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Digital Payment Adoption and Sustainable Retail Practices: An Empirical Study of Retailers and Distributors

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KEYWORDS

Digital payments, UPI, retail performance, supply chain payments, digital adoption.

ABSTRACT

This study examines the adoption of digital payments, particularly the Unified Payments Interface (UPI), and its impact on retail sales performance and supply chain payment practices. The analysis uses primary data collected through structured surveys from 49 retailers and 39 distributors. The results indicate moderate adoption of digital payments among retailers: 67.3% reported that 25–50% of their customers use UPI, and 73.4% experienced either a slight or significant increase in sales after accepting UPI payments.A regression model was used to assess the relationship between digital payment usage and sales performance. The results show a positive coefficient for customer UPI usage ($\beta 1 = 0.63$), suggesting that higher digital payment usage is associated with improved sales performance, although the relationship is statistically weak. The coefficient for distributor UPI acceptance ($\beta 2 = -0.13$) is slightly negative, indicating that distributor digitalization currently has no significant measurable impact on retailer sales outcomes. The model's explanatory power is limited ($R^2 = 0.7$).

In contrast, digital payment adoption among distributors remains low. 84.6% use mixed payment methods, while only 2.6% prefer UPI as their primary payment mode, highlighting a gap between digital payment adoption at the consumer–retailer level and within the retail supply chain..

1. INTRODUCTION

The rapid advancement of financial technology has significantly transformed payment systems and business transactions across the world. Digital payment platforms, including mobile wallets, QR-based payments, and real-time bank transfers, have emerged as efficient alternatives to traditional cash-based transactions. These technologies enable faster, safer, and more convenient financial exchanges, improving the overall efficiency of economic activities. In many developing economies, governments and financial institutions actively promote digital payments to enhance financial inclusion and reduce dependence on cash transactions (Sivathanu, 2019). As a result, digital payment adoption has expanded rapidly across various sectors, particularly in retail markets.

In India, the introduction of the Unified Payments Interface (UPI) has played a crucial role in accelerating the digital payment ecosystem. Developed by the National Payments Corporation of India (NPCI), UPI allows users to perform instant bank-to-bank transactions through mobile devices without requiring detailed banking information. The widespread availability of smartphones, increasing internet penetration, and government initiatives such as the Digital India program have further contributed to the rapid adoption of UPI across the country (Ravikumar & Prakash, 2022). Consequently, digital payments have become increasingly common in everyday retail transactions, enabling businesses to offer more convenient payment options to consumers.

The retail sector plays an important role in linking producers, distributors, and consumers within the economy. Traditionally, retail transactions in many developing countries have relied heavily on cash payments. However, the increasing adoption of digital payment technologies is gradually transforming retail operations by improving transaction speed, enhancing customer convenience, and reducing the risks associated with cash handling. Research suggests that

digital payment adoption can positively influence retailer performance by improving operational efficiency and attracting more customers who prefer cashless transactions (Adhikary et al., 2021).

Despite the growing adoption of digital payments at the consumer–retailer interface, the integration of digital transactions within the broader retail supply chain remains limited. Payment interactions between retailers and distributors often continue to rely on conventional methods such as cash payments or bank transfers. This imbalance indicates a gap in digital adoption within the retail ecosystem. Studies suggest that factors such as technological readiness, trust among business partners, and infrastructure limitations influence the adoption of digital payments within supply chains (Srinivasan et al., 2025).

Given these developments, it is important to examine how digital payment adoption influences retail performance and supply chain payment practices. Therefore, this study focuses on the adoption of digital payment systems, particularly UPI, among retailers and distributors and analyzes their impact on retail sales performance and payment practices within the retail supply chain. By using primary survey data, the study aims to provide insights into the role of digital payments in improving transaction efficiency and supporting more sustainable retail operations.

Literature Review

Digital payment systems have significantly transformed retail transactions by providing faster, more secure, and convenient payment methods. The growth of financial technologies such as mobile wallets, QR-code payments, and real-time bank transfers has reduced reliance on cash and improved transaction efficiency in retail environments. Studies show that digital payment adoption enhances retailer performance by improving customer convenience and reducing operational costs. For instance, Adhikary et al. (2021) found that digital payment technologies improve the efficiency and profitability of small retailers, while Winata (2024) highlights their role in improving financial record keeping and transparency.

In India, the Unified Payments Interface (UPI) has played a major role in accelerating digital payment adoption. UPI enables instant bank-to-bank transfers through mobile devices, making digital transactions accessible for both consumers and retailers. Research indicates that UPI adoption improves transaction convenience and can positively influence retail sales. Roopa and Vijayalakshmi (2025) report that retailers accepting UPI experienced improvements in sales performance due to faster payment processing. Similarly, Mahesh and Bhat (2022) identify perceived usefulness, ease of use, and security as key factors influencing digital payment adoption. However, Bhutani and Pahal (2025) note that some small retailers still face challenges related to technological literacy and digital infrastructure.

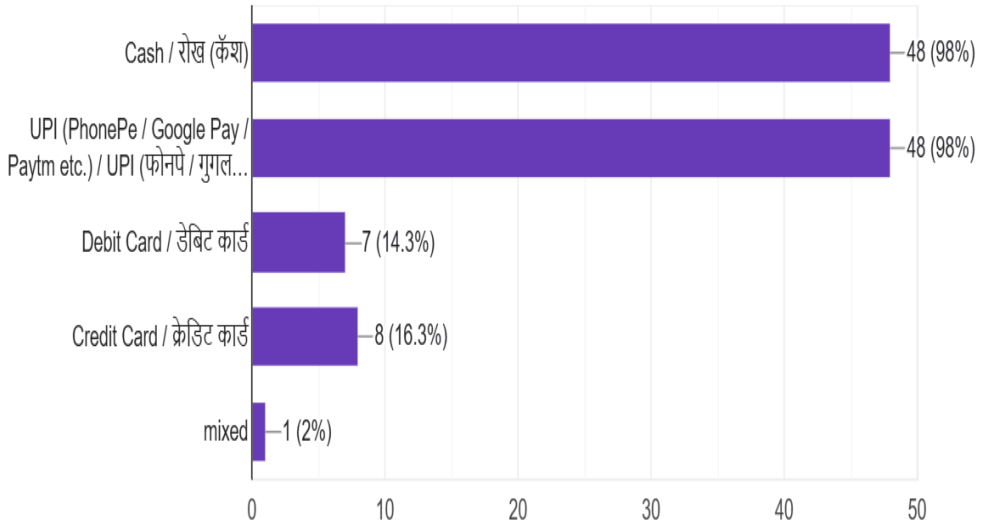
Existing literature also highlights the impact of digital payments on retail business performance. Padvi and Mishra (2025) observed that digital payment acceptance can increase customer satisfaction and sales turnover. Additionally, Jadeja (2025) suggests that digital payments help stabilize income flows in informal retail sectors by enabling continuous transactions. Despite strong adoption at the consumer–retailer level, digital payments remain less common in retail supply chains. Srinivasan et al. (2025) explain that adoption among distributors is influenced by factors such as trust, infrastructure, and transaction limits. Overall, while digital payments have become integral to retail transactions, limited research examines their role within retailer–distributor payment relationships, highlighting an important area for further study.

Empirical Analysis of Digital Payment Adoption and Sustainable Retail Practices

This study uses two datasets collected through structured surveys administered to retailers and distributors. The retailer dataset contains 49 valid responses, while the distributor dataset includes 39 responses. The analysis examines the relationship between digital payment adoption, particularly Unified Payments Interface (UPI), and its impact on retail sales performance and supply chain payment practices. Descriptive statistics and regression modelling are used to evaluate how digital payment adoption contributes to sustainable retail practices.

Descriptive Analysis of Retailer Digital Payment Adoption

Descriptive statistics indicate substantial adoption of digital payments among retailers. A key variable is the proportion of customers using UPI. Results show that most retailers report 25–50% of customers paying via UPI. Specifically, 33 out of 49 retailers (67.3%) fall into this category. In comparison, 24.5% of retailers report that less than 25% of customers use UPI, while 8.2% report that 50–75% of customers pay using UPI. This distribution suggests moderate digital payment penetration in retail and indicates a gradual shift from cash-based transactions toward digital payment ecosystems.



Retailers were also asked whether sales changed after adopting UPI. The findings show that 30 retailers (61.2%) experienced a slight increase in sales, while 6 retailers (12.2%) reported a significant increase. In contrast, 13 retailers (26.5%) reported no noticeable change. Overall, approximately 73.4% of retailers perceive a positive association between digital payment acceptance and sales performance, suggesting that digital payment infrastructure improves transactional convenience and may increase purchase frequency and customer retention.

Econometric Model Specification

To test the relationship between digital payment adoption and sales performance, a regression model was developed. The dependent variable represents changes in sales after UPI adoption and is measured using ordinal categories: no change, slight increase, and significant increase. The key independent variables include the proportion of customers using UPI and whether distributors accept UPI payments.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where Y represents Change in Sales, X_1 represents UPI usage by Retailor, X_2 represents UPI Usage by Distributor, β_0 represents the intercept, β_1 and β_2 represent the coefficients and ε represents the error term.

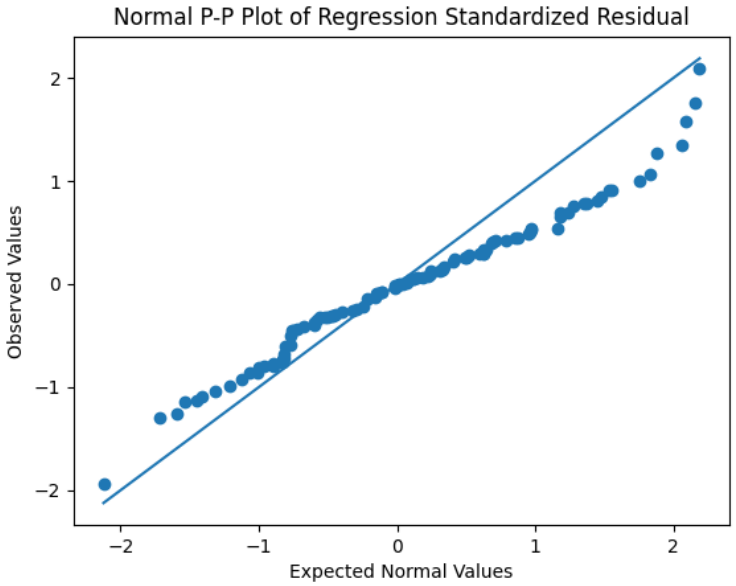
The regression results show a positive coefficient ($\beta_1 = 0.63$) for customer UPI usage, indicating that a higher proportion of digital payment users is associated with improved sales performance. However, the statistical significance is limited, likely due to the small sample size and the ordinal nature of the dependent variable. The coefficient for distributor UPI acceptance ($\beta_2 = -0.13$) is slightly negative, suggesting that distributor digitalization currently has no strong measurable effect on retailer sales performance.

The model's explanatory power is relatively low, with a coefficient of determination ($R^2 = 0.7$). This implies that although digital payments influence sales dynamics, other factors such as store location, product category, customer demographics, pricing strategies, and competitive market conditions also affect retail performance.

Distributor Payment Practices and Supply Chain Digitization

The distributor dataset highlights lower digital adoption in the upstream supply chain. When asked about preferred payment modes, 33 distributors (84.6%) reported using mixed payment methods, including cash, bank transfers, and occasional digital payments. Only one distributor (2.6%) preferred UPI as the primary payment method, while five distributors (12.8%) relied mainly on bank transfers such as NEFT or RTGS. These results indicate that although digital payments are common at the consumer–retailer interface, adoption in the retailer–distributor channel remains limited.

Cash persistence may reflect high transaction values, trust-based informal practices, and concerns about transaction limits and settlement delays.



Implications for Sustainable Retail Practices

Digital payment adoption reduces reliance on physical cash handling, lowering risks such as theft, counting errors, and manual record-keeping. Digital transactions also create electronic records, improving financial transparency and accounting efficiency. From a sustainability perspective, digital payments enhance financial flow efficiency by reducing administrative costs and accelerating transaction speed. Greater distributor adoption could enable a fully integrated digital payment ecosystem, improving inventory planning, real-time financial monitoring, and operational efficiency.

Conclusion

The empirical results indicate that digital payment adoption among retailers is widespread and has a positive association with perceived sales performance. However, the regression analysis suggests that digital payment adoption alone cannot fully explain variations in retail sales outcomes. Furthermore, the analysis reveals a significant digital adoption gap between retailers and distributors within the retail supply chain.

Overall, the findings highlight the importance of extending digital payment infrastructure beyond consumer transactions to include upstream supply chain participants. Strengthening digital payment adoption across the entire retail ecosystem has the potential to enhance economic efficiency, improve financial transparency, and support the development of sustainable retail practices.

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