



The rise of digital payments and its impact on retail consumer spend in India

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Abstract

In the past decade, India has seen an unparalleled growth in digital payments, thanks for the most part to the Unified Payments Interface (UPI), QR-triggered merchant payments and mobile wallets. The objective of this paper is to investigate the effect of proliferation of these digital payment formats on retail consumer spending in India. Based on the secondary data collected from NPCI, RBI, NSO CMIE and industry listed between 2014 and 2024, the paper utilises descriptive, correlation analysis and regression growth model to assess the linkage between digital payment adoption & consumption trends. Results show that consumer retail expenditure and UPI+QR payments appear to have the most impact, at least in case of urban/ semi-urban consumers, vis-a-vis wallets which have not only constantly lost their relative importance but also indicate the preference of Indian mobile-phone-based shoppers who are moving toward real time one click payment modes. This research has theoretical implications because it combines models of Technology Acceptance, Network Externality, and Behavioural Economics to develop a conceptual framework that ties payment adoption with spending behavior. Policy measures are recommended for infrastructure, inclusive adoption and secure and modern digital payments. There are implications for regulators, policy makers and retail businesses seeking to leverage digital payment expansion to drive consumption and formalize the retail market.

Keywords: Digital payments, Unified Payments Interface (UPI), QR code payments mobile wallets

Introduction

India's retail economy has been experiencing a quiet revolution that is not entirely evident at first glance, but which is as profound in its magnitude and implications. The country has rapidly shifted in the past decade from being heavily cash-based to adopting digital forms of payment almost seamlessly. At the heart of this change is the UPI as well as QR-based merchant payments and mobile wallets that have in many ways, altered what people do when they purchase.

The swift uptake of these digital payment instruments is not coincidental. By some estimates, more than a dozen macroeconomic factors — including demonetisation in 2016, growing smartphone penetration and an improving internet infrastructure — meshed with technological efficiencies and behavioural drivers to build an ecosystem conducive to digital payments. Consumers are the great beneficiaries, enjoying inexpensive and easy transaction now.

Yet, a key question remains to be answered: How has this rise in digital payments actually impacted retail consumer spending in India? Are these technologies merely convenient, or do they change the frequency and value of purchases and what is purchased? This paper seeks to fill this gap by placing the Indian experience within wider theoretical frameworks, based on secondary data for its empirical insight.

Literature Review

1. Digital Payment Adoption: Theoretical Foundations

The basic variant of TAM (Davis, 1989) [3] and some of its extensions, particularly UTAUT by Venkatesh *et al.* (2003) [20], offer a good starting point. From these, perceived usefulness and ease of use, along with social influence and facilitating conditions, emerge as critical determinants of adoption. In the Indian context, however, trust, app

usability, and security are particularly salient (Sharma & Alhuwalia, 2020) [17].

There's also the concept of network externalities: the value of a payment network increases with the number of people using it. UPI is a perfect example: the more users who join, the more attractive it is for merchants, too-which begets even more users in return. QR-based merchant payments further hasten the inclusion at the small retail level, integrating the informal economy with formal digital systems.

It is in this context that behavioral economics adds another layer. The "pain of paying" (Prelec & Loewenstein, 1998) [14] suggests that due to digital payments, the psychological cost of spending decreases, leading to impulsive and frequent purchases. In India, research points out that micro transactions through UPI or QR code are mainly susceptible to this effect (Pathak & Thomas, 2022) [13].

2. Empirical Studies on Digital Payments and Consumption

International studies also demonstrate that frequency of consumption is positively associated with digital payments. Examples include Bagnall *et al.* (2016) [2] and Zhou *et al.* (2019) [21]. In China, for example, the adaption of mobile payment significantly increased the small-ticket offline and online spending.

Empirical studies also suggest strong associations in India. UPI adoption is positively related to retail consumption metrics like PFCE, e-commerce GMV, and organized retail sales. Goel & Kathuria, 2021 [6]; Prakash, 2022 [15] Besides, QR adoption amongst the kirana stores improves merchant efficiency as well as consumer convenience. Vaidyanathan, 2023 [19] More interestingly, wallets seem to have lost their sheen post-UPI, indicating the changing nature of technology-driven payments.

3. Literature Gaps

Despite the breadth of existing studies, gaps remain. Most are cross-sectional and thus limit causal inference. Granular data on merchant-level adoption and household consumption remains rare. Moreover, heterogeneous effects across the rural–urban divide, different income strata, and gender have been underexplored. This paper tries to address some of these shortcomings by integrating scattered secondary data into a single analytical framework.

Theoretical Framework and Conceptual Model

This study combines three important theoretical lenses

1. Technology Acceptance Model - TAM/UTAUT - explains user adoption in relation to perceived usefulness, ease of use, and facilitating conditions.
2. Network Externality Theory - emphasizing self-reinforcing adoption dynamics.
3. Behavioural Economics ("Pain of Paying")-explaining consumption patterns influenced by psychological costs of spending.

Conceptual Model

The conceptual model of this study explains how digital payment adoption influences retail consumer spending in India. At its core, adoption of payment technologies—such as UPI, QR codes, mobile wallets, and card transactions—reduces transaction friction, making payments faster, more convenient, and secure. This reduction in friction directly affects consumer behaviour, encouraging both more frequent purchases and higher transaction values.

The relationship between digital payment adoption and retail consumption is moderated by external factors, including the quality of digital infrastructure, smartphone and internet penetration, and socio-economic characteristics of consumers. Psychological factors, such as the perceived ease of use, trust in digital platforms, and the behavioural concept of “pain of paying,” further shape spending patterns.

In essence, the model posits a sequential relationship: as digital payments are adopted more widely, transaction friction decreases, leading to increased spending frequency and value, which ultimately drives higher retail consumption. This framework captures both the technological and behavioural mechanisms through which digital payments are transforming India’s retail markets.

This is because digital payment adoption, such as UPI, QR, wallet, and card, reduces friction in transactions, adds convenience, and interacts with consumer behaviour for changes in retail spending patterns, moderated by technological and socio-economic factors.

Research Methodology

A quantitative, secondary-data based approach was taken and the study ran from 2014 to 2024, considering the period before and after the launch of UPI, when I looked at the research methodology. This research is descriptive, analytical and explanatory.

The data came from a number of sources, including NPCI, RBI DPI, MeitY, and digital payments trends. The retail consumption statistics I considered were from the National Statistical Office PFCE, CMIE, Nielsen retail reports and DPIIT/Invest India. Other related information I used was provided by the World Bank India, Economic Survey, smartphone and internet penetration statistics.

The main variables in the study included the volume of retail consumer spending, organized retail, and the GMV of e-commerce. These were the dependent variables, and were associated with the independent factors of UPI volume, QR adoption, mobile wallet use, card transactions, and DPI (Digital Payments Index). I also had economic controls in the form of GDP per capita, urbanization, inflation, and major policy events.

In my analysis, used statistical techniques such as descriptive statistics, correlation analysis, OLS and time-series regression analysis, structural break analysis, and estimation of elasticity.

Analysis and Interpretation

1. Descriptive Trends

- UPI has grown from 0.1 billion transactions in 2016 to 120 billion in 2024.
- QR merchant payments increased from 5% to 45% share PFCE: ₹82 lakh crore, 2016; ₹137 lakh crore, 2024
- E-commerce GMV increased from US\$20B to US\$120B

2. Correlation & Regression

- **UPI ↔ PFCE:** $r = 0.89$
- **QR ↔ small retail:** $r = 0.83$
- **Regression:** $\beta_{UPI} = 0.62$ ($p < .01$), $\beta_{QR} = 0.41$ ($p < .05$), $\beta_{wallet} = 0.09$ (ns)
- **Elasticity:** For every 10% increase in digital payment penetration, retail spending increased by 4.2%.

Interpretation: UPI and QR payments are the strongest drivers; wallets are increasingly irrelevant. Consumer behavior lines up with TAM and “pain of paying” theory

Findings and Conclusions

Looking at digital payments in India, Unified Payments Interface (UPI) has become the dominant force in consumer-driven spending. Quick Response (QR) codes have made it possible for small retail businesses to integrate with the digital payment systems, and boost the number and frequency of transactions. Coming hotfooting into the scene, digital payments have given a significant boost to spending in both the organized and the informal markets.

However, after the UPI, the use of wallets has begun to decline. The digital payments phenomenon in India was initially supported by the massive development of technological infrastructure in the country, namely, the smartphone and internet. The economic shocks such as demonetization and COVID-19 were instrumental in accelerating this phenomenon but since the UPI system got into place, we have witnessed fundamental changes. As for, digital payments are not here to stay.

Conclusion

Digital payments in India have now become a way of structural force that is radically changing consumer behaviour, by formalizing markets and, pushing forward inclusive growth.

Policy and Managerial Implications

Policy Recommendations

- Expand UPI/QR infrastructure in rural areas
- Improve network reliability and cybersecurity

- Improve fraud detection and grievance mechanisms
- Promote financial literacy and digital adoption programs
- Incentivize merchant adoption through tax or credit benefits

Managerial Implications

- Integration of UPI/QR payments by the retailer improves customer frequency.
- Fintech companies should focus on micro-merchant solutions and rural penetration
- E-commerce platforms can use frictionless payments to increase basket size.

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