



The Growth and Impact of UPI on Digital Payments in India

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ABSTRACT

India's financial landscape has changed dramatically, shifting from a cash-based economy to one that is more focused on digital technology. The UPI, which was first introduced by the NPCI in 2016, has been essential to this development since it makes bank-to-bank transactions via mobile platforms quick, safe, and easy. As of May 2025, UPI accounted for more than 75% of all retail digital payments in India, facilitating over 14.5 billion monthly transactions worth over ₹20 lakh crore. This study examines UPI's development, capabilities, and growing significance in India's payment ecosystem by examining trends from FY 2017–18 to FY 2023–24. The usage of UPI has grown exponentially, according to the data, and there has been a noticeable shift from person-to-person (P2P) to person-to-merchant (P2M) transactions, which suggests increased commercial integration. With the help of advancements like UPI Autopay, UPI Lite, and credit card linkage, UPI has expanded financial inclusion and strengthened the basis of India's digital economy by providing wider access to smooth digital transactions. Despite obstacles including server limitations, cyber security threats, and digital illiteracy, its overall influence cannot be denied. Based on statistics from the RBI and NPCI, this paper emphasizes how UPI helped make India a global leader in fintech. The results highlight the significance of UPI in promoting digital payment systems that are inclusive, scalable, and prepared for the future in both local and foreign settings.

Keywords: Digital Payment, Digital Economy, UPI, NPCI

Introduction: Over the past ten years, India's financial landscape has drastically changed, moving from a primarily cash-based economy to one that is more reliant on digital payments. The NPCI launched the UPI in April 2016, and with its real-time transaction structure, it has emerged as a key driver of this digital revolution. UPI makes digital payments easy, accessible, and highly interoperable by enabling instantaneous, round-the-clock inter-bank transactions through cell phones. UPI handles more than 14.5 billion transactions every month as of May 2025, with a total transaction value of more over ₹20 lakh crore. More than 75% of all retail payments in India are made digitally through the platform, greatly outpacing more conventional methods

like RTGS, NEFT, and card-based payments. The popularity of UPI is further demonstrated by its increasing UPI's growing user base further illustrates its appeal, since it has more than 400 partner banks and third-party apps including PhonePe, Google Pay, Paytm, Amazon Pay, and the government-backed BHIM app. This adoption surge has been fueled by a number of factors, including the government's goal of a cash-lite economy, the Digital India mission, increased internet accessibility, and the growing number of smartphones, which is expected to reach over 1.2 billion users by the end of 2025. UPI's zero-merchant discount rate (MDR) policy and simple QR-code-based payments have also encouraged millions of small company owners and kirana enterprises to utilize digital methods. Notwithstanding its significant progress, UPI continues to confront some obstacles, such as cyber security vulnerabilities, inadequate internet connectivity in remote areas, concerns around data protection, and low levels of digital knowledge among certain demographic groups. Its capacity to advance financial inclusion, democratize access to financial services, and integrate with cutting-edge technology like Central Bank Digital Currency (CBDC) and cross-border payment systems underscores its vital importance in India's digital economy. The development, importance, and future prospects of UPI are examined in this essay, with a focus on how it has transformed digital payments and sped up the nation's shift from "cash to click."

The UPI Concept: The RBI is in charge of UPI, an instant digital payment system developed by the NPCI. It was first made available on mobile devices in April 2016 and allows for smooth, instantaneous money transfers between bank accounts. By combining several banking services into one platform, UPI enables its customers to send and receive money, pay bills, and make purchases online using a Virtual Payment Address, or UPI ID, rather than a bank account number. UPI has revolutionized India's digital payment environment by fostering interoperability between banks and payment apps, which makes all transactions quick and easily accessible for consumers, companies, merchants, and government agencies.

How UPI Operates: utilizing mobile applications, customers can instantly move money between bank accounts utilizing UPI, a real-time digital payment platform. Installing a UPI-compatible app, such as BHIM, Google Pay, PhonePe, or Paytm, and connecting it to a bank account are prerequisites for using UPI. Users create a UPI ID after linking, which eliminates the need to divulge private financial information such account numbers or IFSC codes. Transactions are started by entering the recipient's UPI ID or by scanning a QR code, indicating the amount to be paid, and using a secure 4- or 6-digit UPI PIN to confirm the transaction. The NPCI oversees the system by securely facilitating transactions between the participating banks and guaranteeing prompt completion, especially on weekends and holidays when regular banking hours are not in effect. Person-to-person (P2P) and person-to-merchant (P2M) payments, utility bill settling, recurring payments with UPI Autopay, and credit-based transactions through UPI Credit are just a few of the many features that UPI enables. UPI is one of the most sophisticated and inclusive digital payment systems in the world thanks to its smartphone integration, security focus, and user-friendliness.

Literature Review: In a survey of 2,000 urban and semi-urban users, Kumar et al. (2024) from IIT Bombay found that 86% of respondents favored UPI over cards or wallets due to its user-friendliness and peer recommendations. In a paper published by the Centre for Sustainable Finance, Verma & Singh (2024)

examined UPI transactions in tier-2 to tier-5 towns. They found that the volume of rural UPI transactions increased by 60% year over year, and that retailers' acceptance of QR-based payments increased by 45%. According to Patil (2023) in the International Journal of Rural Management, UPI improved timeliness and decreased cash leakage by streamlining subsidy transfers to farmers under programs like PM-KISAN. The Journal of Financial Innovation's Rajesh & Sharma (2023) study of NPCI data revealed a ~120% YoY increase in monthly active UPI users between 2021 and 2023, which they attributed to the service's convenience and zero-fee model. According to a working paper on UPI Autopay published by ISB's Mehta & Banerjee (2023), recurring payments (such as bill payments and subscriptions) increased by 40% within the first year of implementation. Using the diffusion of innovation theory, Fahad & Shahid (2022) highlighted early trust and usability as the main factors influencing UPI acceptance. Consumer views were examined by Jha & Kumar (2021), who found that user-friendliness and technical confidence were important factors in adoption. Nenavath & Sreenu (2020) examined the benefits of cashless policies in ACM Transactions, pointing out that UPI contributes to economic growth by improving transaction efficiency. In their survey of 55 users, Sharma & Yadav (2017) discovered that 91% of them had shifted from cash to UPI, while there were still issues with infrastructure and transaction failures.

The research study's Objectives

- To examine how digital payments have changed in India during the past seven years.
- To look at the patterns in UPI transaction growth and usage over the same time frame.
- To provide information and suggestions to individuals, businesses, and authorities that want to encourage and improve the growth of India's digital payment infrastructure.

Research Methodology

In order to examine the development and impact of digital payment systems in India, with a focus on UPI specifically, this study uses a descriptive and analytical methodology from 2017 to 2024. The only secondary data used in the study came from reliable sources including the RBI, the NPCI, and the individual banks. Its main objective is to analyse patterns in the number of transactions, monetary amounts, and user acceptance of different digital payment platforms—particularly UPI. Finding usage trends, evaluating UPI's role in transforming India's digital financial ecosystem, and offering well-informed suggestions to governments, corporations, and other pertinent stakeholders are the objectives. Its only dependence on secondary data and lack of field-based original research constitute the study's main limitations.

Data Analysis & Interpretation

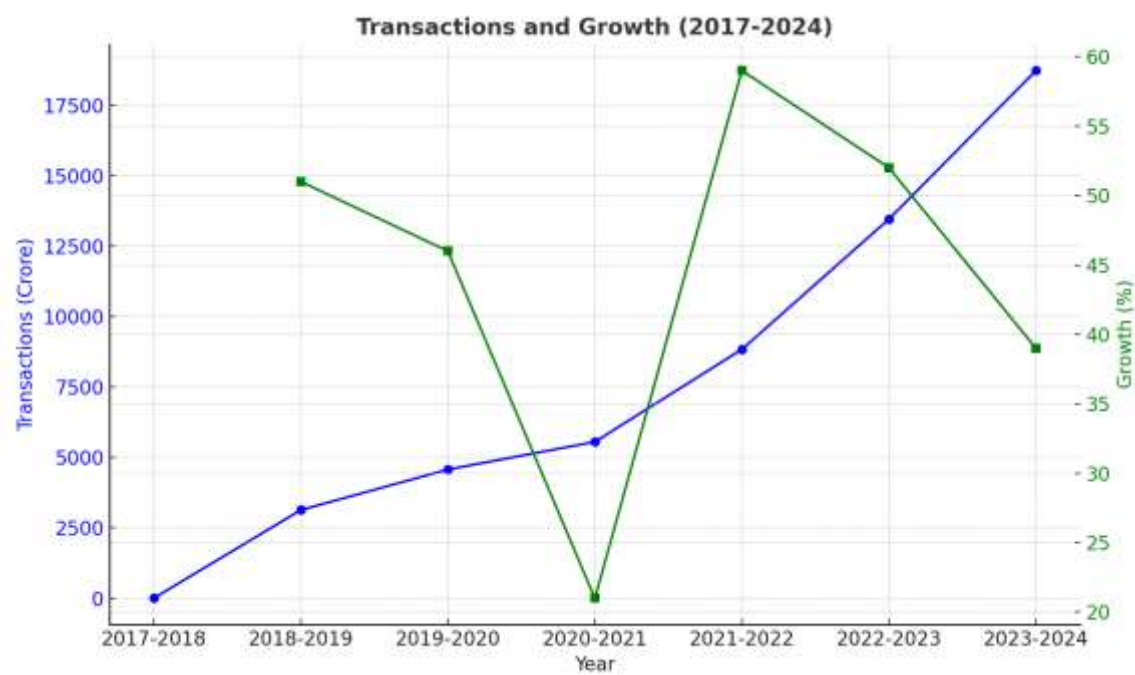
Table: 1 Digital Payment Transaction in India

Year	No of Transaction (in Crore)	Growth (in %)
2017-2018	2.071	
2018-2019	3,134	51%
2019-2020	4,572	46%
2020-2021	5,554	21%
2021-2022	8,839	59%

2022-2023	13,462	52%
2023-2024	18,737	39%

Source: RBI, NPCI & Banks

Graph: Transactions and Growth (2017-2024)



UPI's transition from FY2017–18 to FY2023–24 offers an engaging example of how policy, technology, and consumer behavior may come together to transform a country's financial system. In just seven years, the system's transaction volume increased from 91.52 crore in FY2017–18 to 13,116.47 crore in FY2023–24, a startling 140x growth. Due in large part to the widespread adoption of mobile apps, the ease of use of UPI's real-time bank-to-bank transfers, and vigorous marketing through the Digital India campaign, the most notable increase took place in FY2018–19, with a 485% spike. The expansion was further accelerated by UPI's zero-fee model, smooth bank-to-bank interoperability, and accessibility for even inexperienced internet users. Despite a minor fall in YoY growth to 134% and 78% in FY2019–20 and FY2020–21, the platform's user trust increased. UPI is now a widely used tool for both personal and company payments since the COVID-19 pandemic acted as a digital accelerator, encouraging consumers and small businesses to switch to contactless transactions. With the aid of the deployment of QR code infrastructure and rising smartphone penetration, UPI also experienced significant growth at this time in semi-urban and rural areas. The UPI entered a mature phase in FY2021–2022. In FY2021–2022, transaction volumes jumped to over 4,500 crores, and in FY2023–2024, they reached over 13,000 crores. Like any system achieving scale, the YoY growth rates naturally slowed to 106%, 82%, and 57%, respectively. Nevertheless, considering the large base effect, these figures are remarkable.

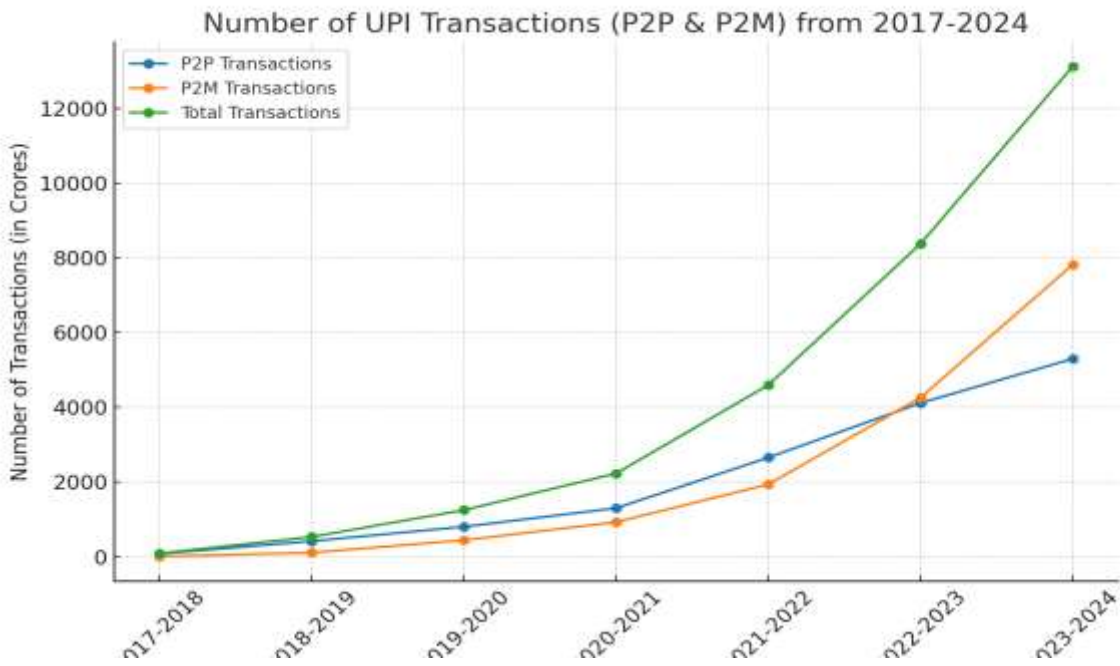
Important developments during this stage, such as integration with RuPay credit cards, UPI Lite for offline micropayments, and UPI Autopay for recurring invoicing, increased its attractiveness for a variety of use cases. Furthermore, UPI's rising worldwide relevance is demonstrated by its support for international remittance corridors (such as the Singapore India UPI connection), merchant payments, and P2M (person-to-merchant) transactions. The decreasing growth rate in percentage terms is a sign of platform maturity and

market stabilization rather than decline. UPI has evolved from a cutting-edge digital tool to an essential piece of national infrastructure, with over 400 million bank accounts connected to it and an average daily transaction volume of over 40 crores by FY2023–2024. India has established itself as a global leader in affordable, scalable fintech innovation thanks to its capacity to promote inclusion, lessen reliance on cash, and offer safe, effective, and instantaneous payments.

Table2: Number of UPI Transactions (P2P& P2M, In crore)

Year	P2P Transactions	P2M Transactions	Total Transaction
2017-2018	81.10	10.40	91.50
2018-2019	422.20	113.10	535.30
2019-2020	806.10	445.80	1251.90
2020-2021	1303.90	929.20	2233.10
2021-2022	2656.20	1940.60	4596.80
2022-2023	4115.00	4260.10	8375.10
2023-2024	5299.60	7816.80	13116.40

Source: RBI, NPCI & Banks



India's digital payments ecosystem is evolutionary mature, as seen by the thorough division of UPI transactions into Person-to-Person (P2P) and Person-to-Merchant (P2M) from FY2017–18 to FY2023–24. UPI's primary function in its early years was peer-to-peer money transfers. Due to a lack of digital merchant infrastructure and consumer confidence in digital commerce, the system was initially dependent on interpersonal usage, as evidenced by the fact that P2P accounted for 81.10 crore of the 91.50 crore UPI transactions in FY2017–18, while P2M contributed only 10.40 crore. While P2M witnessed steady increase, reaching 445.80 crore transactions by FY2019–20 as smartphones, QR codes, and fintech apps became more widely available, this pattern persisted in FY2018–19 and FY2019–20. The pivotal moment occurred in FY2020–21 and FY2021–22. In FY2021–22, P2P transactions increased significantly to 2,656.20 crore,

while P2M transactions also expanded quickly to 1,940.60 crore, driven by the shift in consumer behavior toward contactless payments brought on by the pandemic. During this time, vital services, energy bill payments, and supermarket purchases—areas where cash has historically been the primary method of payment—were increasingly handled digitally. P2M growth was made possible by initiatives like the Digital India framework's deployment of UPI QR codes, 0% MDR (Merchant Discount Rate) for small companies, and the onboarding of street vendors through programs like PM SVANidhi. For the first time in UPI's history, P2M transactions (4,260.10 crore) surpassed P2P transactions (4,115.00 crore), indicating a significant structural shift from a person-centric to a commerce-driven digital system. When P2M transactions (4,260.10 crore) surpassed P2P transactions (4,115.00 crore) for the first time in UPI's history in FY2022–2023, it marked a significant structural shift and the beginning of a larger transition from a person-centric to a commerce-driven digital payment platform. When P2M transactions increased to 7,816.80 crores in FY2023–2024, accounting for approximately 60% of all UPI transactions, this trend acquired even more traction. P2P transactions, on the other hand, grew steadily but more slowly, reaching 5,299.60 crore. According to the changing trend, UPI has surpassed personal convenience transfers to become the most widely utilized payment mechanism in a number of industries, including e-commerce, retail, utilities, and services.

Due to a number of interconnected developments, person-to-merchant (P2M) transactions are becoming more and more popular. MSMEs and small shops are using UPI extensively. the implementation of UPI Soundbox devices, which give businesses instant transaction confirmations, and features like UPI Autopay, which enables recurring transactions, and UPI Lite, which enables offline micro-transactions. The platform has also been made into a complete solution for both debit and credit transactions by the integration of RuPay credit cards with UPI. Along with increasing user confidence, this expansion of UPI's capabilities has also helped to boost the volume and frequency of transactions.

Suggestion: A number of specific recommendations can be made for legislators, companies, and individuals in order to encourage the ongoing expansion and advancement of digital payment systems in India, especially UPI. Enhancing grievance redressal systems and putting in place real-time fraud detection techniques should be policymakers top priorities when it comes to bolstering cyber security infrastructure. Given the significance of inclusion, they could also use infrastructure subsidies, tax breaks, and expanded UPI services like UPI123Pay for feature phones to encourage rural residents and small business owners to adopt digital technology. For banks and fintech companies that preserve the foundation of digital payments to remain viable, the existing zero-MDR (Merchant Discount Rate) policy must be reviewed. Additionally, to foster trust and guarantee safe user behaviour across demographics, national digital literacy initiatives are required, particularly in regional languages. Using QR-based UPI systems for everyday transactions can help businesses and merchants cut down on cash handling and streamline operations. To further improve efficiency and engagement, use UPI Autopay for recurring payments and UPI data analytics for customer insights. Regular employee training on managing digital transactions should also be implemented. Customers are urged to use UPI for regular payments on an individual basis while adopting secure online practices, like avoiding dubious

links and safeguarding their PIN. Peer and community awareness and education can aid in expanding the circle of digital adoption and trust.

Conclusion: The transition of India's economy from cash to digital has been greatly aided by the UPI. Due to widespread use for both personal and business purposes, UPI transactions have increased from 91.5 crore in FY2017–18 to over 13,116 crore in FY2023–24 since its inception in 2016. Person-to-Person (P2P) payments dominated early usage, but in recent years, Person-to-Merchant (P2M) transactions have sharply increased and now account for approximately 60% of all UPI activity, indicating a fundamental behavioral shift in the use of digital payments. Real-time, inexpensive, and interoperable transactions—bolstered by innovations like UPI Autopay, UPI Lite, QR codes, and credit card integration—are the foundation of UPI's success. Through mobile-based platforms, it has made formal banking accessible to millions of people, including small business owners and those living in rural areas, greatly advancing financial inclusion. Still, there are issues with digital literacy, infrastructure scalability, and cyber security. All things considered, UPI has democratized access to finance in addition to digitizing payments. Offering a scalable, equitable, and sustainable approach for digital payments, UPI is a representation of India's fintech leadership as it grows internationally and connects with emerging systems like CBDCs.

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