



Payments System Research Briefing

The Role of Nonbanks and Fintechs in Boosting India's UPI Person-to-Merchant Transactions

by: Aditi Routh

August 30, 2024

Unified Payments Interface (UPI), a mobile-based instant payment system in India, has grown substantially in the last few years. Indians initially used UPI for person-to-person (P2P) payments, but today use UPI more for person-to-merchant (P2M) payments. Nonbanks and fintechs have contributed to the rapid growth of UPI P2M payments by providing third-party apps, merchant services, and consumer credit, as well as enabling UPI P2M payments to expand beyond India's borders.

India's Unified Payments Interface (UPI), a mobile-based instant payment system that often involves a quick response (QR) code, has grown significantly since launching in 2016. Initially, Indians used UPI mainly for person-to-person (P2P) payments, and while P2P payments have continued to grow steadily, Indians now use UPI more for person-to-merchant (P2M) payments. This *Payments System Research Briefing* examines the rise in UPI transactions and the roles nonbanks and fintechs have played in expanding UPI P2M payments.

UPI and the rapid rise in UPI P2M transactions

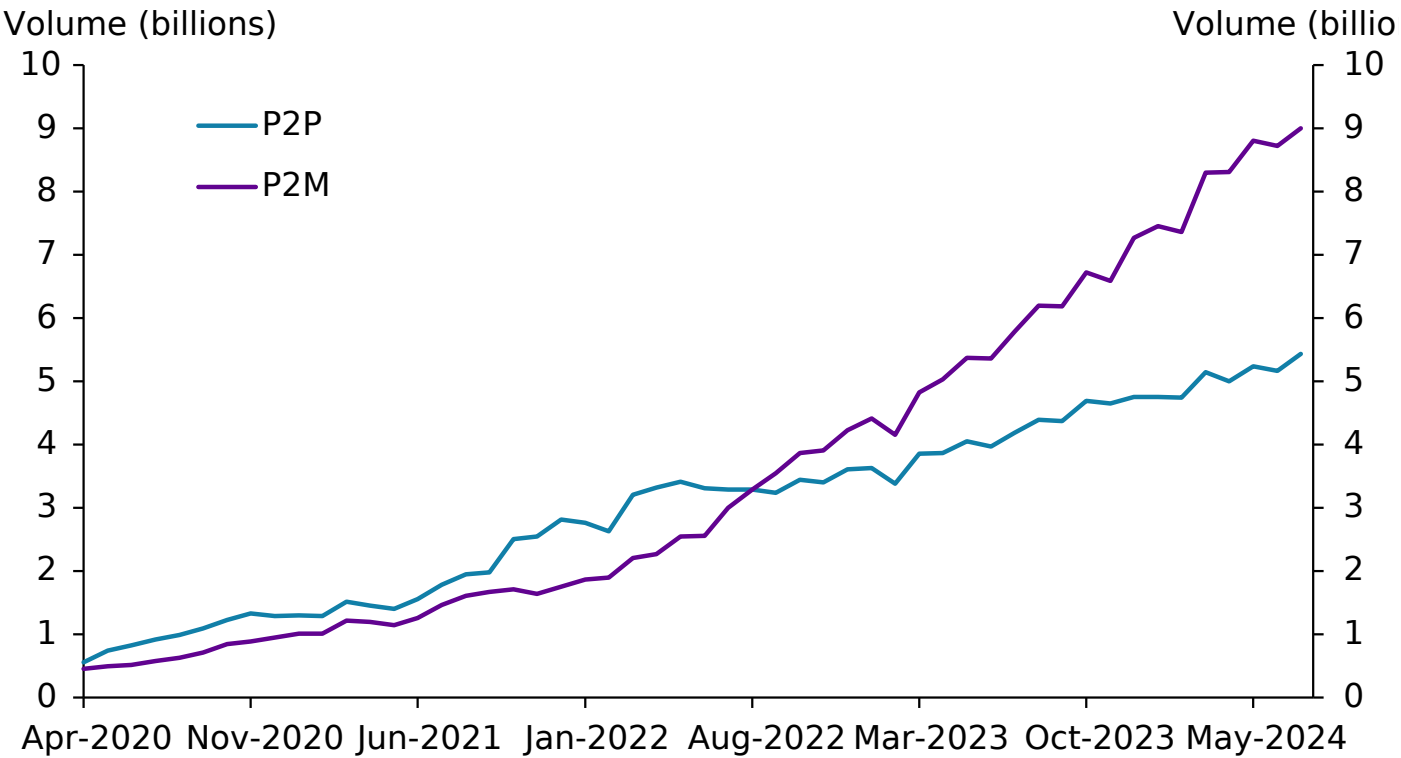
UPI is part of "India Stack," a government-led effort to transform India into a digital society, with UPI expected to help shift the economy—and its large share of unbanked consumers—from relying heavily on cash payments to using digital payments.^[1] UPI was developed by the National Payments Corporation of India (NPCI), an umbrella organization created as an initiative of the Reserve Bank of India and Indian Banks' Association (a representative entity of banks and other financial institutions in India) to establish a robust payment and settlement infrastructure in India. The NPCI has emphasized UPI interoperability among UPI apps and software through an open-source architecture and common standards. Users link their bank account(s) to any UPI-enabled app and make payments through QR codes, as well as other channels such as UPI IDs and mobile phone numbers (FasterCapital 2024). To initiate a UPI P2M payment in person, for example, the consumer typically scans a QR code that contains the merchant's account information, using a UPI app installed on the consumer's mobile phone.^[2]

Since launching in 2016, UPI has democratized payments in India, providing financial services access to any user with a mobile device. Today, UPI is the most used digital payment method in India and processes over 75 percent of India's retail digital

payments (PwC 2023). UPI currently has around 350 million active users and 340 million QR codes at merchant locations (Shukla 2024).^[3] More than 600 banks (about 30 percent of all banks in India) participate in UPI, including the top 20 largest banks.^[4]

UPI transactions recently expanded to include business-to-consumer (B2C) and business-to-business (B2B) payments, but P2P and P2M payments still accounted for 99.5 percent of the 14 billion UPI transactions in June 2024. Chart 1 shows monthly UPI transaction numbers for P2P payments (blue line) and P2M payments (purple line), respectively. In April 2020—the earliest monthly data available from NPCI—UPI users made more P2P payments (550 million) than P2M payments (449 million). But in August 2022, UPI P2M payments outpaced P2P and have since grown more rapidly, exceeding P2P by 3.6 billion transactions in July 2024. Indians make P2M payments at brick-and-mortar merchants, online merchants, and billers; the highest numbers of UPI transactions have been generated at grocery stores, restaurants, and merchants selling digital goods (especially games), and for telephone bills.

Chart 1: The number of UPI P2M payments has exceeded UPI P2P payments since August 2022



Source: NPCI.

Factors contributing to UPI transaction growth

UPI P2M payments have grown in part because UPI transactions in general have grown, thanks to several factors. The Jan Dhan-Aadhaar-Mobile (JAM) trinity, a government initiative that links three components—a Jan Dhan bank account, Aadhaar unique identity number, and mobile phone—has contributed to Indians’ adoption and use of UPI. The JAM trinity was rolled out in 2014 and intended to implement direct subsidy transfers to the poor, but it also served as a foundation to transform India’s payment system. Jan Dhan bank accounts have facilitated financial inclusion, and more than 460 million accounts were opened by June 2022 (Ministry of Finance 2023). Many Indians make UPI transactions from these bank accounts. Aadhaar is a 12-digit unique identity number a central government agency issues to each Indian citizen, which makes digital identity verification easy and thus helps mitigate payment fraud for UPI and other digital payment methods.^[5] More than 99 percent of the Indian adult population had an Aadhaar number in early 2017 (Ravi 2018). Mobile phones enable Indians to access digital payments, including UPI. In 2022, India had over 1.2 billion mobile phone users and 600 million smartphone users, all of whom can access one of the cheapest mobile data plans in the world—about \$0.04 for 1 GB (Ministry of Information and Broadcasting 2022; Das 2023).

The Indian government’s demonetization of INR 500 and INR 1000 banknotes in 2016 and the COVID-19 pandemic in 2020 accelerated the shift from cash to digital payments, especially UPI. Although the main purpose of demonetization was to fight corruption and tackle counterfeit banknotes, evidence suggests that demonetization led to a cash shortage and a significant increase in digital payments (Aggarwal, Kulkarni, and Ritadhi 2019; Crouzet, Gupta, and Mezzanotti 2023). During the COVID-19 pandemic, consumers and businesses resorted to contactless payment methods and remote payments due to fear of coronavirus exposure. This shift became a new normal: even after almost all COVID-19 restrictions were lifted in India in March 2022, UPI transactions continued to increase at a rapid pace (Trehan and others 2022).

The NPCI’s innovations have enhanced core functions of UPI, extending UPI’s reach to people initially excluded from it. UPI123Pay is an app designed for feature phones (basic mobile phones lacking the advanced functionalities of smartphones) to increase digital payment adoption among populations without access to smartphones. UPI Lite enables offline transactions, facilitating digital payments in areas with limited internet connectivity.

Several core features of UPI are attractive for merchants and billers and encourage their acceptance of UPI transactions, which in turn encourages consumers’ use of UPI for purchases and bill payments. UPI’s instant settlement helps optimize cash flows for merchants and billers. UPI’s interoperability enables merchants and billers to offer a seamless payment experience to their customers. UPI’s lack of fees or low fees for merchants and billers help them increase profit margins relative to other digital payment methods, such as cards. UPI’s digital recordkeeping helps merchants and billers make their workflows more efficient compared with keeping paper records.

Finally, the establishment of the Open Network for Digital Commerce (ONDC) may boost e-commerce transactions, including UPI transactions for remote P2M, B2C, and B2B payments. ONDC, a private nonprofit company established by the Indian government in 2022, aims to build an interoperable decentralized network for digital commerce operations through open protocols, in which any seller and buyer can transact without participating on the same e-commerce platform. ONDC seeks to foster digital inclusivity, especially among smaller merchants and local retailers, and stimulate competition and innovation in digital commerce by showcasing a broader array of sellers participating in the network (BCG and PhonePe 2022; Sethi and Agarwal 2023).

Roles of nonbanks and fintechs in increasing UPI P2M transactions

The more recent rapid growth specifically of UPI P2M transactions has been helped by nonbanks and fintechs through several roles. First, nonbanks and fintechs serve as third-party app providers (TPAPs) of UPI, offering apps and solutions to end-user customers (including consumers, merchants, billers, and other businesses) and enabling them to make and accept UPI payments.^[6] Currently, 30 TPAPs participate in UPI, and the three apps with the highest number of UPI payments (PhonePe, Google Pay, and Paytm) are all offered by TPAPs (NPCI 2024).^[7] Twenty more TPAPs are ranked within the top 70 UPI apps, suggesting TPAPs' UPI apps may offer more attractive features to end users than banks' UPI apps, such as ease of use, more types of transactions, and a variety of ancillary services. In addition to apps and solutions, TPAPs have deployed QR codes across merchants at minimal cost, which has facilitated merchants' acceptance of UPI payments (BCG and PhonePe 2022). One TPAP innovation to improve customer-merchant interactions is a voice notification system on a merchant app or on a speaker device with a QR-code sticker at a merchant location. With this app or device, merchants can validate customer payments instantly in the language of their choice and avoid interruptions of customer payments during peak hours (PhonePe 2022).

Second, several large TPAPs and fintech payment service providers offer more complete services to merchants. Naturally, some of their services are payment-related, such as end-to-end payment processing, fraud prevention and management, and offline payment acceptance capability. But other services go beyond payments. Certain services, such as sales analysis and business management solutions, are for improving merchants' business processes. Other services run advertisements and enable merchants to offer discounts and rewards to their customers on the apps to help drive sales. Some fintechs even offer loans to merchants: a merchant's digital footprint of UPI transaction data can facilitate business loans, especially for smaller-sized merchants who previously had no or limited credit history, making formal credit more accessible to them. These ancillary services offered along with UPI apps and solutions help attract merchants to UPI.

Third, some TPAPs provide consumers a credit line on a UPI payment, sometimes through a partnership with another nonbank or fintech. These credit lines are similar to buy now, pay later services in the United States. For example, PhonePe enables consumers who made purchases through Flipkart, an e-commerce firm in India, to pay their large purchases in smaller

installments over time. Paytm allows consumers to make purchases or pay bills without paying upfront, instead repaying the amount over the next 30 days. The availability of these credits on UPI payments helps increase consumer spending, which in turn increases the number and the average value of UPI transactions.

Fourth, nonbanks and fintechs enable UPI P2M payments to expand beyond India's borders. The NPCI International Payments Limited (NIPL), the international arm of NPCI, has partnered with fintechs in other countries to enable Indian travelers to make UPI payments at merchants abroad. One of the NIPL's partners is Liquid Group, a fintech headquartered in Singapore, which operates a QR-based payment acceptance network by integrating a network of merchant acquiring partners in 10 countries across North and South Asia (Liquid Group 2021).^[8] Through partnership with Lyra, a French digital payment platform, UPI payments are accepted now by merchants in France and soon by merchants in other European countries (Ojha 2024). NIPL also partners with payment networks (such as LankaPay, Sri Lanka's national payment network) and banks (such as QNB Group, the largest bank in the Middle East and Africa) for similar arrangements (Tripathi 2024; Times of India 2024). Large TPAPs are often the first to allow their users to make international UPI payments (Tripathi 2024). In January 2024, the NIPL signed an agreement with Google Pay, with one objective being to broaden the use of UPI payments for Indian travelers abroad and another "to assist in establishing UPI-like digital payment systems in other countries, providing a model for seamless financial transactions" (NIPL 2024). The NIPL also entered into an agreement in 2024 with a few central banks such as the Bank of Namibia and the Central Reserve Bank of Peru to develop a UPI-like payment system (Economic Times 2024). As other countries develop UPI-like payment systems, their systems may become interoperable with India's UPI, enabling Indian merchants to accept UPI-like payments from foreign tourists in India in the future.

Conclusion

Since its launch, UPI has become the most used digital payment method in India, with over 14 billion monthly transactions as of July 2024. Several factors have contributed to the significant growth of UPI, including the JAM trinity, the Indian government's demonetization, the COVID-19 pandemic, the NPCI's innovations to make UPI more inclusive and attractive for merchants, and the establishment of the ONDC.^[9] While Indians initially used UPI mainly for P2P payments, today they use it more for P2M payments. Nonbanks and fintechs have played critical roles as TPAPs, services providers to merchants and consumers, and enablers for UPI P2M payments to expand beyond India's borders, which have contributed to the increase in UPI P2M payments.

The role of nonbanks and fintechs in boosting UPI P2M payments may be the outcome of the Indian government's strategic decisions to foster an open, innovative, and inclusive payment ecosystem. More importantly, the NPCI's emphasis on creating an open-source architecture for UPI and ensuring common standards have enabled nonbanks and fintechs to enter the market seamlessly, innovate UPI services, and integrate UPI with broader digital commerce. These efforts have not only

revolutionized the payment landscape within India but also set the stage for global interoperability, potentially transforming the future of international P2M digital payments for Indians abroad as well as foreigners in India.

Endnotes

- [1] India Stack is a set of digital public goods consisting of three layers: a unique ID for every resident in India; a fast, cheap, and interoperable payment network; and secure data sharing.
- [2] For remote UPI P2M payments, consumers typically provide their UPI IDs to initiate transactions.
- [3] The number of active UPI users (350 million) may seem small relative to the total Indian population of about 1.4 billion, but it is comparable to the number of households (302 million) in India (GlobalData 2022). At least one member of each household could be an active UPI user. However, a great digital payments divide has been reported, especially between rural and urban areas (Mani and Pereira 2024).
- [4] The share is the author's calculation considering all types of banks in India.
- [5] Foreigners residing in India can also be issued Aadhaar numbers if they meet certain criteria enforced by the government (PaisaBazaar 2024).
- [6] TPAPs participate in UPI through a payment service provider (PSP) bank, which onboards and registers end-user customers on UPI, links their bank accounts to their respective UPI IDs, and ensures that UPI apps of TPAPs and UPI transaction data are secure. The NPCI defines the roles and responsibilities of PSP banks and TPAPs (NPCI 2024).
- [7] PhonePe's majority share is owned by Walmart (85 percent at the end of April 2023) and Paytm is an Indian multinational financial technology company.
- [8] The 10 countries are Singapore, Malaysia, Thailand, Philippines, Vietnam, Cambodia, Hong Kong, Taiwan, South Korea, and Japan.
- [9] Cornelli and others (2024) discuss some other factors driving the rapid adoption of UPI, such as data protection.

Author



Aditi Routh Economist

Aditi Routh is an Economist in the Economic Research Department at the Federal Reserve Bank of Kansas City. Her research focuses on payment behavior of consumers, the financially underserved population in the payments market, and payment innovations. She is also studying payment system preferences of small businesses in the U.S. Aditi joined the Bank in June 2022, after earning her Ph.D. in Consumer Economics at University of Georgia, Athens. She also holds a M.A. in Economics from University of California, Riverside, and a B.A. in Economics from Jadavpur University, India.
