MRS Journal of Accounting and Business Management
ISSN *(Online) 3049-1460*
Vol-3, Iss-3 (March-2026)
Journal homepage: https://mrspublisher.com/journals

Smart Shopping in the Palm of Your Hand: How AI-Powered Mobile Commerce Shapes Consumer Behavior and Retail Sales

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Received: 12 / 02 / 2026	Accepted: 11 / 03 / 2026	Published: 28 / 03 / 2026

Abstract: Mobile phones have become the main way many Indians pay for goods and services. This paper documents the growth of mobile-linked digital payments in India and the digital infrastructure that supports them. Using secondary data from the Press Information Bureau, the Reserve Bank of India, the Telecom Regulatory Authority of India, the India Brand Equity Foundation, Bain & Company, and recent press coverage of official figures, the paper traces the rise of the Unified Payments Interface (UPI) from a small launch in 2016 to more than 24,000 crore transactions in FY2025-26. It shows that digital payments as a whole have also grown quickly, but that UPI has become the dominant mode, accounting for about 84% of digital payment transactions. The paper then describes the infrastructure behind this growth: internet connectivity that now exceeds one billion subscribers, a large and growing base of smartphones, a widening network of participating banks, and the spread of QR-code acceptance among merchants. The evidence suggests that the growth of mobile payments has been driven by the combination of an open, interoperable payment system and mass-market connectivity, and that mobile payments are used mostly for small, everyday purchases. The paper is descriptive and does not test causal relationships. It provides a foundation for later studies of how mobile commerce affects consumer behavior and retail performance.

Keywords: *mobile payments, digital payments, UPI, digital infrastructure, mobile commerce, India.*

Cite this article: Yadav, N. & Tiwari, A. (2026). Smart Shopping in the Palm of Your Hand: How AI-Powered Mobile Commerce Shapes Consumer Behavior and Retail Sales. *MRS Journal of Accounting and Business Management, 3(3),21-24.*

Introduction

A decade ago, most retail purchases in India were settled in cash. Today a shopper can scan a code at a street stall, a grocery store, or an online checkout and complete a payment in seconds from a smartphone. This shift is one of the most visible changes in how Indians shop, and it is closely tied to the rise of mobile commerce, defined as commercial activity carried out through mobile devices (Shankar et al., 2010).

Mobile payments matter for retail because payment is the final step of any purchase. When payment is slow, costly, or insecure, shoppers abandon purchases or avoid certain channels. When it is instant and free of friction, shopping becomes easier, and new kinds of buying, such as small and frequent purchases, become practical. Retailers are also building smarter mobile experiences, including personalized recommendations and chatbots, on top of this payment base. Those experiences depend on consumers being connected and able to pay easily from their phones.

The objective of this paper is to document the growth of mobile-linked digital payments and the supporting digital infrastructure in India. The paper does not examine consumer behavior or retail sales; its purpose is to describe, using publicly available data, how large the mobile payments system has become, how quickly it has grown, how it is used, and what infrastructure makes it possible.

The paper is organized as follows. Section 2 gives brief conceptual background. Section 3 describes the data and approach. Section 4 documents the growth of mobile-linked digital payments. Section 5 describes the supporting digital infrastructure. Section 6 discusses the findings, Section 7 notes limitations, and Section 8 concludes.

Conceptual Background

People adopt technologies that they find useful and easy to use, according to the Technology Acceptance Model (Davis, 1989). Extensions of that model for consumer settings add price value, hedonic motivation, and habit as drivers of use (Venkatesh et al., 2012). Mobile payments fit these ideas well. They reduce effort, they are often free for the user, they are used by friends and shopkeepers alike, and repeated use turns them into habit. Research on mobile shopping apps in India and elsewhere has also shown that perceived risk can hold back adoption, which makes trust in the payment system an important condition (Chopdar et al., 2018).

For any of this to work, certain supporting conditions must exist. People need connectivity and a capable device, banks and payment providers need a common technical standard, and merchants need a simple way to accept payment. Marketing research on mobile commerce has emphasized that the mobile channel is powerful because it is personal, always with the user, and tied to context such as location and time (Shankar et al., 2010).

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The sections that follow document the payment growth and these supporting conditions in the Indian case.

Data and Approach

The paper uses a documentary approach based entirely on secondary data. No primary data were collected. The information comes from official publications and reputable industry reports that are openly available:

- The Press Information Bureau (PIB), which publishes government statements and replies to Parliament on digital payments (Press Information Bureau, 2023, 2025, 2026).
- The Reserve Bank of India (RBI), whose payment system indicators report volumes and values of different payment modes, including mobile app-based payments and UPI (Reserve Bank of India, 2025).
- The Telecom Regulatory Authority of India (TRAI), which reports internet subscribers and tele-density (Telecom Regulatory Authority of India, 2026).
- The India Brand Equity Foundation (IBEF) and Bain & Company, which report on smartphones and online retail (India Brand Equity Foundation, 2026; Bain & Company, 2025).
- Business Today (2026) and Paytm Editorial Team (2025), which report official UPI figures for specific years.

The analysis is descriptive. Figures are reported as published and discussed in text, with simple comparisons such as how many times a figure has grown. Where two sources give slightly different numbers, the more recent release is used, and this is noted in the discussion. Terms follow Indian usage: one crore equals ten million, and one lakh crore equals one trillion rupees.

Growth of Mobile-Linked Digital Payments

The launch and rise of UPI

The Unified Payments Interface was launched in 2016 as a system that lets customers send money instantly between bank accounts using a mobile phone. Its beginnings were modest. According to Business Today (2026), the system recorded about 90,000 transactions in its first month and only 1.78 crore transactions worth ₹0.07 lakh crore across the whole of FY2016-17. PIB figures reported by Paytm Editorial Team (2025) show that this had risen to about 92 crore transactions worth ₹1.10 lakh crore by FY2017-18, which was the first full year of operation.

From that point growth was rapid and sustained. PIB (2023) reports that UPI handled about 4,500 crore transactions in FY2021-22, and the PIB (2026) factsheet notes that UPI crossed one billion transactions in a single month in October 2019 and five billion in a single month in March 2022. In FY2024-25 the RBI (2025) records about 18,587 crore UPI transactions, equal to 1,858,660 lakh, with a value of about ₹260.6 lakh crore. For FY2025-26 Business Today (2026) reports more than 24,162 crore transactions worth about ₹314 lakh crore.

Put in perspective, annual UPI volume rose by close to 13,000 times between FY2016-17 and FY2025-26, a compound annual growth rate of 188%, while annual value rose more than 4,000 times, at 155% a year (Business Today, 2026). Even in the most recent years, when growth has naturally slowed from its explosive early pace, volume increased by roughly 30% and value by about 20% between FY2024-25 and FY2025-26. The same source reports that monthly volume first passed 2,300 crore in May 2026 and peaked at 2,366 crore transactions worth ₹29.88 lakh crore in July 2026, which corresponds to more than 66 crore transactions a day. Figures reported by IBEF (2026) for April 2026, 22.35 billion transactions worth ₹29.03 lakh crore, are consistent with this level of activity.

UPI within the wider digital payments system

UPI is the largest part of a broader set of digital payment modes, which also include cards, wallets, and other bank transfers. The PIB (2025) reports that total digital payment volume across all modes rose from 4,370.68 crore transactions in FY2020-21 to 7,197.68 crore in FY2021-22, 11,393.82 crore in FY2022-23, and 16,443.02 crore in FY2023-24. Earlier PIB (2023) data show 2,326.02 crore in FY2018-19 and 3,400.25 crore in FY2019-20, which means that total digital payment volume grew roughly sevenfold in the five years to FY2023-24. Provisional figures to January 2025 show a further rise to 18,120.82 crore transactions in FY2024-25.

An important feature of this growth is that volume has grown far faster than value. Total digital payment value rose from ₹1,414.58 lakh crore in FY2020-21 to ₹2,428.24 lakh crore in FY2023-24 (Press Information Bureau, 2025), an increase of about 70%, while volume grew nearly fourfold over the same years. The average value of a digital payment has therefore fallen sharply, which signals that digital payments are being adopted for smaller and more frequent transactions rather than only for large transfers.

UPI's share of this system has become dominant. The PIB (2026) factsheet reports that UPI accounted for about 70% of India's digital payment transactions in FY2023-24, and Business Today (2026) reports that the share had risen to about 84% by FY2025-26. By this measure, the story of India's digital payments is largely the story of UPI.

Mobile as the main channel

The RBI (2025) separately reports mobile payments made through apps. In FY2024-25 these amounted to about 17,570 crore transactions (1,756,976.91 lakh) worth ₹392 lakh crore. Most of these were inter-bank payments, which means money moving from one bank's customer to another's, and only a small share were transfers within the same bank. The scale of this figure, close to the full volume of UPI and of total digital payments, shows that the phone is now the main device through which digital payments are made.

The RBI (2025) data also show that even simple feature phones have been brought into the system. UPI payments made through USSD, a service that works without a smartphone or internet connection, were small in FY2024-25, at about 17 lakh transactions, which is tiny next to app-based volume. Their importance is not scale but inclusion: they show that the system offers a route for users without smartphones, even if most users now prefer apps.

How mobile payments are used

Data on the composition of UPI payments show where the growth comes from. Business Today (2026) reports that in FY2025-26 person-to-merchant payments made up 63% of UPI

volume but only 29% of value, while person-to-person transfers made up 37% of volume but 71% of value. Payments below ₹500 accounted for 86% of person-to-merchant volume and 59% of person-to-person volume. In other words, most UPI transactions are small, and the majority involve paying a merchant.

These patterns are important for mobile commerce. They show that mobile payments are used mainly for everyday shopping and services, such as groceries, transport, food, and small retail purchases, and not just for occasional transfers between individuals. The same pattern explains why transaction counts have risen so much faster than the value of payments.

India in the global context

The scale of the Indian system has attracted international attention. Business Today (2026) reports that the International Monetary Fund recognized UPI as the world's largest real-time payment system by volume, and that UPI handled nearly 49% of global real-time payment transactions in 2025. The same source notes that UPI is now accepted in 11 countries. This global recognition underlines that the Indian payment infrastructure is not merely large in a domestic sense but is also among the most heavily used anywhere.

Supporting Digital Infrastructure

Payments can grow only where people are connected, have devices, and can use a shared payment system. The evidence points to progress on each of these.

Internet connectivity

TRAI (2026) reports that India had 1,028.61 million internet subscribers at the end of December 2025, of which 1,007.35 million were broadband subscribers. This is equivalent to about 72 internet subscribers for every 100 people. Wireless connections, which include mobile and fixed wireless, account for the overwhelming majority, with 983.29 million subscribers, compared with 45.32 million on wired connections. IBEF (2026) reports a further rise to 1,092.79 million internet subscribers at the end of March 2026. TRAI notes that a major operator began including machine-to-machine connections in its mobile base from December 2025, so recent quarterly jumps are not fully comparable with earlier periods, and the figures should be read as indicating scale rather than precise growth.

Connectivity is also no longer limited to cities. Of the 1,028.61 million subscribers at the end of 2025, 594.33 million were urban and 434.27 million were rural, so rural users already make up about 42% of the total (Telecom Regulatory Authority of India, 2026). Tele-density, which measures telephone connections per 100 people, stood at about 92% overall and 88% for wireless connections, with urban tele-density far above rural tele-density but rural usage still substantial. This matters for mobile payments because a payment system can reach smaller towns and villages only if connectivity does.

Smartphones

Smartphone ownership is the second foundation. IBEF (2026), citing IDC, reports that India's smartphone shipments were about 151 million units in 2024, making it the second-largest smartphone market in the world by units and about 15.5% of global shipments. India has also become a significant smartphone exporter, with exports of roughly US$30 billion in 2025. A large domestic market, together with local manufacturing, has helped keep devices available across price points, which supports mass adoption of mobile payment apps.

The payment infrastructure itself

The third element is the payment system. UPI is built as an open, interoperable network. Business Today (2026) reports that the number of banks live on UPI rose from 21 at launch to 44 in FY2016-17 and to 703 by FY2025-26, and PIB (2026) reports 741 live banks in July 2026. A customer with an account at almost any of these banks can pay a person or merchant whose account is at any other, and this interoperability is a large part of why the system became a standard.

On the merchant side, QR-code acceptance has spread widely. According to the RBI (2025), there were about 5,597 lakh UPI QR codes in April 2024, 6,579 lakh as of March 2025, and 6,625 lakh in April 2025. This is more than 65 crore codes in use. A printed code costs a merchant very little to display, and acceptance needs no special terminal, which is why small vendors, street sellers, and local shops have been able to join the system alongside large retailers.

Online retail and the widening shopper base

Online retail has grown on top of this infrastructure. Bain & Company (2025) estimates that India had more than 270 million online shoppers in 2024, the second-largest shopper base globally, and that almost 60% of new shoppers since 2020 came from Tier-3 or smaller cities. It estimates that online retail sales were about US$60 billion in 2024 and projects growth to US$170 to 190 billion by 2030. IBEF (2026) gives higher estimates of market size and about 290 to 300 million online shoppers in 2025, a difference that reflects varying definitions of e-commerce. Despite the differences, both sources describe a large and widening base of consumers who shop through mobile and online channels, supported by the payment and connectivity infrastructure described above.

Discussion

First, the growth of mobile-linked payments has been both fast and sustained. UPI grew from a negligible base to tens of thousands of crores of transactions in a decade, and total digital payments grew several times over in the years for which official totals are available. Growth has slowed from its early pace, as would be expected for a system of this size, but it has continued to rise at a double-digit rate in the latest year reported.

Second, the growth is concentrated in small, frequent payments to merchants. The fall in the average value of digital payments, and the dominance of person-to-merchant payments below ₹500, show that mobile payments have moved into everyday retail. This is consistent with the idea that low effort, zero or low cost, and habit are strong drivers of consumer use (Venkatesh et al., 2012). It also suggests that the system now reaches the kinds of small purchases that were once almost entirely cash-based.

Third, the infrastructure explains much of why this was possible. Connectivity exceeding one billion subscribers, a very large smartphone market, hundreds of banks on a common interoperable network, and tens of crores of merchant QR codes together form a stack in which each layer supports the others. Without connectivity and devices, the payment system could not reach users; without an interoperable payment system and simple merchant acceptance, connectivity and devices would not translate

into retail payments. The Indian experience therefore suggests that mobile payment growth depends on a combination of infrastructure conditions, in line with the facilitating conditions highlighted in technology adoption research (Venkatesh et al., 2012).

These findings also provide context for mobile commerce more broadly. The widening shopper base in smaller cities (Bain & Company, 2025), together with rural connectivity, means that mobile payments and online shopping are no longer confined to large metropolitan areas. Any retailer designing smart mobile experiences, including those that use artificial intelligence, now operates in an environment where a large share of consumers can already be reached and can already pay from a phone.

Limitations

The paper has several limitations. It is descriptive and relies entirely on secondary data, so it documents what has happened but does not explain why or test any relationships. Figures come from different publishers and releases, and some vary slightly: for example, FY2016-17 UPI volume is given as about 1.78 crore in one source and 2 crore in another, and total digital payment volume for FY2020-21 differs slightly between two PIB releases. The more recent release was used in such cases. Some figures, such as FY2024-25 digital payment totals, were provisional when published, and some FY2025-26 figures come from press reports of official data rather than directly from the government publication. Estimates of online retail differ between sources because of differing definitions. Finally, the data are national, so the paper cannot describe how payments and infrastructure differ across states or between rural and urban areas in detail. Readers should check key figures against the original sources before citing them.

Conclusion

This paper documented the growth of mobile-linked digital payments in India and the digital infrastructure that supports them. UPI has grown from about 90,000 transactions in its first month to more than 24,000 crore transactions in a single year, and it now accounts for most of the country's digital payment transactions. Total digital payments have grown several times over, with volume rising much faster than value because mobile payments are used mainly for small, frequent purchases from merchants. The growth rests on a supporting base of more than one billion internet subscribers, including a large rural share, a very large smartphone market, hundreds of banks connected through a single interoperable network, and tens of crores of merchant QR codes.

Taken together, the evidence shows that India has built a mass-market mobile payment environment in a short time. This environment is the foundation on which mobile commerce, and the smart shopping features built into it, now operate. Future research can build on this base by examining how mobile payments affect consumer buying behavior and retail performance, using state-level or transaction-level data to go beyond the national picture presented here.

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