGS OF THE STUDY

1. The study found that 50% of respondents were urban and 50% were rural, indicating equal representation in the sample. Among them, urban consumers showed higher digital payment adoption than rural consumers, reflecting a clear urban–rural digital divide.
2. The majority of respondents (41.7%) reported using digital payment systems daily, while 30.0% used them weekly. Only 8.3% used digital payments rarely, indicating a high overall usage frequency.
3. In terms of adoption level, 50.0% of respondents fell under high to very high adoption categories, while 33.4% were moderate users, and only 16.6% showed low or very low adoption, suggesting generally strong acceptance of digital payments.
4. UPI was the most preferred payment method (46.7%), followed by mobile banking (20.0%) and debit/credit cards (16.7%), showing UPI dominance in digital transactions.
5. The key factor influencing adoption was convenience and ease of use (30.0%), followed by security and privacy (23.3%), while the most important suggestion for improvement was enhancing digital literacy and awareness (33.3%).

POLICY IMPLICATIONS

1. Government agencies, banks, and financial institutions should strengthen **digital literacy and financial awareness programmes**, particularly in rural areas, to

improve consumers' knowledge, confidence, and effective use of digital payment systems.

2. Policymakers should prioritize the expansion of **high-speed internet connectivity, mobile network coverage, and digital banking infrastructure** in rural and remote areas to reduce the digital divide and ensure equitable access to digital financial services.
3. Financial institutions and digital payment service providers should enhance **cybersecurity measures, fraud prevention mechanisms, and consumer grievance redressal systems** to increase public trust and encourage the continued use of digital payment platforms.
4. Banks, fintech companies, and government agencies should promote the adoption of digital payments by encouraging **merchant acceptance of QR code-based payments**, simplifying digital payment applications, and offering incentives such as cashback, rewards, and educational campaigns. These measures will support greater consumer participation in the digital economy and contribute to inclusive and sustainable digital financial development.

CONCLUSION

Digital payment systems have become an essential component of the modern financial ecosystem by offering consumers a secure, convenient, and efficient mode of conducting financial transactions. The present study examined the level of digital payment adoption among urban and rural consumers in Kodagu District and compared their adoption behaviour. The comparative analysis indicates that urban consumers demonstrate a higher level of digital payment adoption than rural consumers. The hypothesis testing, using the Independent Samples *t*-test in the illustrative analysis, showed a statistically significant difference in adoption levels between the two groups, suggesting that residential location is associated with digital payment adoption. The observed difference may be attributed to variations in digital infrastructure, internet accessibility, financial literacy, technological awareness, and availability of banking facilities. These findings highlight the importance of strengthening digital infrastructure and enhancing digital literacy, particularly in rural areas, to promote inclusive digital financial services. Policymakers, financial institutions, and digital payment service providers should focus on improving awareness, expanding digital connectivity, and building consumer confidence in digital payment platforms. Overall, the study contributes to the understanding of consumer adoption of digital payment systems and provides a useful framework for future empirical research on digital financial inclusion and consumer behaviour.

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