



UPI—The Global Benchmark for Digital Payments

Transforming lives at scale

October 2025

About



The National Payments Corporation of India (NPCI) is a deep-tech powerhouse leading India's digital payment revolution and shaping the global digital economy. Established in 2008, NPCI is anchored in deep technology, deep human understanding of citizen needs, and deep domain expertise—enabling inclusive, secure, and population-scale solutions. Currently, its AI-powered, blockchain-enabled platforms process over 22 Billion transactions each month, with a cumulative value exceeding INR 42 Trillion (~USD 47 Billion). These systems generate approximately 6 terabytes of data daily and are capable of detecting fraudulent activity in real time—within just 10 milliseconds per transaction. By combining cutting-edge innovation with scale, NPCI has fostered collaboration between banks, fintechs, and all ecosystem players—making India a global benchmark in digital payments.

NPCI's vision is to be the best payments network globally and its mission is to touch every Indian with one or other payments services. To address the evolving needs of India's digital payments landscape, NPCI has set up three focused subsidiaries. NPCI International Payments Limited (**NIPL**) solves for global scalability by exporting India's proven payment platforms like UPI and RuPay to international markets. NPCI Bharat BillPay Limited (**NBBL**) tackles the fragmentation in bill payments by offering a unified, interoperable system through Bharat Connect. NPCI BHIM Services Limited (**NBSL**) addresses the need for inclusive and accessible digital transactions via the BHIM app, simplifying UPI usage for millions.

With NPCI's innovative approach and commitment to modern technology, India has emerged as a global leader in digital payments. This has facilitated financial inclusion and economic growth, positioning NPCI as a prominent player in the global financial technology arena.

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Our diverse, global teams bring deep industry and functional expertise and a range of perspectives that question the status quo and spark change. BCG delivers solutions through leading-edge management consulting, technology and design, and corporate and digital ventures. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, fueled by the goal of helping our clients thrive and enabling them to make the world a better place.

Foreword

India's journey towards a digitally empowered, inclusive, and resilient economy has been truly transformative. At the heart of this journey stands the Unified Payments Interface (UPI), a homegrown innovation that has redefined the way individuals and businesses transact. What began less than a decade ago as a mission to simplify digital payments has evolved into one of the most remarkable financial inclusion success stories in the world.

UPI today represents a great story of collaboration between the Government, Reserve Bank of India, banks and fintechs. This partnership has been instrumental in creating a robust, trusted, and accessible payment ecosystem that serves the needs of every segment of society.

More than a payment platform, UPI has become a catalyst of social and economic change. With over 504 Million consumers and 65 Million merchants, it has seamlessly connected individuals and enterprises, democratized access to digital finance, empowered micro-entrepreneurs, and opened new avenues for credit and commerce. Its reach among underserved populations stands as testimony to India's progress toward financial inclusion at population scale.

What makes UPI's achievement truly extraordinary is the sheer scale of value and volume it handles each month—over 20 Billion transactions—at one of the lowest costs globally. Continuous innovation has further enriched customer experience and expanded the platform's versatility. Features such as UPI AutoPay, RuPay Credit Card on UPI and UPI Lite have already made a difference.

This report provides compelling evidence of UPI's far-reaching impact—from accelerating small business growth and enhancing productivity to fostering transparency and trust in digital transactions. Above all, UPI has been a powerful enabler of social development—empowering individuals, transforming livelihoods, and strengthening the fabric of India's digital society. The findings highlight how UPI has improved the quality of life for millions of Indians—enabling migrant workers to send remittances instantly, empowering homemakers with financial autonomy, and reducing dependence on cash in everyday transactions.

Beyond its domestic achievements, UPI has established a global benchmark for secure, interoperable and scalable digital payment systems. The growing interest from other nations in adopting similar frameworks reaffirms India's leadership in building Digital Public Infrastructure that is inclusive and transformative. The UPI technology stack continues to remain best-in-class, reflecting India's conviction and commitment to innovation in digital public platforms. It has also enabled a seamless shift from embedded payments to embedded finance, unlocking new frontiers for growth and efficiency.

As India advances towards the vision of Viksit Bharat 2047, UPI will remain a cornerstone of this transformation—strengthening our financial architecture, deepening inclusion, and shaping the digital economy of the future.

The insights presented in this report highlight not only UPI's achievements so far but also the boundless possibilities it holds for the years ahead.



Shri Gunveer Singh

*Chief General Manager-in-Charge,
Department of Payment and Settlement Systems,
Reserve Bank of India*

Preface

This report is a joint initiative of National Payments Corporation of India (NPCI) and Boston Consulting Group (BCG), launched at Global Fintech Festival in October 2025.

As part of the collaborative efforts, NPCI has brought its deep insights & expertise as the umbrella organization that operates the retail payments and settlement systems in India and has leveraged its extensive database providing Unified Payments Interface (UPI) payments trends in India. BCG has brought to bear its deep industry expertise in the payments domain globally.

Together, NPCI and BCG look forward to engaging with you on the exciting subject of India’s world leading digital payment platform—UPI. The report presents, in detail, UPI’s journey, its current reach and impact on consumers, merchants and the economy as it becomes the default payment mode for millions—reshaping social dynamics by bridging the digital divide, advancing financial inclusion, and empowering communities across India.

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Executive Summary (I)

UPI has transformed the Indian payments landscape and has chartered a significant shift away from the age-old behavior of using cash. This is revolutionary for a complex, diverse and cash-heavy economy like India where people are used to the security, anonymity and trust of cash. Beyond economics, cash in India carries cultural and even spiritual significance—it is not uncommon for people to seek blessings through cash offerings in temples, where it is revered as sacred. Against this backdrop, the behavioral transition towards digital payments is uniquely challenging and even more impactful.

As of August 2025, there are 504 Million unique UPI users¹, which is about half of India's adult population. UPI is now a habit and is being preferred by people of all ages, geographies, and income segments. This report draws on findings from detailed surveys conducted separately among consumers and merchants in 2023 and 2025, aimed at evaluating the evolving impact of UPI on adoption, usage, and overall experiences. According to the consumer survey², UPI is the preferred mode of payment for 82% of users aged 55+ in the survey, 73% of users surveyed in rural areas, 80% of women users surveyed and 77% of users surveyed under the INR 0.3 Million p.a. income bracket. A 29-year-old from Gorakhpur, Uttar Pradesh, aptly reflects UPI's popularity, by saying "UPI ab sab jagah chalta hai".

UPI, with a staggering ~50%³ share in the global real-time payment volume, has surpassed all other digital payment solutions in the world. This has been possible due to the initiatives and efforts taken by the Government of India, RBI, NPCI and the ecosystem participants—banks and fintechs.

UPI has truly democratized payments, allowing banks and non-banks to participate. UPI has vastly expanded access to digital payments, particularly for people lacking credit cards or other alternatives to cash. These modes were largely used by high income, metro/urban consumers and medium to large merchants who could afford POS acceptance. UPI has brought the smallest of merchants into the digital payment ambit. It has reached all types of merchants—from the street hawkers to luxury outlets. More than 65 Million merchants⁴ accept UPI payments (vis-à-vis 11-12 Million using POS)⁵.

For consumers, beyond convenience, UPI has also uplifted the quality of life and has contributed to social development:

- Reduced the need for cash withdrawals, minimizing frequent ATM or bank visits
- Enabled millions of migrant workers to send money home safely and instantly

- UPI has also boosted access to goods for consumers by enabling them to go online and shop beyond the limitation of local stores. Beyond access to online markets, UPI has also enabled users to spend on unplanned and emergency purchases. Consumers are no longer limited by the amount of cash in their wallet
- Financially empowered millions of homemakers across the country who now can easily access and manage household funds through UPI
- UPI has not only expanded digital payments but also unlocked richer consumer data, enabling fintechs and lenders to scale rapidly. This has directly fueled the growth of small-ticket loans. Districts with high UPI volume growth (>100%) between FY23 and FY25 recorded a 10x higher CAGR in consumer durables loans and a 4.4x higher CAGR in personal loans compared to districts with modest UPI growth (<25%)

By bridging the digital divide, UPI has also increased a sense of belonging among those previously excluded from the digital revolution and the new economy.

If we look at merchants, while UPI started as a low-cost and easy acceptance format, they are now starting to recognize direct economic benefits:

- 81% of the merchants acknowledged increased staff productivity at the counter especially during crowded/peak hours due to UPI Soundbox. Freed from cash-handling, small businesses can now focus more on customer service and business growth
- 59% of merchants reported higher sales in the post-UPI era compared to the pre-UPI era
- 80% of merchants reported easier and faster access to financing post UPI due to better transaction footprint in the bank accounts
- 39% of merchants reported zero pilferage while another 51% reported pilferage of <1% of revenues (down from >1% in the pre-UPI era), after the adoption of UPI
- UPI has expanded exponentially, as per BCG analysis, there is a QR code present in almost all of India's ~19,000 pin codes, including regions with limited bank branch connectivity
- Reliable transaction trails have opened new avenues for formal credit for merchants. Districts with high UPI volume growth (>100%) showed a strong positive correlation with business loan growth, recording a 4.2x higher CAGR in business loans compared to districts with modest UPI growth (<25%) between FY23 and FY25.

1. NPCI Data; 2. BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details, (Q) Out of the following payment methods, please rank your top 3 most preferred methods for making payments while purchasing goods or services (data quoted is percentage of people who ranked UPI 1); 3. ACI Worldwide Real-Time Payments Report 2024; 4. Press Information Bureau (July 2025) (Release ID: 154912); 5. RBI Bank wise ATM/POS/Card Statistics (August 2025)

Executive Summary (II)

UPI is fast becoming a necessary payment acceptance mode. Nearly 65% of UPI-accepting merchants surveyed mentioned that customer encouragement was a very important reason for them to start using UPI for receiving payments.

In India, customers are experiencing some of the benefits of UPI described above. It is important to note that UPI is also contributing to some structural shifts and improvements in the overall Indian economy:

- UPI, in conjunction with other structural Government initiatives, is playing a large role in the formalization of a largely unorganized shadow economy in India
- UPI has also had an influence on acceleration of e-commerce and hyper-local commerce by enabling large segments of population to pay digitally. E-commerce sales took 15+ years to reach USD 15 Billion by 2017 and took just 5 years to reach USD 55 Billion by 2022 and then another 3 years to reach USD 145 Billion by 2024

As Albert Einstein said, “Not everything that matters can be measured”. Let us not forget that UPI also played a large role in one of the toughest times in history—the Covid pandemic. UPI being contactless, enabled easy acceptance of payment by anyone and allowed commerce to continue. This made the country more resilient and allowed many lives and livelihoods to be saved.

Going forward, UPI’s impact on financial inclusion, increased digital payments, unlocking MSME credit, fintech innovation, new business models, increased velocity in consumption will have a significant role in shaping the economy. UPI is expected to play a significant role in India’s goal of becoming a USD 35 Trillion+ economy by 2047.

UPI has truly set the global benchmark in user experience, privacy, and architecture. It provides a mobile first, unbundled and context-free approach to connect bank accounts. UPI ensures user privacy through data dispersion among network participants. These factors combined with interoperability, resilience, scalability, superior messaging standards and the lowest cost of transaction processing, make UPI one of the best payment infrastructures in the world. With unrestricted fintech participation and constant innovation, UPI has enabled new and differentiated user experiences such as offline payments (LiteX), conversational payments, Tap and pay, EMI on QR, UPI for IPO subscriptions, UPI circle, Credit Card on UPI, UPI Autopay, etc.

The UPI model is a replicable template for moving from cash to digital transactions and unlocking benefits for all stakeholders not only for the emerging economies but also developed economies. While all economies including developed, can realize benefits of convenience, productivity, efficiency, velocity, emerging economies can additionally gain the benefits of formalization and reduction in burden of cash transactions.

Many countries have started to set up real time/digital payment systems on similar lines. We also see active collaborations between countries to connect real time payments, e.g., Singapore PayNow and UPI. UPI, therefore, has the potential to become a global payment network.



Chapter 1

UPI is a crown jewel in India's DPI

At the turn of the century, India had a GDP of around USD 470 Billion with a per capita income of USD 442⁶. By 2024 India's GDP had grown to USD 3,913 Billion with a per capita of USD 2,697⁷. GDP grew over eight times while per capita income grew more than 6 times during this period. It took 60 years after independence to become a USD 1 Trillion economy in 2007, but it took

just 18 years to surpass USD 4 Trillion⁸ in 2025, making India the fourth largest economy in the world.

Indians now have an aspiration for a better life and are demanding better services and easier access to these services from the Government and private sector providers.



The foundational elements behind UPI

A significant challenge faced by India in the past had been the lack of a common identity that could link multiple authentication documents that one possessed, such as ration cards, driving licenses, PAN cards, and others. The Government and policymakers also found it difficult to identify the right beneficiaries for various Government schemes and those liable to pay taxes.

It is here that India has perhaps made the most innovative and remarkable progress that is a true

partnership between the state and the technology sector. By combining Jan Dhan accounts, Aadhaar, and Mobile (JAM Trinity, as referred in Exhibit 1), India created a robust digital foundation that enabled universal access, verifiable identity, and seamless connectivity. These elements together became the bedrock for UPI, making population-scale digital payments both feasible and inclusive.

Exhibit 1: Laying the groundwork for launch of UPI in 2016 through JAM trinity


		
Jan Dhan Accounts	Aadhaar	Mobile
<ul style="list-style-type: none">• Universal access to banking services• 240 Million Jan Dhan accounts opened before UPI	<ul style="list-style-type: none">• Unique non-duplicable identifier for each citizen• A billion Aadhaar cards issued before UPI Launch	<ul style="list-style-type: none">• Rapid growth in mobile device penetration• Cost per GB of internet at less than INR 20 (USD 0.23)

The first transformative endeavor was to provide every Indian a unique identity. The Unique Identification Authority of India (UIDAI) was constituted in 2009, with the job of providing every Indian with a unique non-duplicable identity.

UIDAI decided to call the identity so created, an Aadhaar number. Aadhaar meaning “Foundation” in Hindi, was aptly chosen as the name. Over time Aadhaar has become the foundation of the Indian technology stack.

Aadhaar, was a critical foundational layer that empowered citizens to go digital with their identity. Today, it is already the world's largest personal biometric population database, one that is digitally verifiable, enabling authentication across multiple use cases as well as targeted delivery of services and benefits. On April 4, 2016, just four months before the launch of UPI, UIDAI issued its billionth Aadhaar. Today, Aadhaar is ubiquitous, with more than 1.43 Billion registered users, and serves as India's most widely accepted citizen identifier, used across trains, airports, hotels, and multiple other services.

India's Digital Public Infrastructure, including its unique digital identity system Aadhaar, is a model for other countries seeking to harness the power of technology for inclusive and efficient governance.



—World Bank⁹

6, 7, 8. World Development Indicators, The World Bank (databank.worldbank.org); 9. Global DPI Summit 2023

Combining its growing prowess in the Information Technology Enabled Services (ITES) sector with the rapid penetration in cell phone ownership which grew from a measly 3 Million phones in 2000 to just under 600 Million phones by 2010¹⁰, India made major innovations in the provision of citizen services. This digital adoption was further accelerated by the sharp decline in mobile data costs. The average cost of data per gigabyte fell dramatically from around INR 270 (~USD 3) in 2014 to INR 19 (~USD 0.2) by 2017, and has since further reduced to INR 10–11 (~USD 0.1) by 2025, making internet access affordable to millions and enabling large-scale participation in the digital economy.

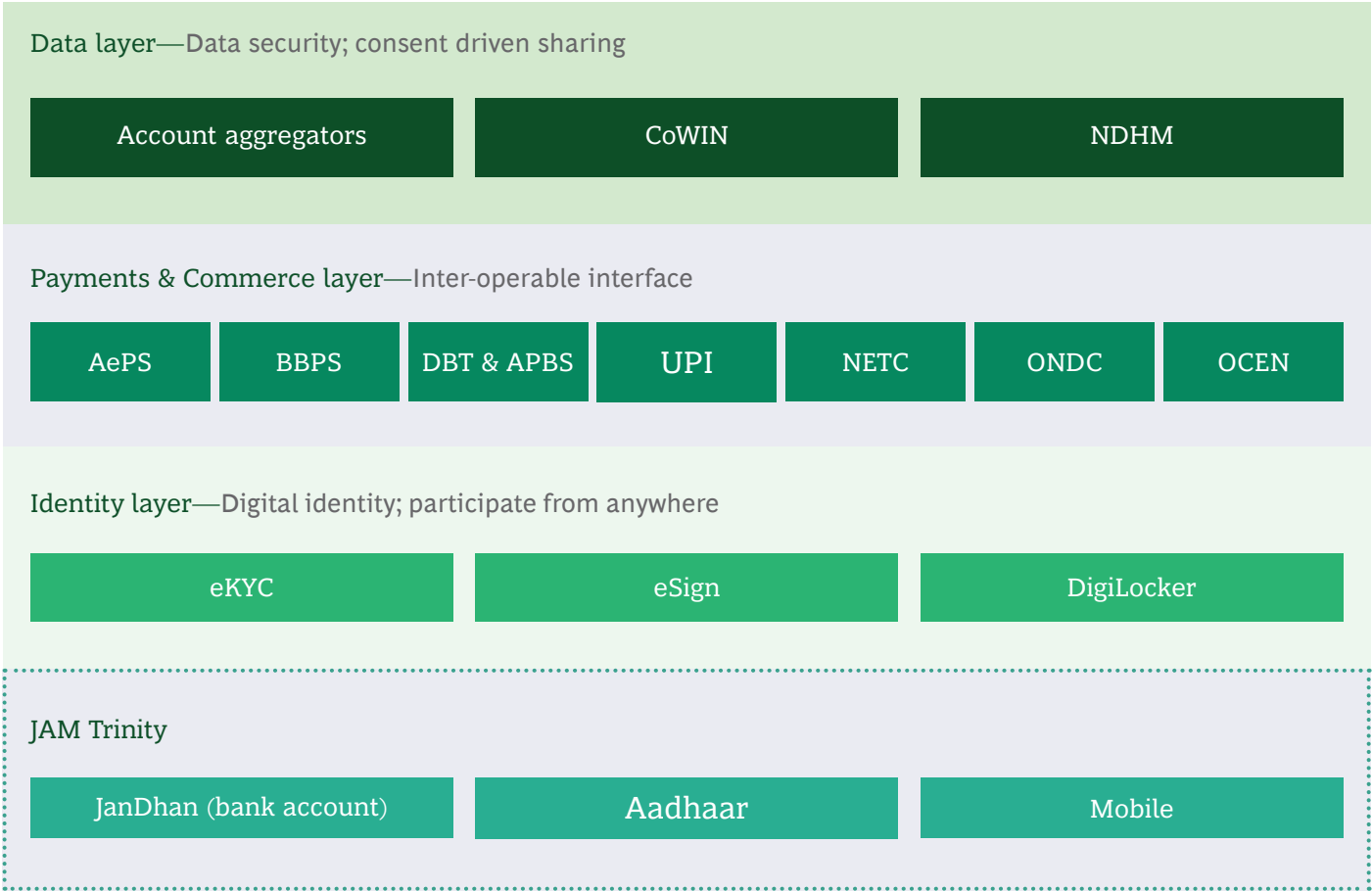
In parallel, through a flagship financial inclusion program PMJDY (Pradhan Mantri Jan Dhan Yojana), India also provided its unbanked sections with universal access to formal banking services. Just the ability to identify and subsequently reach a citizen directly was a revolutionary development. By the time UPI was launched, more than 240 Million Jan Dhan accounts had already been opened,

bringing a vast section of the population into the formal financial system for the first time. As of August 2025, the program has scaled to over 560 Million accounts with aggregated deposits exceeding INR 2.7 Trillion (~USD 30.4 Billion).

For UPI, this meant that every individual—regardless of income or geography—now had a bank account to link, an identity to verify, and a mobile phone to transact with. Without this unprecedented scale of financial inclusion, the rapid adoption and ubiquity of UPI would not have been possible. Further, the JAM trinity has been the core building block of the many financial services that are now available, including the ability to provide Direct Benefit Transfers.

Lying on top of this layer are several innovative pieces, including centralized healthcare databases, democratized financial data, and indiscriminated access to marketplaces, as illustrated in Exhibit 2.

Exhibit 2: Building blocks of India’s Digital Public Infrastructure



10. Telecom Statistics India 2020, Department of Telecommunication, Government of India

In the process of creating the technology stack, India integrated a deep digital DNA into its economy. Our focus in this report will be on a transformative addition to the technology stack that is now powering all Indians to transact differently—the creation of India’s native digital payment ecosystem, Unified Payments Interface (UPI). India has always been a cash-first economy with payments being cash dominated. Only about 5% used online banking in 2017 and around 13% used either a debit or a credit card¹¹. A cash economy has many problems associated with it. The issuance, storage, exchange, and replacement of cash is very expensive and needs a large infrastructure. The worst affected in this again were India’s poorest and those living in remote places with least access.

UPI, India’s payments crown jewel, is an interoperable payment system where the user can use a single application to manage payments from multiple bank accounts. It is unique because it allows real-time peer-to-peer as well as peer-to-merchant payments and is also recognized as one of the more secure data payment platforms, ensuring privacy by data dispersion.

UPI is specifically targeted to unlock the potential for all Indians, including those at the bottom of the pyramid, bringing them into the economic mainstream and allowing them to make retail payments through QR codes.

UPI today has become the default payment mode for millions of Indians.

A 29-year-old from Gorakhpur, a town in Uttar Pradesh, aptly reflected its popularity, by saying “UPI ab sab jagah chalta hai”.

Through this report, we want to bring to life the story about the widespread impact of UPI on consumers, merchants, and the economy, and how it is transforming the lives of millions of Indians. Beyond economic growth, UPI is also reshaping social dynamics—bridging the digital divide, fostering greater financial inclusion, and empowering individuals across rural and urban India. It has enabled digital participation among traditionally underserved communities, promoting a shift towards a more equitable and connected society.

11. The Global Findex Database, The World Bank

Key Takeaways

Chapter 1: UPI is a crown jewel in India's DPI

India has undergone a remarkable economic transformation over the past two decades. What was a USD 470 Billion economy at the turn of the century, is now the 4th largest economy in the world with a USD 4 Trillion GDP. This transformation has been powered by the creation of a robust Digital Public Infrastructure (DPI), anchored in the JAM Trinity—Jan Dhan accounts, Aadhaar, and Mobile connectivity—which together laid the foundational rails for UPI.

One long-standing challenge India has overcome is the ability to use a unique citizen identifier for citizen services and benefits. UIDAI was created to provide every Indian with a unique, non-duplicable identity, which came to be known as Aadhaar. This became the foundation of the technology stack behind India's Digital Public Infrastructure (DPI).

With growing cell phone penetration, India reached a tele-density of 82%¹² at the end of May 2025. Alongside, the flagship financial inclusion program, PMJDY, with more than 560 Million accounts opened with aggregated deposits of INR 2.7 Trillion (USD 30.4 Billion) as of August 2025¹³, provided the unbanked with universal access to formal banking services. The sharp decline in mobile data costs—from around INR 270 (~USD 3) per GB in 2014 to INR 10–11 (~USD 0.1) by 2025—further democratized access to the internet, making digital services affordable and accessible at population scale.

UPI has emerged as one of the most successful pillars of DPI, offering an interoperable, real-time payments platform that enables users to make seamless peer-to-peer and peer-to-merchant payments through a single application. It has now become the default mode of payment for millions, reshaping social dynamics by bridging the digital divide, advancing financial inclusion, and empowering communities across India.

Notes



Chapter 2

Overcoming the challenge of changing an age-old habit

UPI was not minted overnight. To create this first-of-its-kind open architecture digital payment infrastructure for 1.5 Billion citizens¹⁴, India placed a bold bet quite early through the foundational layers of DPI and built

the infrastructure at a rapid pace. In 2016, the time had come to start transforming lives one transaction at a time.

Enormity of the challenge

For UPI, the challenge was daunting as it intended to change an age-old human habit of using physical currency, the rupee, or the rupiah, as a means of exchange.

People are generally resistant to change as it involves deviation from set habits and behavior. More so, in this case the change was systemic in nature, and required, among other things, a change in collective attitude and behavior.

Change does not roll in on the wheels of inevitability but comes through continuous struggle.



—Martin Luther King

And UPI did struggle initially. The challenge was to encourage people to adopt an entirely new payment system, utilizing newly opened bank accounts. Until the Jan Dhan revolution happened, only 58%¹⁵ households had a bank account. With over 40% of the bank accounts in India opened in 2014 and 2015¹⁶. This was compounded by issues such as limited availability of

electricity and data connectivity in many areas, and a low level of financial literacy among the population.

But this was not the only hurdle. UPI also had to get the buy-in of institutional stakeholders. India already had many payment systems, and there were several unknowns about UPI—its potential efficacy, adaptability, and scalability. Banks were still on the journey of driving digital adoption of online banking and debit/credit cards. Up until 2013, about 15 years since its inception, the internet and mobile banking penetration was at a mere 3.6%¹⁷ of the total population. One of the challenges in adopting mobile banking was the frequently changing mobile numbers due to the existence of a large number of telecom operators and lack of mobile number portability, unlike today.

On the other hand, fintechs were interested, curious, and trying to comprehend the potential of an open architecture public good. Some of them had built closed loop wallets with reasonable success with 120 Million¹⁸ people using them by 2015 and were worried about implications of UPI. However, this initial apprehension soon turned into opportunity—fintechs leveraged UPI's open architecture to scale rapidly, innovate new use cases, and emerge as one of the biggest drivers of its adoption.

Orchestrating change

Taking on a transformation of this magnitude required customer awareness, robust infrastructure and long-term stakeholder collaboration.

People had to be convinced that their money was safe. Trust for a payment system builds not just through facilitation of successful transactions, but also by the fairness of action in failed cases. If the payment was successful, they needed to know that it was received by the intended beneficiary and most importantly, when the payment was unsuccessful, they needed to know that they would get their money back.

The next major requirement was to build a full network to even start a trial. The main change bearers of UPI—

the Government of India, the Reserve Bank of India (RBI) and National Payments Corporation of India (NPCI) were cognizant of the challenge ahead of them. NPCI ran trials within multiple banks to ensure UPI's safe functioning. On 25 August 2016, the Governor of the RBI, launched the Unified Payment Interface (UPI) to facilitate real-time, secure money transfer for all Indians, with 21 banks onboard. Of these, 19 banks had UPI-enabled apps¹⁹. Bigger banks such as State Bank of India and HDFC Bank went live on UPI soon after, in October 2016, enabling access to a large population to try UPI.

14. World Population Dashboard—United Nations Population Fund; 15, 16. PM Jan Dhan Yojana (PMJDY): A National Mission on Financial Inclusion; 17. Statista Key Market Indicators—Online banking penetration in India (July 2023); 18. Assocham—Mobile wallet users across India in 2015 (December 2016); 19. NPCI data

In December 2016, Honorable Prime Minister of India launched BHIM (Bharat Interface for Money), as one of the starter apps demonstrating proof of the potential of UPI. The institutional backing provided people with a sense of trust about the payment system and triggered a new wave of UPI users. Within three months, BHIM recorded 19 Million downloads and 5 Million users²⁰.

There was a need to incentivize an initial set of early adopters. It was obvious that as more people tried and succeeded, trust would build and eventually enough people would get on board to make the system viable.

NPCI, with the support of RBI, rallied the ecosystem to energize non-banks to participate, by creating a vision of continuous innovation to stay ahead of the digital curve, to make open architecture come to life. PhonePe launched its app for UPI transactions in

August 2016, becoming the first 3rd party application to join the ecosystem and was soon joined by Google Pay, Paytm and many others. The investments by big tech companies into large campaigns with cashbacks and other incentive schemes for both consumers as well as merchants accelerated UPI trials. PhonePe and Paytm deployed 30,000+ field agents to acquire millions of merchants, while GooglePay and AmazonPay leveraged their existing ecosystems to drive rapid uptake among consumers. Through these efforts, unique users of UPI jumped 6X, from 4.7 Million to 31.1 Million²¹ between April 2017 and April 2018.

Beyond trial and trust, another aspect which was critical to large scale adoption of any new payment platform was to highlight benefits over existing alternatives (highlighted in next chapter).

Tailwinds generated mass trials

As the axiom goes—“Fortune favours the bold”. While the efforts of RBI, the Government, NPCI and the big techs started to play out, two unexpected events provided a fillip.

UPI was still in its infancy, just about two months old, when withdrawal of specific high denomination currency notes was announced. Getting the new tender became a major task. Long waiting times at ATMs and the effort to get access to new denominations and currency notes meant that people started looking for alternate ways of transacting in day-to-day life. UPI transactions in December 2016 spiked 600% from November 2016 levels²².

The Covid pandemic was another accelerant in the journey of UPI adoption. With Covid came

unprecedented lockdowns and the fear of physically handling cash. People needed to use non-physical transaction mechanisms and UPI proved to be the best antidote to the virus by avoiding transactions involving cash and card exchange. By December 2019, UPI had 122 Million users on the platform and more than 1,300 Million transactions were processed per month²³.

The monthly run rate of transactions after the first wave of Covid in November 2020 was ~67% higher than the pre-Covid levels in February 2020. The second wave was accompanied by a 61% increase in monthly run rate by August 2021. UPI had 223 Million registered users in August 2021 up from 132 Million registered users in February 2020 and was clocking ~3,600 Million transactions a month, an increase of ~3x²⁴.

UPI is now on a viral journey

Through the collective initiatives, thrust of the Government of India, RBI, NPCI, banks and fintechs, supported by some tailwinds and the continuous innovation of use cases, experiences on the platform, UPI is firmly on its journey of virality. Exhibit 3 illustrates the journey of UPI.

It took 43 months for UPI transactions to reach the first billion transactions per month. However, the addition of the last billion, i.e., to go from 19 Billion transactions per month to 20 Billion per month took only 1 month.

50% of all digital transactions in world are done in India



—Shri Narendra Modi,
Hon'ble Prime Minister of India
at Global Fintech Fest, 2024

20. Press search; 21. NPCI data; 22,23,24. NPCI data

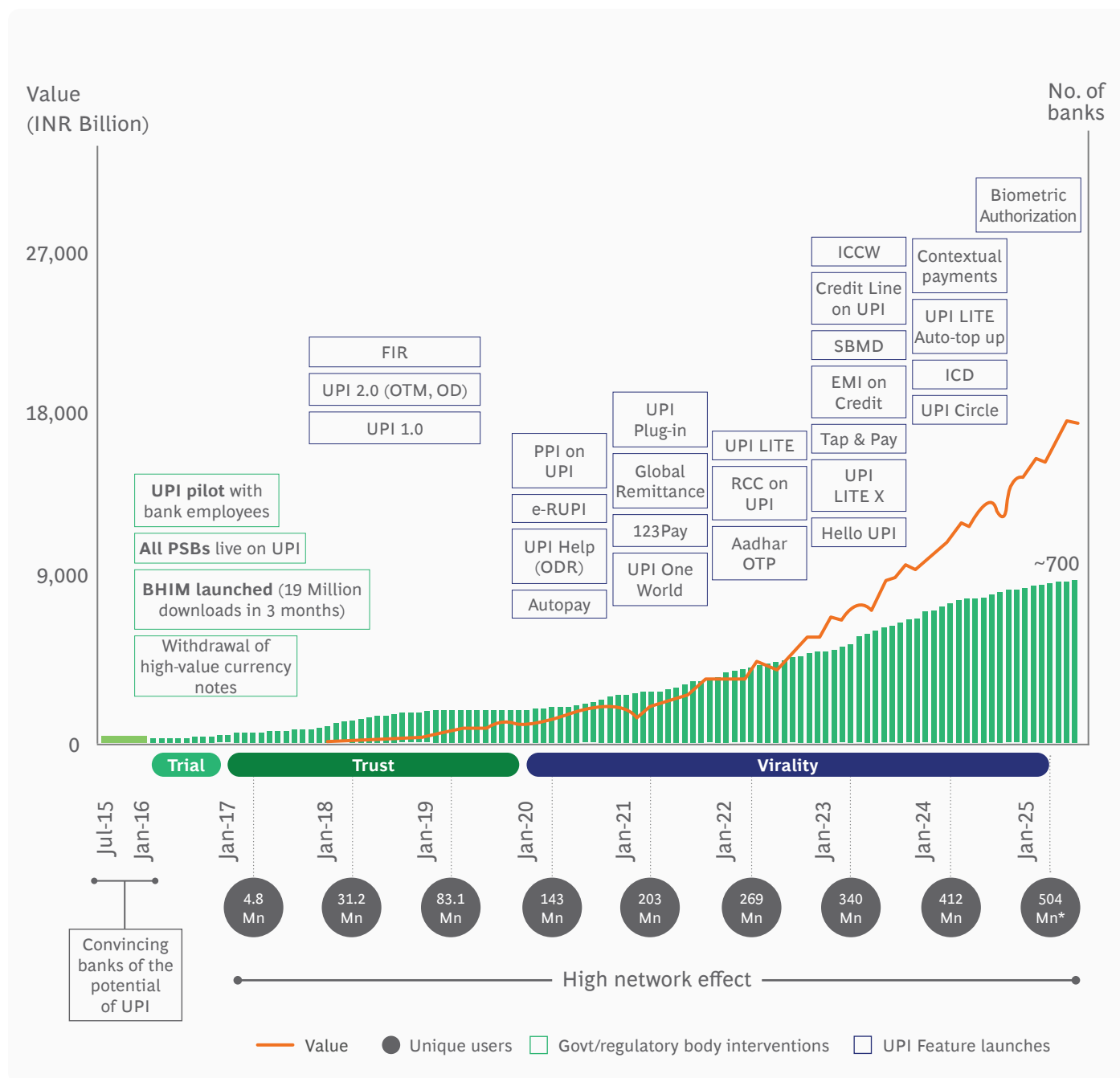
The ease and convenience to use UPI has been the single biggest driver of its adoption, making digital payments instant, intuitive, and accessible. With simple onboarding, vernacular support, and frictionless transactions through mobile numbers or QR codes, UPI has eliminated the complexity of traditional modes like cards or net banking. For merchants too, minimal infrastructure requirements and low transaction costs have spurred adoption across 65 Million outlets, creating a powerful network effect that reinforces UPI's position as the default payment system.

It has also avoided the need for customer recall of remembering bank account details and IFSC

codes. People started remembering UPI for Pay via Mobile Number.

A strong tech stack also underpins this growth, offering a secure, scalable, and open architecture that enables billions of low-latency transactions each month. Fraud rates on UPI remain lower than other digital modes, while continuous innovation by fintechs has expanded its utility beyond payments into adjacent services such as credit, insurance, and retail finance. This resilient technology backbone ensures UPI's role as not just a payment system but a platform for future financial innovation.

Exhibit 3: Evolution of UPI over the last ten years



*as of August 2025

Mn = Million

Source: UPI Product booklet; UPI circulars by NPCI; Reserve Bank of India–Press releases; Press search

Key Takeaways

Chapter 2: Overcoming the challenge of changing an age-old habit

Change is never easy, especially if you are trying to change a thousand-year-old habit. Cash provided people with trust, privacy and ease which no other digital payment system in the world had matched. Making this change at India's population scale, where the mobile banking and internet banking penetration were at ~3.6%, was going to be a monumental challenge.

To make this change happen, UPI needed to a) win the trust of consumers, b) provide an experience that was superior and c) generate enough trials to create a network/viral effect. To this effect the Government of India, RBI and NPCI put their might behind the adoption of UPI with the support of banks and fintech ecosystem.

BHIM (Bharat Interface for Money) was launched in December 2016 as one of the starter apps to demonstrate the potential of UPI. NPCI with the support of RBI rallied the ecosystem to energize banks and non-banks to participate, creating the vision of a changed India not dependent on cash. It created an assurance in the ecosystem of continuous innovation and set clear and strong policies for all which led to the likes of PhonePe, Google Pay and Paytm joining UPI as TPAPs and all the large banks launching UPI apps.

Amidst this, two unexpected events catalyzed the adoption of UPI. In November 2016, the withdrawal of RBI specified currency notes led people to look for modes other than cash to transact in daily life, thus creating trials. The Covid pandemic induced lockdowns and fear of physically handling cash, drove people towards contact less methods. These events, combined with UPI's unmatched ease-of-use and rapid merchant adoption, accelerated its acceptance across the country. Strategic efforts to expand into semi-urban and rural areas further deepened its reach, making UPI a key pillar in India's shift towards digital and inclusive finance.

Due to this journey, UPI is now firmly on its journey of virality. UPI has scaled to 500 Million users, transforming the way India transacts digitally.

Notes



DIGITAL PAYMENTS

CASHLESS

TRANSACTIONS

SECURE

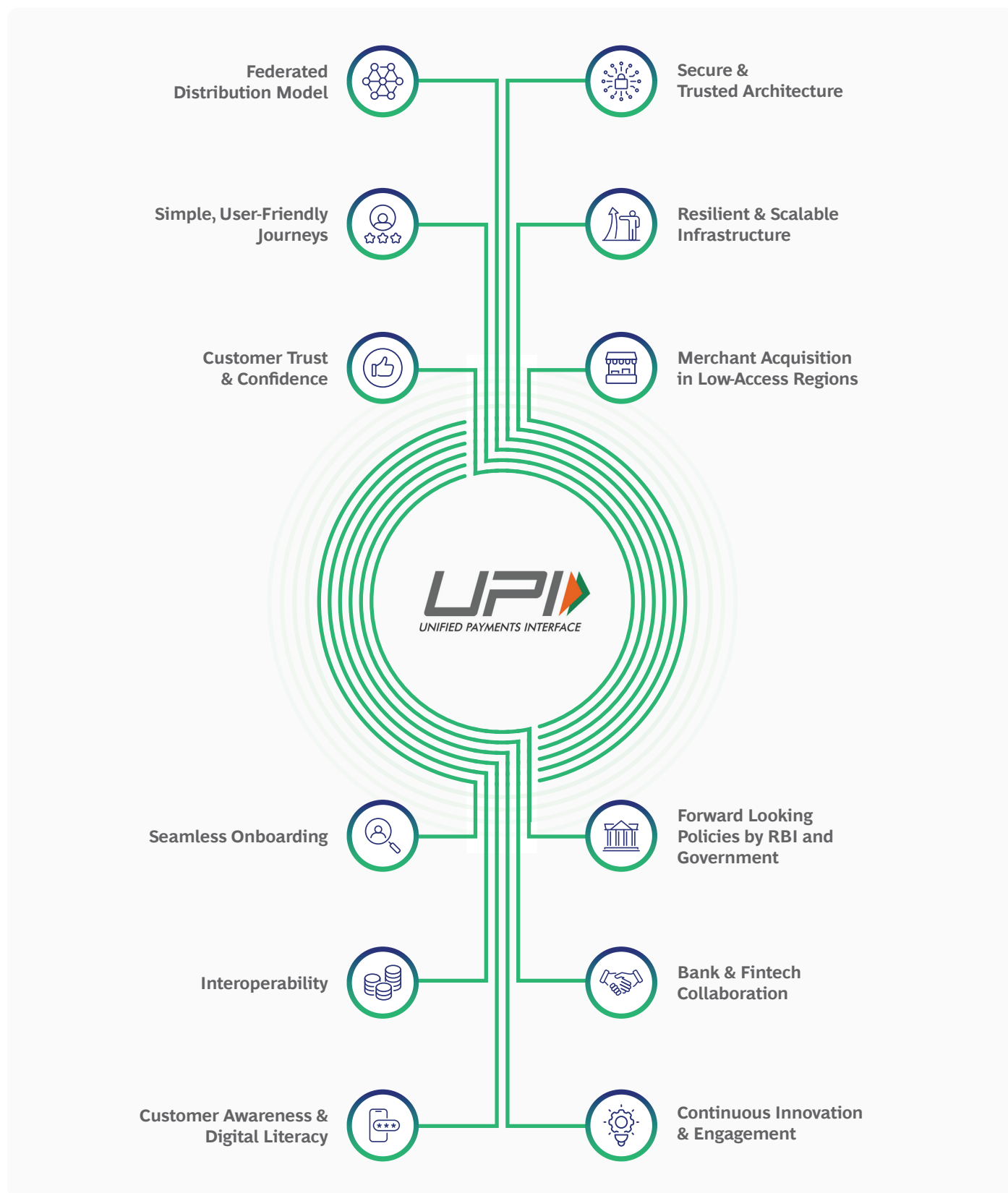
Chapter 3

Rapid scale and adoption

UPI has today emerged as the world's largest real-time digital payments platform, handling more than 20 Billion transactions a month²⁵. This chapter covers not just the scale but also the reach of UPI. **The Tenets of UPI's**

Growth Story (refer to Exhibit 4)—spanning secure infrastructure, inclusive access, seamless onboarding, and continuous innovation—have collectively fueled this unprecedented rise.

Exhibit 4: Key tenets of UPI's growth story



25. NPCI data (as of July 2025)

These include a federated distribution model that unlocked competition and choice, a secure and trusted architecture with resilient, scalable infrastructure, and simple, user-friendly journeys that made digital payments accessible to first-time users. UPI's momentum has also been driven by customer trust and confidence, and merchant acquisition even in low-access regions. Investments in robust bank infrastructure, alongside efforts in customer awareness and digital literacy, ensured that the system could handle growth at scale. Finally, a culture of continuous innovation and engagement has kept the ecosystem dynamic and relevant.

A particularly defining element has been the Bank + Fintech collaboration. Unlike many markets where incumbents and new-age players compete, in India they co-created the ecosystem. Banks provided the backbone of trust and compliance, while fintechs delivered intuitive experiences, rapid merchant acquisition, and product innovation. This partnership, rare even in advanced markets, has been central to making UPI not just a payments platform, but a nationwide movement.

Exponential scale of UPI

As of August 2025, UPI had 504 Million unique users²⁶, i.e., half of India's adult population. From another perspective, if all UPI users constituted a country, its population would be the third largest in the world.

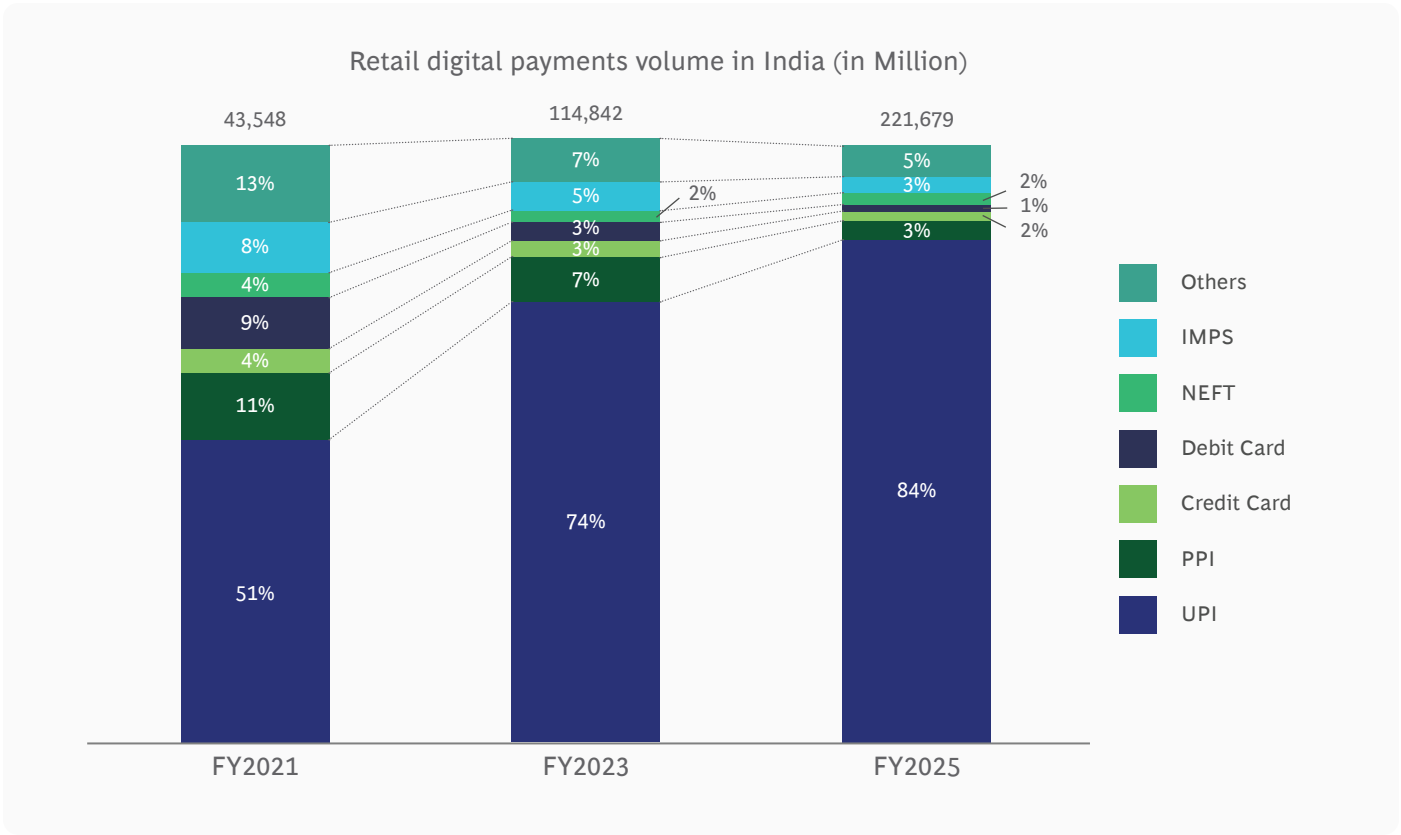
It is also estimated that there are approximately 65 Million merchants who accept UPI payments.

With the fly wheel of consumers and merchants growing, nearly 40% of the retail payments in FY25 were digital

and UPI captured a lion's share (84%)—1.6x its share in 2021²⁹ as shown in Exhibit 5.

The strong growth momentum of UPI continues with the monthly run rate of number of transactions in August 2025 being 34% higher than the run rate of August 2024²⁷.

Exhibit 5: Share of digital payment modes in retail payments in India from 2021 to 2025



Source: RBI Annual Reports
*Note: 50% of NEFT volume assumed retail

26, 27. NPCI data

UPI Chalega!

UPI is no longer a noun referring to a platform or a payment method, it has become a verb—synonymous to payments. ‘UPI Chalega’ or ‘UPI hai kya?’²⁸ have become common parlance. In the survey^{29(a)} conducted of UPI users, 77% of the respondents said that they preferred UPI over all other payment modes, including cash. With the convenience of UPI, this does not come as a surprise. UPI experience encourages people to talk about it, influencing others to come onboard.

UPI Chalega campaign has also played a pivotal role in turning this awareness into action. First launched in 2020 under the Financial Literacy & Awareness Committee (FLAC), the campaign frames UPI as Easy, Safe, Instant, using relatable characters. The idea is to shift behavior—urging people to use UPI in

daily use cases (vegetable shops, splitting bills, petrol pumps), and educating them on safe usage and key features like UPI LITE, AutoPay, and Interoperability, via a dedicated microsite with how-to content.

UPI has a strong network effect; as per the consumer survey, 83%^{29(b)} of the respondents mentioned that they had been referred to UPI by another user. In fact, not just consumers, even merchants are contributing to the viral effect; as per the merchant survey, 84%^{29(c)} of the UPI accepting merchants, mentioned that they encourage users to pay through UPI.

Riding the viral effect, UPI continues to onboard new users every year as shown in Exhibit 6.



The campaign highlights that people can make digital payments seamlessly using any UPI-enabled app. It highlights the ease, safety, and universality of UPI for everyday transactions



The campaign highlights the credit features on UPI wherein shopkeepers can now accept select credit card payments through UPI QR codes

28. English translation: ‘UPI Chalega/UPI hai kya’ – Do you have/accept UPI?; 29(a). BCG Survey: N=2000 consumers, 1000 merchants surveyed across Metro to Tier-6 cities, gender, employment, annual household income (for consumers), revenue (for businesses), payment acceptance point (for businesses); Refer Survey Methodology for details; (a) Q: Which is your most preferred mode of making payments?; 29(b). Q: How did you become aware about UPI?; 29(c) Q: Do you encourage your customers to start using UPI?

Exhibit 6: Number of users onboarded on UPI year-on-year (Million)



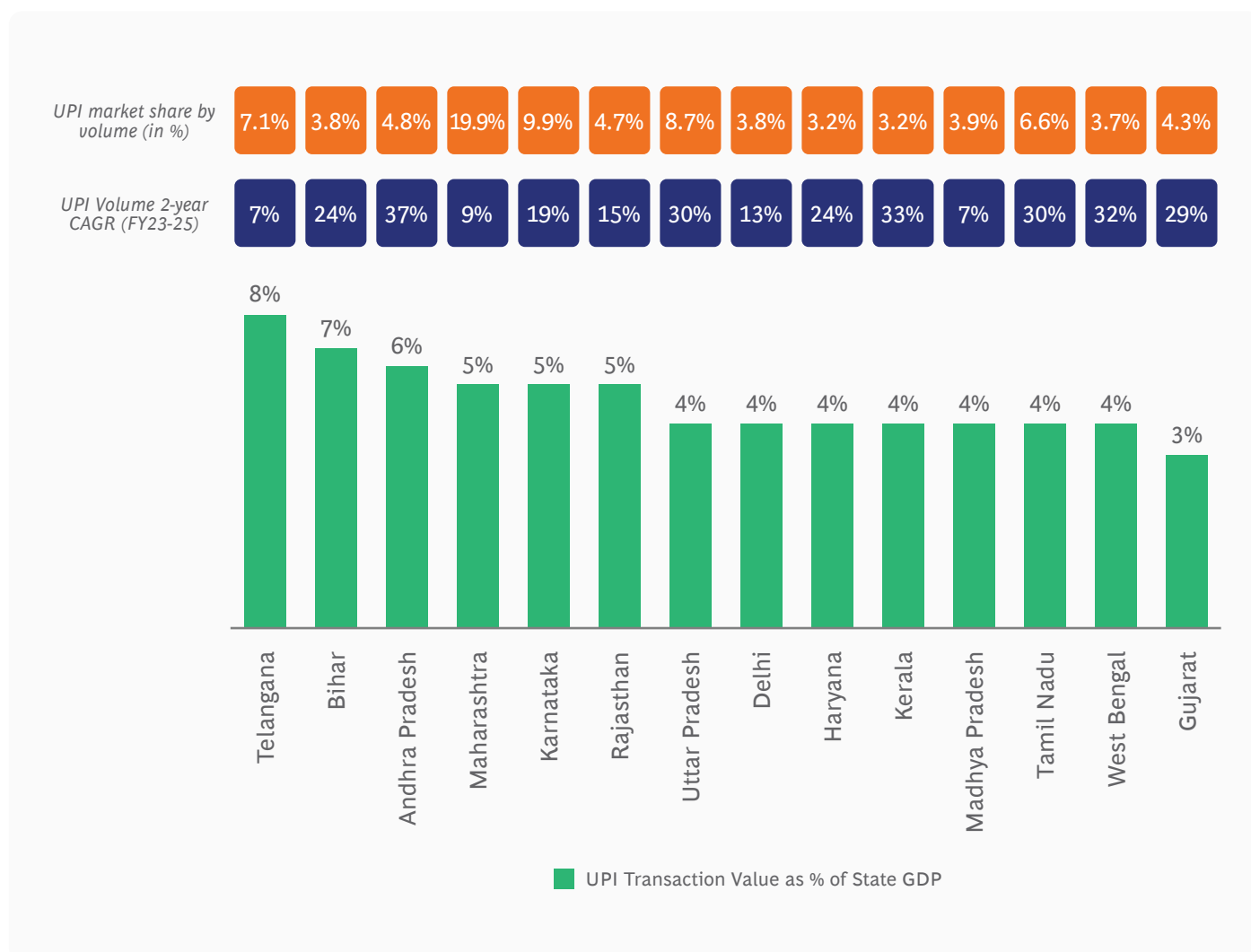
* as of March 2025; this has increased to 504 Million users as of August 2025
Source: NPCI data

Beyond individual users and merchants, UPI's growth story is visible across the length and breadth of the country (refer to Exhibit 7). Its adoption has been widespread, transcending differences in income levels, digital readiness, and regional development, and continues to bring millions into the digital payments ecosystem.

The data highlights that in states such as Telangana, Bihar, and Andhra Pradesh, UPI transaction value already accounts for 6–8% of state GDP, signaling deep penetration. On the other hand, states like Haryana, West

Bengal, and Gujarat show relatively lower penetration levels (3–4% of state GDP) but are clocking high growth rates (24–33% CAGR), indicating rapid catch-up and future expansion potential. Interestingly, mature digital states like Karnataka and Maharashtra balance both—contributing significantly to national volumes (together ~15% share) while still maintaining steady growth. This divergence underscores UPI's dual narrative: in some regions it has become a default habit, while in others it is in the midst of a steep adoption curve.

Exhibit 7: State-wise UPI Volume Growth for 2 years (FY23-FY25)



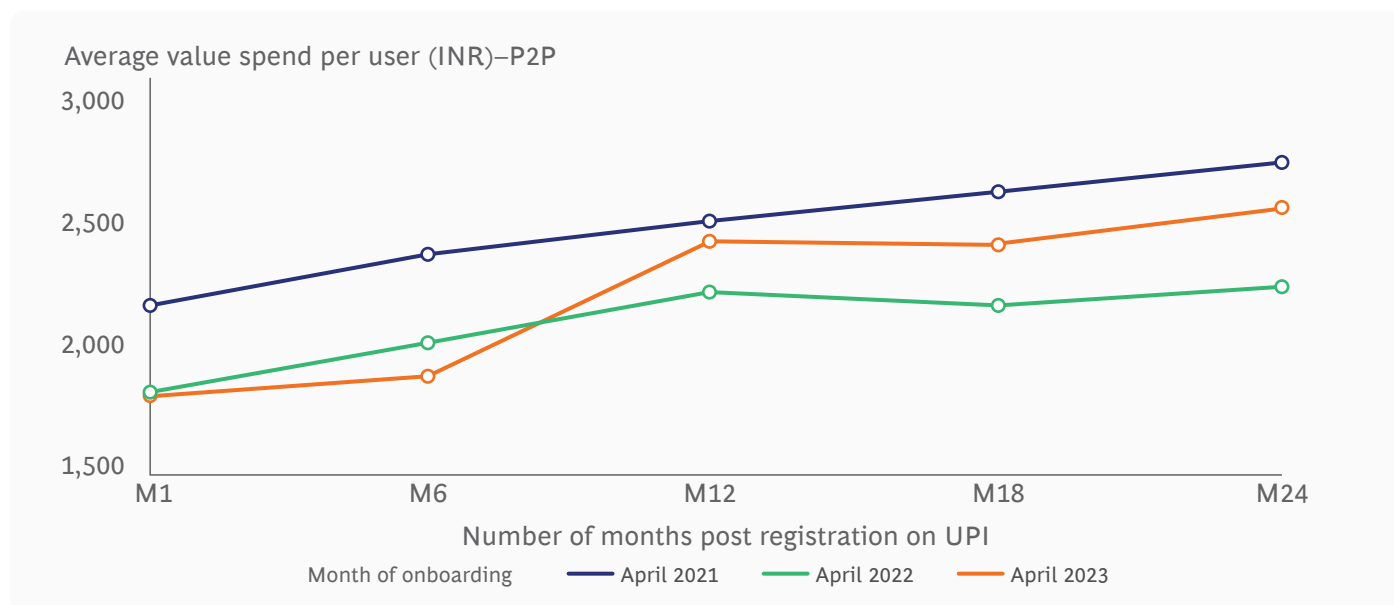
Note: State GDP figures are for FY25, except for Gujarat, which is for FY24
Source: NPCI data, MoSPI

UPI is now a habit

After coming onboard, users are showing a steep growth in usage. As shown in Exhibit 8, for the cohort of 9.9 Million P2P UPI users who came onboard in April 2021, the average transaction value in the first month was INR 2,173 (~USD 24.5). In twenty-four months post registration, this has increased to INR 2,689 (~USD 30.3), with increased trust and acceptance across peers.

With growing popularity and adoption, newer users are joining the UPI ecosystem at lower average ticket sizes, reflecting the democratization of digital payments. However, their spend per user has been increasing at a relatively faster pace over time, narrowing the gap with earlier cohorts.

Exhibit 8: New users joining now have a higher starting point and steeper slope



Source: NPCI data

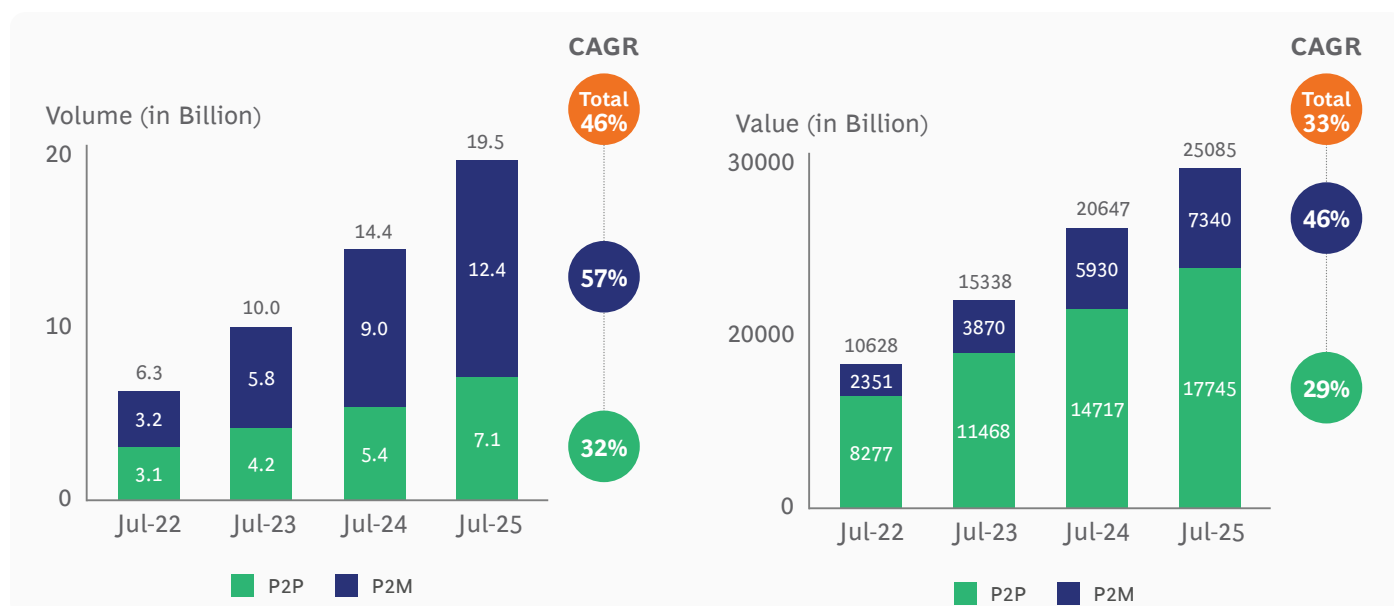
Digital payments to overtake cash in retail transactions

By FY26, digital payment modes are expected to be more than 40% of all retail transactions in India³⁰, including those made in cash, with UPI emerging as the fastest-growing option. Given the current growth trajectory, as per BCG analysis, digital payments are expected to surpass cash in the coming years and contribute to 75% of all retail transactions by FY30—meaning 3 out of every 4 payments will be made digitally.

A key driver of this digital surge has been the rise in peer-to-merchant (P2M) transactions within the UPI

ecosystem. As seen in Exhibit 9, over the past three years, P2M payments have grown at a faster pace than peer-to-peer (P2P) transactions. This momentum is fueled by the increasing formalization of the market, with more small merchants embracing digital payment solutions, referring to Exhibit 10. This is also reflected in the increased share of online UPI transactions, which stood at 77%³¹ as of August 2025, indicating a preference among users for paying online. As a result, merchant transactions now lead in both volume and value growth, underscoring the expanding role of digital payments in everyday retail activity.

Exhibit 9: Growth in P2P and P2M transactions



Note: Monthly transaction volume and value

Source: NPCI data

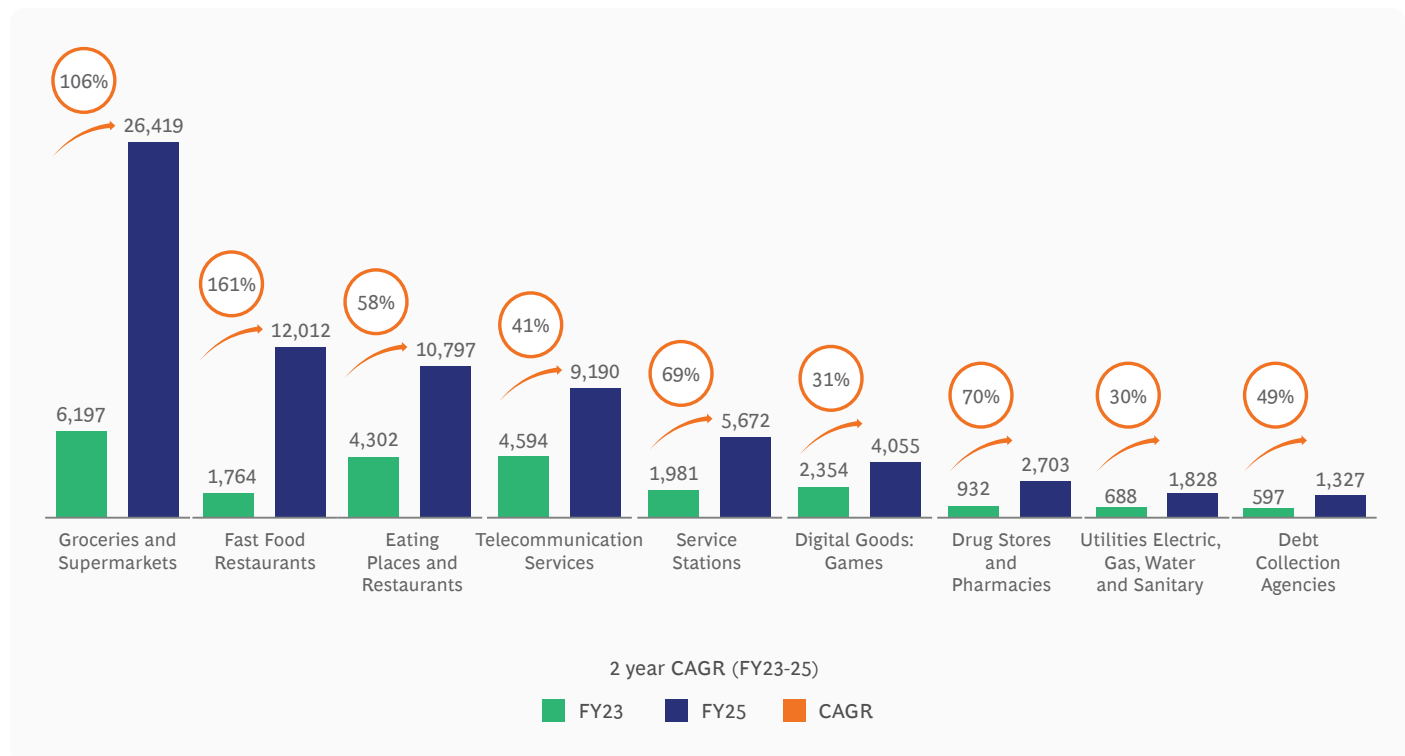
30. BCG-PhonePe Pulse Report published in 2022; 31. NPCI data

Evolution of new use cases

While the initial part of the growth had been driven significantly by the ease of paying peers (P2P payments), payments to merchants (P2M payments) are taking their fair share today. Merchants in our survey using UPI also reflected this change when 1 in 3 mentioned that they are receiving 41-80% of their payments through digital modes, as against <20%, in the pre-UPI era³².

One of the reasons for this acceleration of P2M payments is adoption in previously underpenetrated categories as shown in Exhibit 10. The fastest growing are groceries and supermarkets, restaurants, services stations, drug stores and online gaming platforms.

Exhibit 10: Select top categories of spend in UPI—FY23 vs FY25 (Volume in Million)



The % represent 2-year CAGR between FY23 and FY25
Source: NPCI MCC data

One of the key emerging categories has been debt collections via UPI, which is transforming the credit ecosystem. Earlier dependent on post-dated cheques, or manual follow-ups, repayments are now seamless with real-time debit requests through UPI apps. This shift has reduced defaults and collection costs for lenders, while providing customers with convenient and timely settlements. The impact is evident in the rapid scale-up of this category, which has doubled over the last two years (as shown in Exhibit 10).

UPI has been a game-changer in EMI collections for Bajaj Finance, now contributing a lion's share of repayment mandates—enabling millions of repayments and empowering customers with instant, digital process at scale.



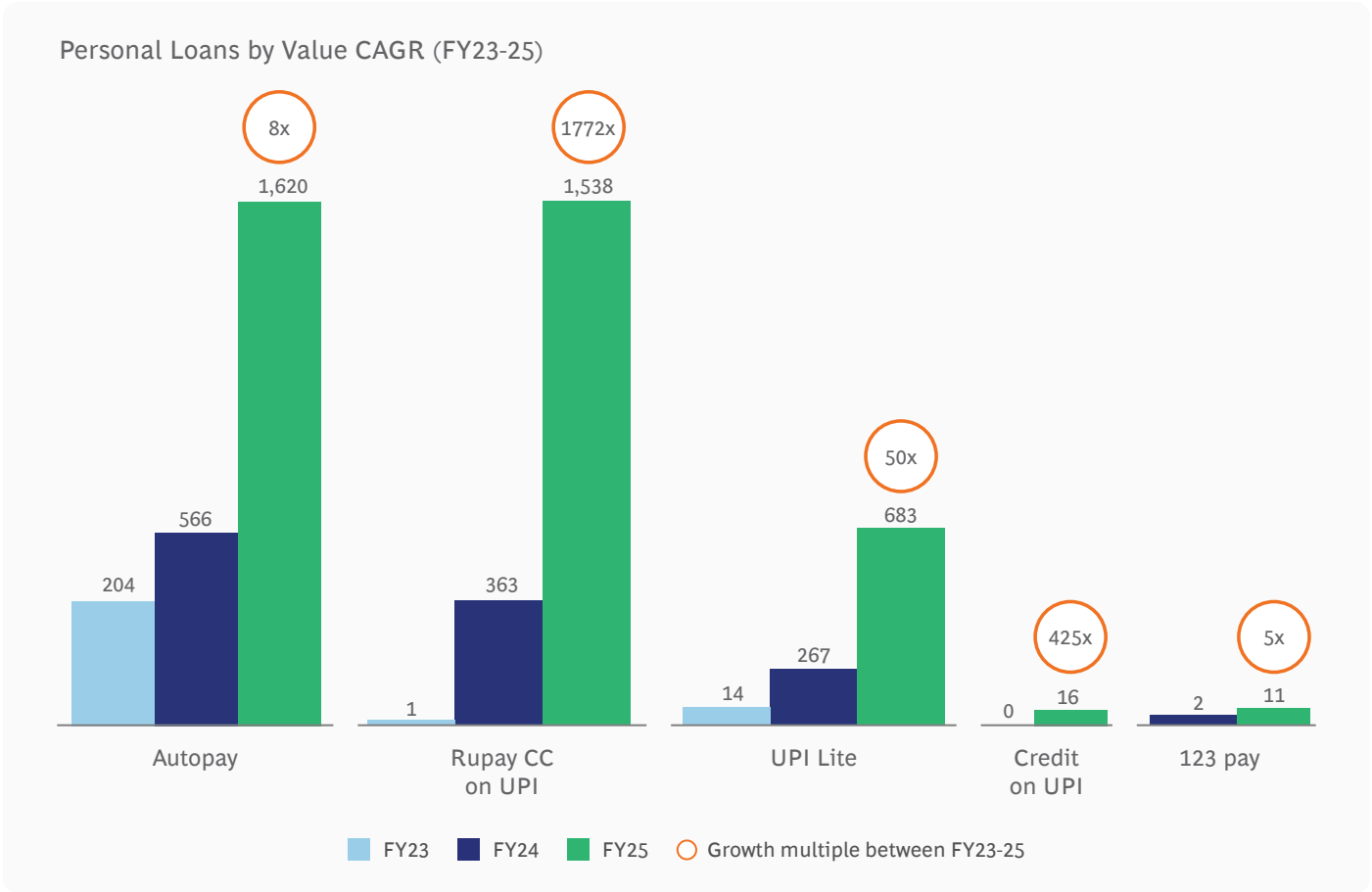
Nitish Asthana
(President–Payments, Bajaj Finance)

32. CG Survey: N = 950 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details; Q: Before you started using UPI for receiving payments, approximately how much was contributed by online payment methods (Debit Card, Credit Card, Internet Banking, Digital Wallets)?; Q: Out of your current monthly revenue from customers, approximately how much is contributed by UPI?

Features like Autopay have further boosted recurring payment related businesses such as OTT platforms by enabling seamless subscription renewals and reducing user drop-offs at merchants, strengthening customer

stickiness and transaction reliability. Furthermore, some of the newer features, such as UPI Circle, have also gained steady traction, crossing 1 Million transactions within a year of launch.

Exhibit 11: Volume (in Million) growth across select UPI features



Source: NPCI data

UPI is now the single largest mode of payment after cash. It is amply clear that UPI is now a habit amongst both consumers and merchants. With more use cases and innovation on the UPI platform such as UPI Lite transaction limit being increased to INR 1,000 (~USD 11.3), use of RuPay Credit Card on UPI,

interoperability of pre-paid instruments, pre-sanctioned credit line on UPI, conversational payments, offline payments through LiteX, etc., there is no denying that UPI will continue to drive further share of commerce in the country.

Key Takeaways

Chapter 3: Rapid scale and adoption

Within seven years of launch, UPI has become the largest real-time digital payments platform in the world. With ~65 Million merchants and 504 Million users on UPI, it now facilitates 4 out of every 5 retail digital payments. It has generated massive network effects on users with new adopters rising each year. As many as 83% of UPI users in our survey had been referred to UPI by another user and 84% of the UPI accepting merchants encouraged users to pay via UPI.

While the initial phase of UPI's popularity was driven by the ease of making peer-to-peer payments, person-to-merchant payments are now on the rise constituting ~64% of the volume. Cash is increasingly being displaced as the primary means of making payments to merchants. Merchants mention that they receive 41-80% of their payments through digital modes, as against <20% in the pre-UPI era.

Categories which were digitally underpenetrated earlier are growing rapidly due to UPI, most notable ones being direct-to-consumer brands, agricultural services, food and entertainment, debt collection, healthcare and education among others.

The ease, utility and flywheel of UPI have made it the single largest mode of payment after cash. UPI is no longer a noun referring to a platform or a payment method, it has become a verb—synonymous to payments. '*UPI Chalega*' or '*UPI hai kya?*' have become common parlance. Nearly 77% of the UPI using survey respondents mentioned that they prefer UPI over all other modes of payment, including cash. With newer use cases and innovation, this adoption is only expected to increase going forward.

Notes



Chapter 4

Going beyond convenience: Driving inclusion and social development

Revolutionary innovations have a far-reaching impact. Their wide acceptance often creates new experiences. UPI is no different. Created initially as an efficient means of payment, UPI today is playing a game changing role in the lives of consumers. While the foremost impact is an obvious one—the convenience it offers to its consumers—when seen in its entirety, the day-to-day impact of UPI has brought about a significant change in the quality of people’s lives including various social development indicators.

Social indicators of an economy are typically defined as measures that reflect the well-being and quality of life of its citizens. Standard definitions of social development highlight dimensions such as education, health, employment, financial inclusion, and equality of opportunity. In this context, UPI plays a major role. In employment, particularly in the informal sector, it fosters job security and income stability by enabling instant and reliable wage payments. By bridging divides across gender, geography, and income groups, UPI strengthens equality of opportunity and empowers marginalized communities.

The success of UPI lies not only in its unprecedented scale but in the transformative outcomes such scale has generated. Unlike credit and debit cards—whose reach has historically been limited to select segments, UPI has democratized digital payments, extending access to millions for the first time. Its adoption cuts across the entire social spectrum: from metro corporate employees and businessmen to roadside tea stall owners, electricians, delivery workers, and homemakers. Exhibit 12 illustrates a couple of such examples. In a conversation, Google Pay mentioned that UPI has been a big equalizer for women.

UPI is rewriting the story of inclusion in India. It has transformed savings into security—money that once sat in cash at home is now securely stored in bank accounts, steadily building resilience for households. For women, UPI has replaced hidden stashes of money

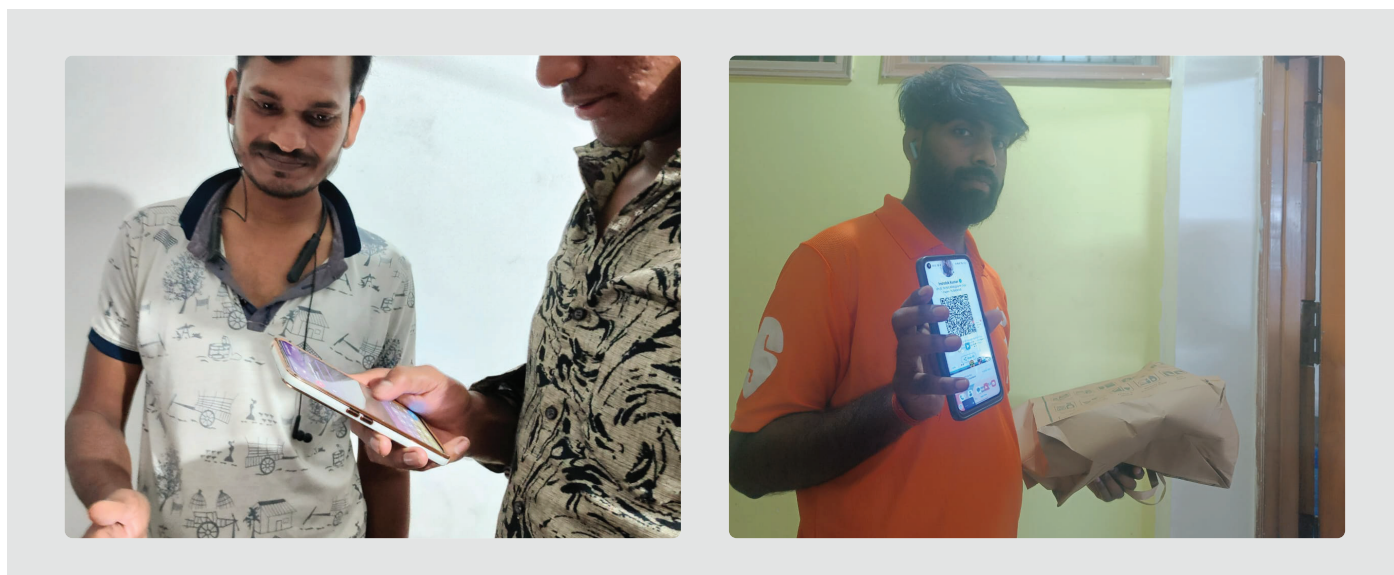
with visible financial strength, providing both dignity and decision-making power. Government benefits that once leaked through layers of intermediaries now reach citizens in full, restoring trust and ensuring real support is delivered where it matters most.

The platform has also unlocked transformative possibilities for migrant workers and small entrepreneurs. Migrant workers no longer stand in long queues or pay steep fees to remit money—their earnings arrive instantly, strengthening the well-being of families thousands of miles away. Street vendors, small entrepreneurs, and homemakers who once operated on the margins are now active participants in the digital economy. With the ability to transact digitally, access credit, and expand their businesses, they are standing shoulder-to-shoulder with the formal economy.

As shown in Exhibit 12, UPI’s impact goes far beyond convenience—it has become an engine of empowerment, equality, and everyday progress. It is enabling access to credit, increased savings and financial empowerment, greater affluence, and ownership. It is also fostering the empowerment of homemakers, inclusion of underserved communities, more time for productive activities, and immeasurable safety and convenience. These outcomes are visible across age groups, geographies, genders, and income segments, underscoring how economic progress is translating into tangible improvements in people’s lives.

Many third-party apps have also helped extend this inclusion by building innovative offerings on the UPI ecosystem. For example, FamApp targets teenagers and provides prepaid UPI-linked cards that can be used irrespective of whether the user has a bank account or not. The entire ecosystem is working towards providing tailored experiences and deeper financial inclusion across diverse customer segments, throughout the length and breadth of the country.

Exhibit 12: Door-to-door electrician, delivery boy accepting UPI payment



Based on the consumer survey, UPI is the preferred mode of payment across segments. For example:

- 82% of UPI users aged 55+ and 80% of UPI users aged 18-25

- 80% of women UPI users vs 75% men UPI users
- 77% of UPI users under the INR 0.3 Million (USD 3,384) p.a. income bracket vs 79% of UPI users earning more than INR 2 Million (USD 22,560) p.a

Exhibit 13: UPI empowering lives for retail users

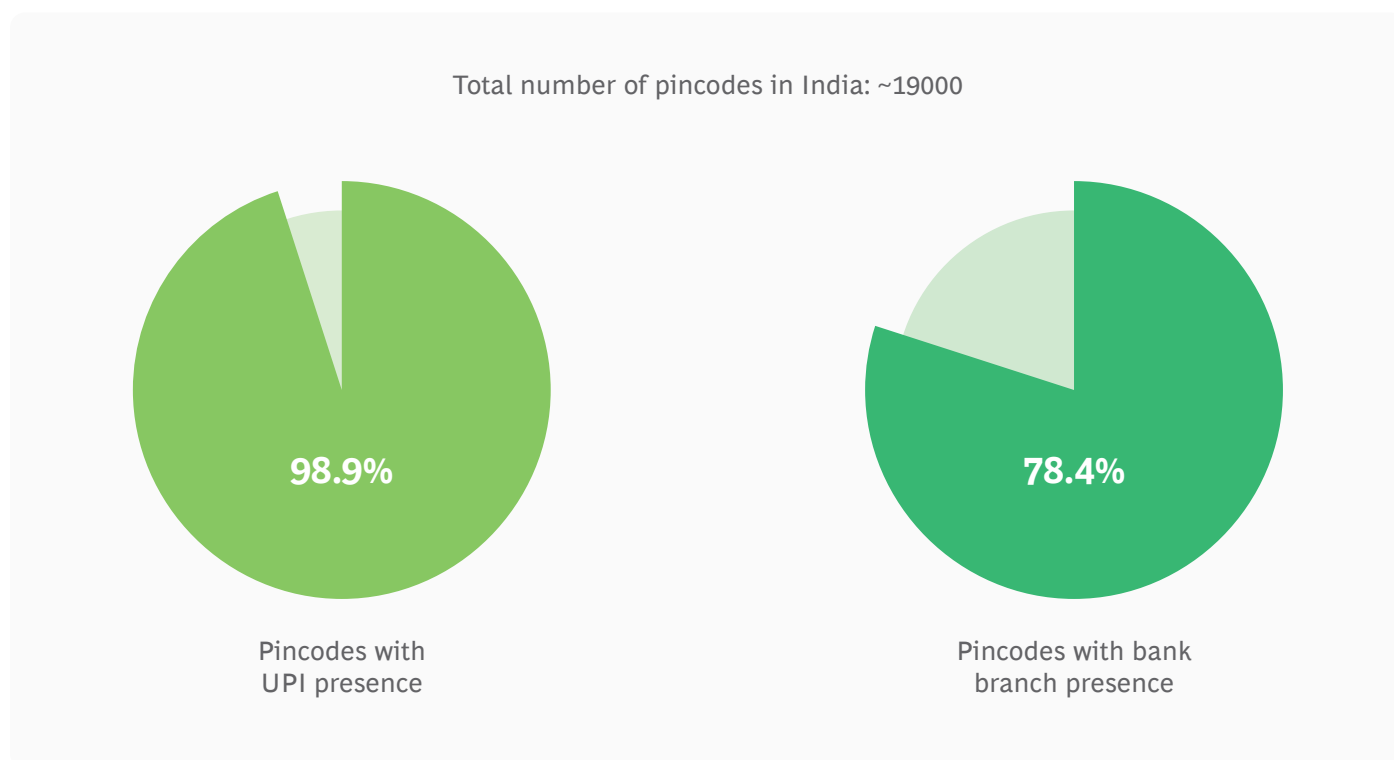


Reach beyond bank branch network

Of India's ~19000+ pin codes, more than ~4100 still have limited bank branch presence. Yet, except for around 200 out of these 4100 pin codes, almost all of these locations already have UPI presence with at least one QR code—establishing UPI as one of India's most preferred financial infrastructure. However, while the breadth of penetration has been achieved, the depth

of penetration within each pincode—measured by the number of merchants, frequency of transactions, and integration into daily economic activity—can improve even further. Growing this will require continuous efforts and investments by ecosystem participants to drive merchant onboarding, consumer adoption, and awareness.

Exhibit 14: Pin codes with UPI presence vs Bank branch presence in India



Note: UPI presence is defined as the availability of at least one QR code in the respective pin code
Source: RBI branch banking statistics, PhonePe Pulse Data, BCG Analysis

Access to credit

With UPI, even the micro transactions that consumers carried out in cash are getting recorded as standard machine-readable transaction data for banks. This has enabled banks to get better visibility of the cash flows of consumers to help underwrite credit.

The advent of UPI has significantly expanded the digital footprint of consumers, enabling new-age fintechs and digital lenders to emerge as key sources of credit. With richer transaction trails and greater visibility into consumer behavior, these lenders have scaled rapidly in recent years. However, despite this growth, the share of loans to new-to-credit (NTC) customers has been declining. In FY25, 16 Million NTC borrowers³³ were added—the second-lowest in recent years—with NTC loans accounting for just 5% of total originations³⁴.

To address this, lenders are increasingly turning to alternative data sources—such as digital payment behavior, to underwrite first-time borrowers. While UPI has deepened the overall digital and payments ecosystem, the real unlock for NTC segments lies in integrating such alternative data into underwriting

frameworks. This shift will enable lenders to better assess risk, expand access to underserved segments, and gradually bring more first-time borrowers into the formal credit ecosystem.

As seen in Exhibit 15 and Exhibit 16, as UPI volumes scales in districts, both consumer durable financing (CD loans) and personal loans (PL) witness a significant step-up in growth, with the latter showing especially sharp momentum.

These trends underscore how UPI not only broadens the digital transaction base but also acts as a powerful enabler for micro-credit growth—particularly in unsecured, short-tenure lending products—thereby reinforcing its role as a catalyst for inclusive financial access.

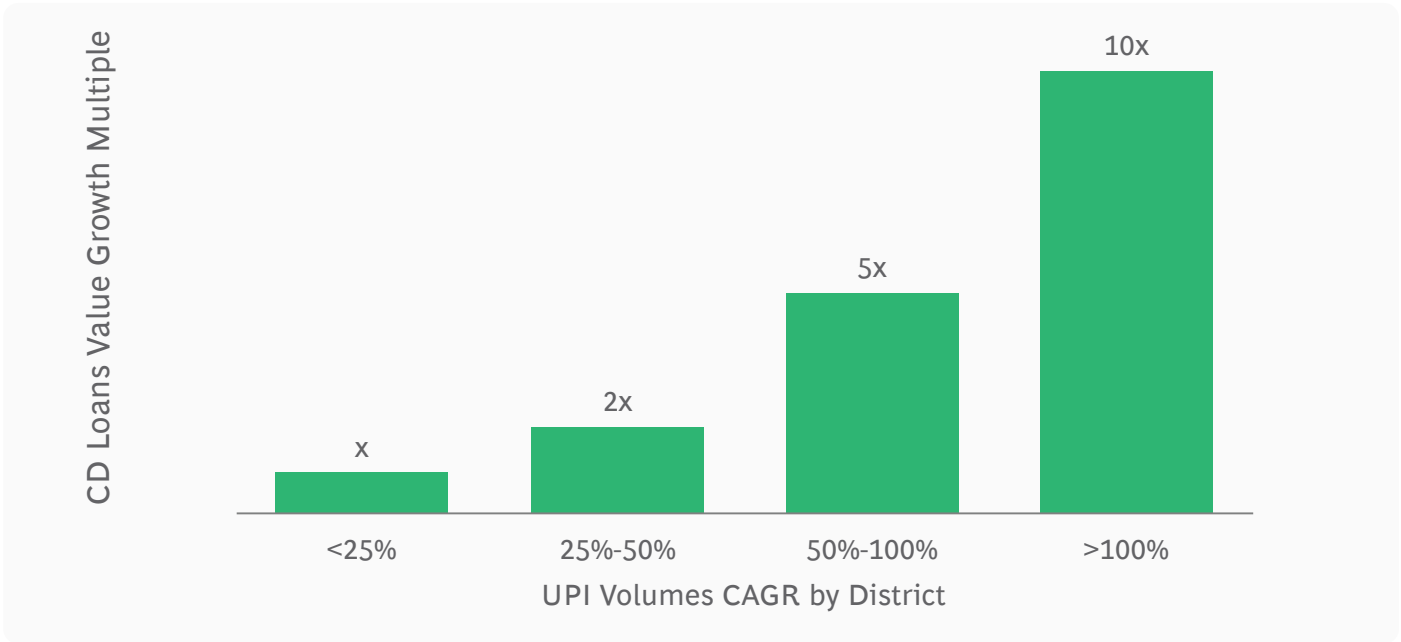
2 out of 3 consumers³⁵ feel that since they have started using UPI, it has become easier to get financing such as loans, better credit limits.

33. BCG FIBAC Report 2025; 34. BCG FIBAC Report 2025; 35. BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details. Q) Since you have started using UPI, do you think it has become easier to get financing such as loans, better credit limits etc.?

As seen in Exhibit 15, consumer durable (CD) loan growth and UPI growth between FY23–25 highlights a clear positive correlation. Districts with subdued UPI growth (<25%) witnessed only modest growth in CD loans. However, as UPI adoption accelerated, so did

credit penetration—districts with 50–100% UPI CAGR recorded 5x growth in CD loans compared with CD loan growth seen in districts with subdued UPI growth (<25%). Further, those with over 100% UPI CAGR saw CD loan growth surge to 10x, the highest across the spectrum.

Exhibit 15: High correlation between UPI Volume CAGR to Consumer Durable loans

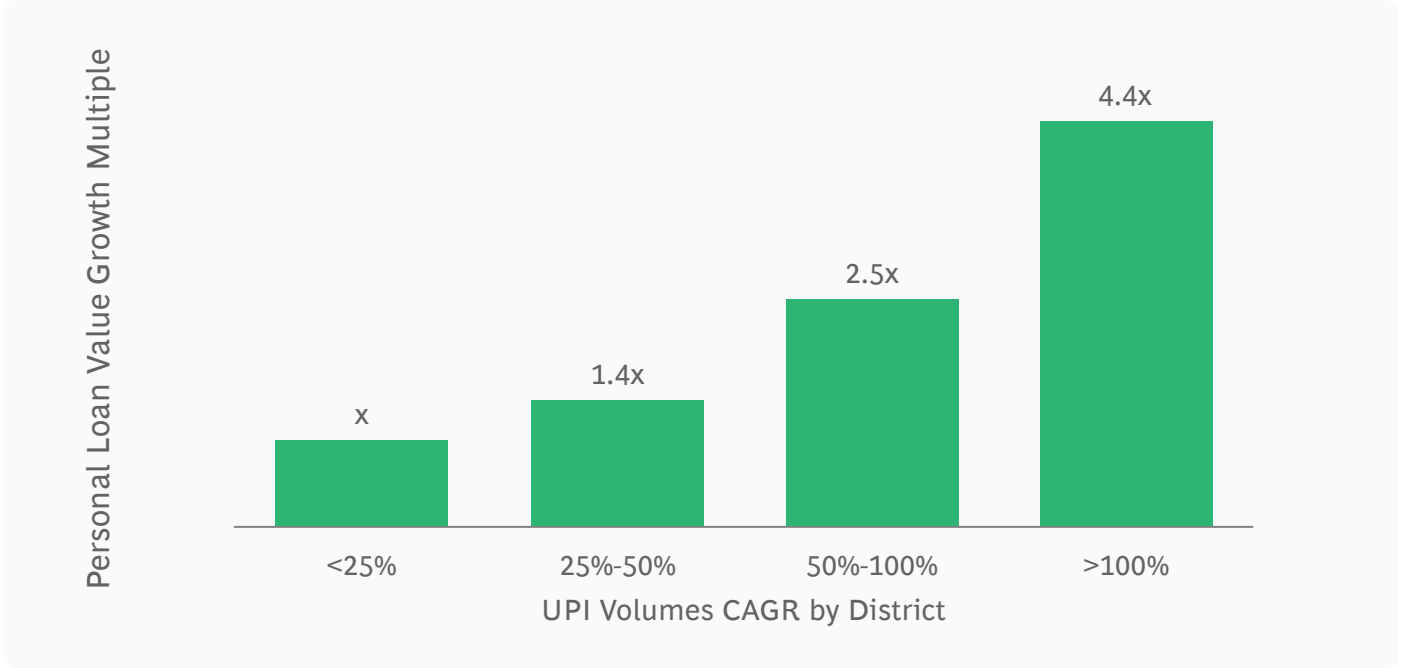


Note: X denotes the CD Loans growth in districts with <25% UPI volume growth for comparison, other values show multiple relative to it; UPI volume and CD Loan growth compared for period between FY2023-FY2025
Source: BCG analysis support by Experian Credit Bureau, NPCI Data

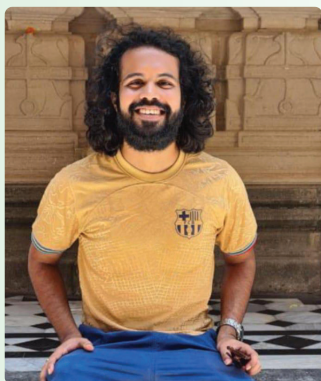
The correlation is also evident in the case of personal loans, where the linkage with UPI adoption is even more pronounced (Exhibit 16). For comparison, districts with modest UPI growth (<25% CAGR) still saw healthy loan expansion, growing at a base multiple of X. However, as

UPI usage scaled, lending accelerated rapidly—districts with 50–100% UPI growth recorded ~2.5x growth in personal loans compared to modest-growth districts. In contrast, districts with more than 100% UPI growth witnessed a ~4.4x surge in personal loans.

Exhibit 16: High correlation between UPI Volume CAGR to Personal Loans



Note: X denotes the Personal Loans growth in districts with <25% UPI volume growth for comparison, other values show multiple relative to it; UPI volume and Personal Loan growth compared for period between FY2023-FY2025
Source: BCG analysis support by Experian Credit Bureau, NPCI Data



Prior to using UPI, 3 of my credit card applications got rejected. But post using UPI, I received multiple calls from banks offering cards and now I finally own a credit card.

—Vishal, a 28-year-old resident of Mumbai

Driving transparency and enhanced financial management

UPI has fundamentally enhanced financial transparency by ensuring every transaction is recorded, traceable, and available in real time. This digital visibility reduces the uncertainty of cash-based dealings and equips individuals with the ability to track, analyze, and manage their money with greater precision. For daily earners, gig workers, and small entrepreneurs, UPI provides immediate clarity on income and expenditures, strengthening their ability to plan and budget effectively. Home-based businesses benefit from structured transaction histories that simplify cash flow management and create a clearer picture of financial health.

By embedding transparency into everyday transactions, UPI is also fostering greater financial discipline. Real-time

balances, automated insights, and spending summaries from UPI-enabled applications are nudging users towards deliberate financial decisions, encouraging savings and reducing impulsive spending.

As UPI continues to embed itself in the everyday economic activity, it is nurturing a more confident and financially secure population—fueling a broader shift towards financial awareness, stability, and empowerment across income segments.

A 27-year-old from Jaipur shared, “With UPI, I can track every payment and control my savings better—it’s helping me put money aside regularly.”

Financial empowerment of the homemaker

UPI has empowered homemakers with financial independence. India has a skewed representation of gender in the workforce—with 67% of the workforce being male⁴³. Majority of financial decisions continue to be made by men, and women are entrusted with only a small amount of money to run the household. Homemakers, especially in remote/semi-urban areas and in economically backward sections of society, have been dependent on men for cash withdrawals and meeting their cash needs.

With UPI, women can transact directly using their bank accounts. This has led to an increased sense of security and emancipation for women.

85% of homemakers³⁶ report reducing cash use for in-store payments.

36. BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details.
Q) Has your usage of the following payment types (those who selected cash) changed since you started using UPI while visiting a store in person?

Durga, a 34-year-old homemaker in Pipla, Nagpur (MH) manages the household with her husband, two kids and in-laws. She proudly narrates her autonomy derived from making UPI payments.



Previously, my husband used to take care of all the bill payments (electricity, water, school fees); I had to remind him to pay bills to avoid any late fees. Now, I take care of these payments on-time at my liberty with complete autonomy and plan the budget for household expenses.

—Durga

Increased access to goods

UPI has boosted access to goods for consumers by enabling them to go online and shop beyond the limitation of local stores. The trust developed on UPI (safe payments through mobile phones) has translated into online shopping and has made people comfortable with online spending. Three in four customers make at least one online purchase each week on online apps as per the survey³⁷.

This is also substantiated by the fact that number of UPI transactions on e-commerce apps has grown at 600% CAGR in the last four years^{38(a)}. 58% of all e-commerce in India is being done through mobile today where UPI is becoming the most preferred payment mode^{38(b)}.

The story of Guriya Devi, a 35-year-old homemaker living in Danapur, Khagaul (Bihar), exemplifies how UPI unlocks access. She manages a family of four. She adopted UPI and now shops online



Earlier, I was limited to products that were available in the local market. But now, I shop online and get more variety and different types of products. I also get more offers and cashbacks and hence I can buy more.

—Guriya Devi

Beyond access to online markets, UPI has also enabled users to spend on unplanned and emergency purchases. Consumers are no longer limited by the

amount of cash in their wallet. With UPI, they can spend anytime, anywhere using money directly parked in their bank accounts.

37. BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details
Q: How often do you use online apps for shopping or purchases?; 38(a). NPCI data; 38(b). FIS Global Payments Report



Previously, I had to carry enough cash with me to buy groceries/other essentials on my way back from office. If my wife asked me to buy an essential item which was not planned, I could not. Now I can pay via my Paytm app immediately and don't have to worry about these things.

–Gaurav,
a 35-year-old corporate
employee living in Gurugram

Enabling domestic transfers for migrant workers

Ability to carry out P2P transactions seamlessly is a boon to the huge population of domestic migrant workers in India.

Small migrant workers from rural areas are often paid in cash, and the common ways of sending remittances home are through post offices (money orders) and cash couriers. A long turnaround time means that the remitter remains uncertain of when the money would

reach and, in some instances, whether it would reach. Remittances also have associated fees.

Using UPI, they can now seamlessly send money to their families, and obtain immediate confirmation of credit into the beneficiary accounts at zero additional costs.



Before UPI, I could only send cash through trusted relatives or acquaintances from my hometown. Also, in cases of emergencies at home, I had to ask neighbors to loan money to my family. But with UPI, I can send money directly to home. In the past few days, when my mother fell sick, I was able to send money immediately to my wife and parents through UPI.





–Mohamed Shoket,
Migrant labor from Bihar working in Delhi

More time being available for productive activities

How many times have we all thought “If only I had a few more hours in a day!” UPI enables users to manage their time more efficiently and focus on other productive tasks. Activities such as visits to the bank and ATM for cash, have reduced. Between FY15 and FY19, the value of cash withdrawals at ATMs increased at CAGR of 9%

but since UPI picked up pace, between FY21 and FY25, this CAGR has reduced to 2%. Further, cash withdrawals at ATMs have declined at a negative CAGR of 4%, while the overall number of ATMs has contracted at a negative CAGR of 1% over the past three years.

Exhibit 17: Slowing growth rate of ATM cash withdrawals

	FY21	FY22	FY23	FY24	FY25
 No of ATMs (in '000)	2.13	2.20	2.23	2.23	2.20
 YoY Growth (%)	-	3%	1%	0%	-2%
 Value of ATM cash withdrawal (INR Trillion)	31.2	34.1	36.4	35.7	33.6
 YoY Growth (%)	-	9%	7%	-2%	-6%

Source: RBI data

Nearly 40% of the consumers in the survey have not visited an ATM in the last 1 month³⁹.

This has allowed individuals to have more time for other activities. We estimate that UPI has enabled users to spend an additional two to four days in a year^{40(a)} on

other activities by reducing time spent on travelling to the ATM or the bank^{40(b)}, not to forget the frustration of standing in long queues. This additional time is now spent by users on activities of choice like personal hobbies, with family and kids, or even in business/work activities.

Vijay is a 40-year-old farmer in Awali (MH) who cultivates wheat, cotton, and sunflower, and sells his produce to wholesalers. The use of UPI has helped him save time and effort.



”

Previously, I had to travel a considerable distance to visit the bank to make ‘Seva Society’ loan payments and deposit cash. Now, I receive only UPI payments, so I transfer the money online to the bank with no visits needed.

–Vijay

39. BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details
Q: How many times do you visit banks and ATMs in a month since starting using UPI for making and receiving payments?; 40(a). BCG Analysis; Leisure time is defined as total number of hours in a day not spent in work (12 hours, 6 days a week) and sleep (8 hours, 7 days a week); 40(b). Time spent to make an ATM and bank transaction is ~50 min and ~80 min respectively (includes walking to the ATM/bank). Assuming UPI has saved between 2-4 bank visits and 2-4 ATM visits in a month for its users

Immeasurable convenience and safety

Convenience with UPI has come in multiple dimensions—not needing to carry cash, hassle free offline payments, ease in online payments and ability to pay friends and family. Consumers now carry less cash in their wallets with wide acceptance and reach of UPI. As per the consumer survey, the amount of cash they carry with them daily has reduced by more than 30%^{40(a)}.

As many as 49% of consumers say that they carry cash only for emergencies—a source of security, instead of money to facilitate purchases.^{40(b)}

Some users even speak about how cash remains in the wallet for weeks/months before being used. Post-UPI, two in three consumers carry under INR 3,000 (~USD 34) in cash; pre-UPI, three in five carried over INR 3,000 (~USD 34) as per survey^{40(c)}.

The second dimension of convenience is seamless payments. In-store transactions have become hassle free with a simple QR code scan. A coincidental benefit is

the ability to pay the exact amount, avoiding challenges with change and bulky coins.

Ease of payment also extends to online transactions. Consumers don't have to remember their card number, CVV digits and struggle with inconsistent OTPs. With intent link integrations, UPI payments are the most convenient check-out option today on m-commerce. UPI is also the first payment platform in the world where you can make payments using just the mobile number of the counterparty.

In addition to convenience, UPI has brought a sense of safety by eliminating the worry of theft of cash or cards and the threat of skimming of cards. It is device bound and uses fingerprint/face scans/phone passwords with a personally set pin to validate transactions. UPI is secure by design and is not subject to traditional digital frauds such as lost cards, card-not-present transactions, etc.

Ashish Solanki, a 25-year-old corporate employee in Mumbai, does not carry a wallet anymore.



I have 2 bank accounts—personal and household separate. Previously I had to carry different debit cards, remember their details to access them if using online; but now, using UPI, I can access both accounts through one app.

—Ashish

40(a). BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details; Q: % split of your spends across payment methods in a typical month now vs prior to using UPI?; 40(b). BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details; Q: Why have you started keeping less cash with you?; 40(c). BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details; Q: What is the approximate amount of cash you carry in your wallet now vs prior to using UPI for making payments?

UPI is an irreversible benefit

UPI driven changes in consumers' lives are irreversible and consumers find it difficult to imagine a world without UPI.

- 93% of UPI users who prefer UPI over other modes of payment say that they use cash only if the shop/app/website does not accept UPI^{41(a)}
- 2 out of 5 adopters say that they will switch shops if the shopkeeper does not accept UPI^{41(b)} (compared to 1 out of 3, according to the survey conducted in 2023)

- 3 out of 4 adopters try to use UPI through another app, before switching to a non-UPI mode of payment, in case a transaction fails through one app^{41(c)}

In summary, UPI has changed everyday lives for the better with not just convenience but also enhanced user experience and better financial management. It is safe to say that UPI is uplifting the quality of life of all Indians while also building financial literacy.

41(a). BCG Survey: N = 2000 consumers surveyed across Metro to Tier-6 cities, gender, employment, annual household income; Refer Survey Methodology for details (a) Q: When do you use cash? Answer option: I only use cash if shop/app/website does not accept UPI; 41(b). Q: Do you prefer buying things from shops/apps/websites that allow you to make payments using UPI?; 41(c). Q: What do you do if UPI payment is unsuccessful? Answer option: I switch try another app before switching to non-UPI mode of payment

Key Takeaways

Chapter 4: Going beyond convenience: Driving inclusion and social development

UPI has brought significant changes in the lives of consumers across age, geography, gender and income groups. The most obvious and most spoken of change is the introduction of convenience. Convenience with UPI has come in multiple dimensions—not needing to carry cash, hassle free offline payments, ease in online payments and ability to pay friends/family.

As per the consumer survey, they now carry 30% less cash in their wallets.

UPI has expanded exponentially, with QR code presence in almost all of India's ~19,000 pin codes, including regions with low bank branch presence. By bridging this last-mile gap, it has become India's most preferred payment mode—driving financial inclusion and enabling digital commerce, livelihoods, and everyday transactions even where traditional banking remains limited.

UPI has also boosted access to goods for consumers by enabling them to go online and shop beyond the limitation of the local stores. The trust on UPI has translated into online shopping. Beyond access to online markets, UPI has also enabled users to spend on unplanned and emergency purchases. Consumers are no longer limited by the amount of cash in wallet.

UPI has not only expanded digital payments but also unlocked richer consumer data, enabling fintechs and lenders to scale rapidly. With every micro-transaction leaving a digital trail, banks and fintechs can better assess cash flows and underwrite credit. Districts with high UPI volume growth (>100%) between FY23 and FY25 recorded a 10x higher CAGR in consumer durables loans and a 4.4x higher CAGR in personal loans compared to districts with modest UPI growth (<25%). Yet, new-to-credit penetration remains low, underscoring the opportunity to leverage UPI data for smarter underwriting and wider credit inclusion.

Notably, 2 out of 3 consumers feel it has become easier to access financing since they started using UPI.

Further, UPI is unlocking more time for productive activities with activities such as visits to the bank and ATM for cash reducing due to increased digital transactions. Cash withdrawals at ATMs have declined at a CAGR of 4%, while the overall number of ATMs has contracted at a CAGR of 1% over the past three years (FY23-FY25). Around 40% of the survey respondents mentioned that consumers in the survey have not visited an ATM in the last 1 month.

Ability to carry out P2P transactions seamlessly is a boon to the huge population of domestic migrant workers in India. Small migrant workers from rural areas are often paid in cash, and the traditional ways of sending remittances home had high turnaround time, cost and uncertainty. With UPI, it's now happening in one click.

A migrant worker from Bihar who works in Delhi, mentions how it has helped him send money home immediately during emergencies for his mother's health needs, instead of asking others to lend to his family which he would repay later in cash.

UPI has also left a lasting impact on certain sections of society. Homemakers, who were earlier dependent for cash, have been empowered with financial independence. It has also served as a social leveler, creating a sense of belonging for sections of society who did not have access to credit and debit cards.

UPI has well and truly uplifted the lives of consumers beyond convenience and the users acknowledge this. 2 out of 5 adopters say that they will switch shops if the shopkeeper does not accept UPI, instead of adopting cash again. 3 out of 4 adopters try to use UPI through another app, before switching to a non-UPI mode of payment, in case a transaction fails through one app.

Notes



Chapter 5

Catalyzing growth of micro and small business

As reflected in earlier chapters, P2M payments account for a large share (around 63% as of August 2025; increasing from 51% 3 years back) of all UPI payments⁴².

In the survey, 65% of the UPI accepting merchants mentioned that customers' demand for UPI has been their trigger for accepting UPI payments⁴³. But now that merchants have come onboard and experienced the change, they are also starting to realize the benefits of UPI. In this chapter, we will cover the reflections of merchants on the benefits of accepting UPI.

The MSME Sector is crucial for India's economic progress. The Government is taking multiple steps to support the sector. Recognizing this importance of MSMEs in catalyzing India's growth, and to be able to support itself to become more self-sustaining is in everyone's interest. It already contributes to more than 30% of GDP and employs more than 20%⁴⁴ of the working population. Moreover, MSMEs are expected to contribute 50% of India's GDP by 2030, and account for nearly 60% of India's exports, underscoring their critical role in shaping the country's economic future.

Digitization of the financial records of micro and small businesses and an ability to analyze them will facilitate

micro and small businesses entry into the formal financial sector. This will have multiple benefits. UPI, in its own way, is playing a critical role in this formalization journey. These payment transaction records are facilitating their access to capital. The ease of availability also goes to enhance their productivity.

Around 65 Million merchants are now using UPI and this number is expected to grow and will play a significant role in the larger formalization of the Indian economy with all its attendant benefits.

For MSMEs, formal financing is becoming more accessible as digital reforms take hold. Udyam registration, GST, and QR adoption have improved visibility. This has been further supported with increasing UPI adoption that has truly transformed the data landscape, creating continuous, real-time transaction trails that reveal business health and customer flows.

Lenders are tapping into this UPI-driven data, to underwrite with greater confidence and reach underserved and first-time micro and small business that have long relied on informal credit.

Exhibit 18: UPI enabling growth for MSMEs



42. NPCI data; As of September 2023; 43. BCG Survey: N = 950 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details Q: Top 3 ranked reasons due to which you started using UPI for receiving payments for your business?
44. MSME Annual Report 2021-22, Ministry of MSME, Government of India

Increased access to formal credit

Micro and small businesses have historically faced significant challenges in accessing adequate credit from formal financial institutions, often relying on informal sources despite the burden of higher interest rates. The increasing adoption of UPI by micro and small businesses is helping generating real-time digital

transaction records, enabling lenders to better assess creditworthiness and confidently extend formal credit to underserved businesses.

As illustrated in Exhibit 19, districts with high UPI volume growth (>100%) showed a strong positive correlation with business loan growth, recording a 4.2x higher CAGR in business loans compared to districts with modest UPI growth (<25%) between FY23 and FY25.

UPI is playing a key role in formalizing micro and small businesses activity and strengthening their digital footprint. These digital transaction trails are enhancing transparency and financial visibility, which in turn support lenders in better assessing creditworthiness. This growing trust and access to formal credit channels are contributing to business expansion, reducing reliance on informal borrowing, and fueling the momentum of India’s micro and small business economy.

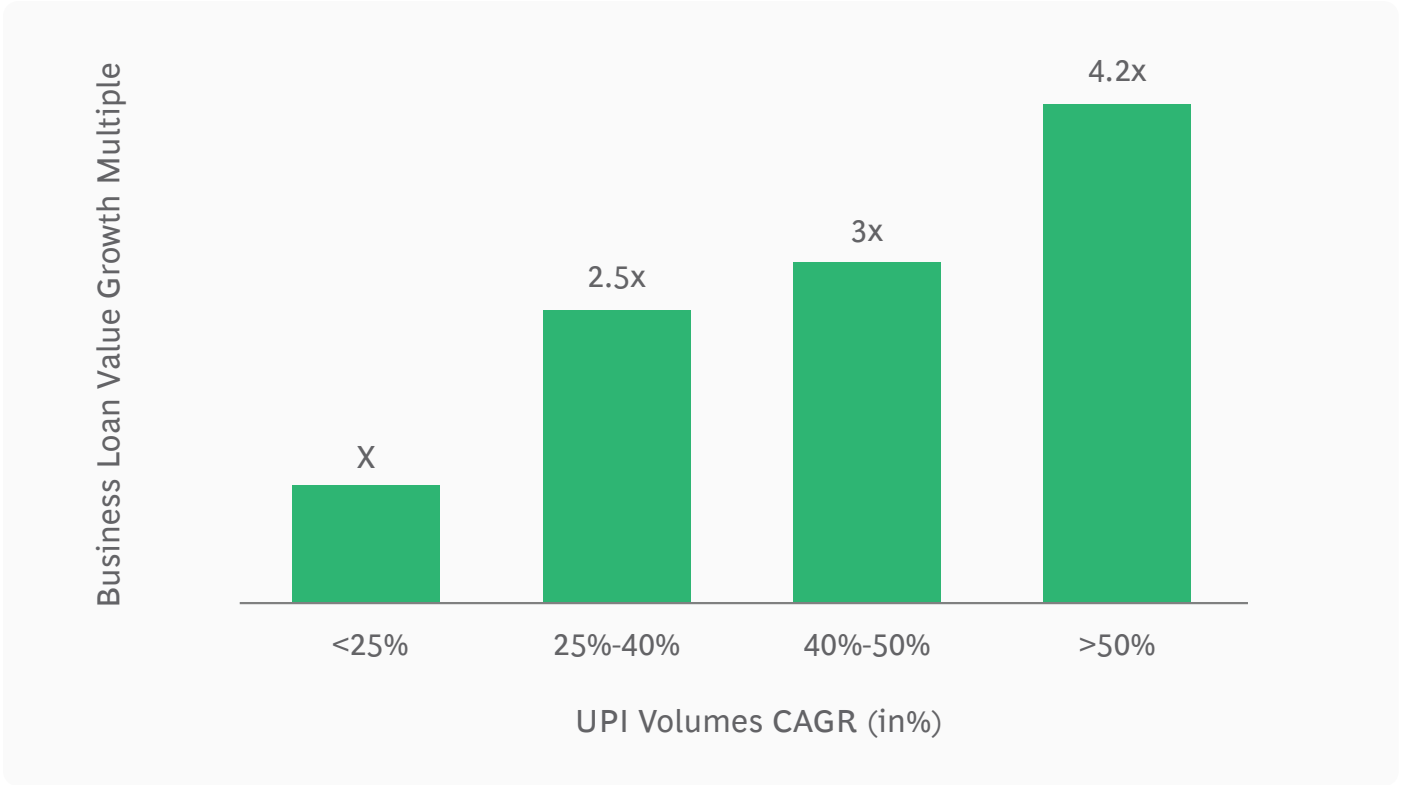
In the survey conducted, 80% of UPI accepting merchants reported easier and faster access to financing post UPI.⁴⁵

This shift from cash to account-based transactions has allowed SBI to harness transactional data through advanced analytics, enabling us to extend tailored, pre-approved credit lines to SMEs. Seamless fund collections via UPI QR and unmatched customisations have further strengthened our SME business, making UPI a true catalyst for growth.



–Nitin Chugh
(DMD, State Bank of India)

Exhibit 19: High correlation between UPI volume growth and Business Loan (10L-25L) Growth during 2023-2025



Note: X denotes the Business Loan growth in districts with <25% UPI volume growth for comparison, other values show multiple relative to it; UPI volume and Business Loans growth compared for period between FY2023-FY2025
Source: BCG analysis support by Experian Credit Bureau, NPCI Data

45. BCG Survey: N=950 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details; Q) Since you have started using UPI, do you think it has become easier to get financing such as loans, better credit limits etc. for your business?

Suresh, a 27-year-old, who runs a paan shop in Gurgaon, is the sole bread-earner of his family of 3. He wanted to grow his business. From approaching the local money lenders who offered loans at 25% interest rates, Suresh is now approached by lenders who are ready to give him loans at very low rates due to his stable monthly transaction value on UPI.



Because of UPI-related digital history of my revenues, I was sanctioned an INR 20,000 business loan via Paytm app with interest rate of 15% p.a. as compared to upwards of 25% interest from local moneylenders. This has helped me expand the business by moving to an improved shop location and manage inventory better.

—Suresh

Improved working capital management

UPI has helped improve merchant cash flow due to faster and easier collections of payments.

For small merchants there are two types of scenarios where UPI is helping with collections:

- The customer is not carrying enough cash and makes a partial payment
- Settlements of monthly khata (credit account) by customer

In both scenarios, multiple follow-ups were required, locking up payables until the customer came by and stopped at the shop again or until the merchant went to the customer's house to collect payments.

UPI now solves for both scenarios—on one hand, it allows customers to pay in full through UPI and on the other, UPI's feature of pull payments allows merchants to remind and collect payments from customers without any physical interaction.

Gopinathan is a 49-year-old kirana store owner in Thirumangalam (Tamil Nadu). He talks about how UPI has simplified collections for him.



Earlier, households used to maintain credit khata with me and settle monthly. With UPI, a greater number of households tend to pay immediately and for few who avail credit, I send them weekly pull requests on GPay freeing up my capital vs before. Also, whenever I used to lend money to my fellow shop owners and buyers, I had to personally collect—leading to delays as they didn't have cash at times. Now they can pay me via UPI as and when they have money or when I request for any part payments leading to faster collections.

—Gopinathan

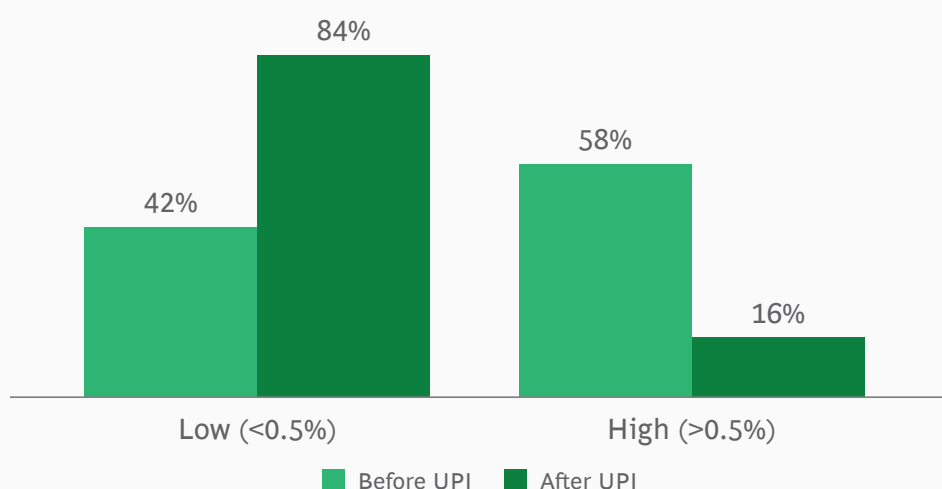
Increased margins with lower pilferage

The shift to UPI has helped merchants either eliminate or significantly reduce cash pilferage, adding to the margins. Due to lower share of cash payments, merchants have lower issues with torn or fake notes or wrongly counted notes which all result in lost payments.

About 39% of the UPI accepting merchants in our survey^{46(a)} reported zero pilferage after the adoption of UPI (compared with 20% as per 2023 merchant survey). Another 51% mentioned that their pilferage levels

have come down to less than 1% of their revenues due to UPI payments (compared with 31% as per 2023 merchant survey). In the survey, UPI accepting merchant^{46(b)} interviewed report that business losses from mishandling cash/cheques and accounting have reduced from over 1% pre-UPI to under 0.5% post-UPI. Hence, it is not surprising when 100% of the merchants say they used UPI for making and receiving payments for their business in the last 1 month^{46(c)}.

Exhibit 20: Business losses for merchants from mishandling cash/cheques and accounting before vs. after UPI



Source: 2025 BCG Merchant Survey, BCG Analysis

Priyanka, a 31-year-old mother of two is a street hawker in Indore. She sells Indian snacks such as pani-puri and dahi puri and earns INR 25,000 per month with more than INR 1,000 lost in pilferage. Now with UPI, aided by the sound box, she rarely deals with cash.



Previously, during rush hours, it was difficult to keep track of payments and at times I missed out on a few (~3 per day). I used to get around 10 torn notes every month—given by customers or due to my own mishandling (especially during monsoons). Now I face no such issues and can track my payments properly.

—Priyanka

46. BCG Survey: N=950 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details

46(a) Q: What is the approximate loss to your business due to mishandling of cash or cheques and accounting?

46(b) Q: What was the approximate loss to your business due to mishandling of cash or cheques and accounting UPI vs previously?

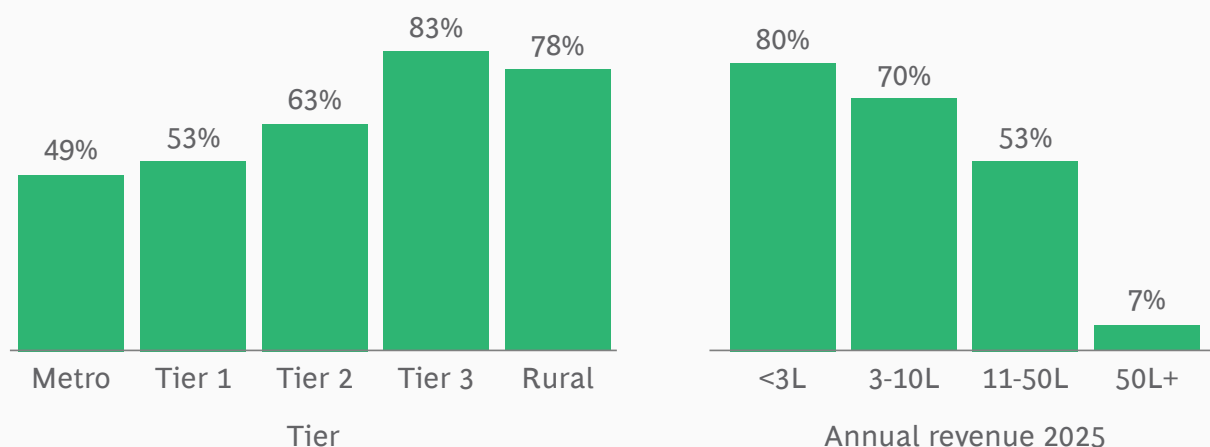
46(c) Q: Which of these platforms have you used for making and receiving payments for your business in the last 1 month?

Improved business productivity

With less cash, the time spent in its management (counting, collecting, storing, and safe keeping) has also reduced. With this time saved, merchants find themselves focusing more on customer delivery and business development. The ability to continuously service customers is translating to revenue increase in high footfall businesses like self-employed non-professionals, street hawkers, retail grocery, pharma retail, etc.

UPI accepting merchants in the survey⁴⁷ said that they experienced 59% increase in sales post UPI. In addition, 81% of the UPI using merchants in survey⁴⁸ acknowledged increased staff productivity at the counter especially during crowded/peak hours due to UPI Soundbox.

Exhibit 21: % increase in monthly sales for merchants before vs. after UPI



Source: 2025 Merchant Survey, BCG Analysis

Mohamed, a 34-year-old certified tour guide at the Taj Mahal says UPI has improved his productivity. After most tours, he had to wait for customers to withdraw cash from ATMs. Due to long queues, every withdrawal took 15-20 minutes, which ate into the time that would otherwise allow him to do another tour. With UPI now, he does five tours instead of four in the past.



Earlier, most customers did not have exact amount of change, so they withdrew cash from nearby ATMs, which had a very long queue most of the times. But now I get direct payments from them via my UPI app without any delay.

—Mohamed

47. BCG Survey: N = 950 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details; (a). Q: What is the monthly approximate revenue your business generates prior vs after usage of UPI?; 48. Q: Since using the soundbox, how has staff productivity at the counter changed at your business—especially during crowded/peak hours?

Better cash management

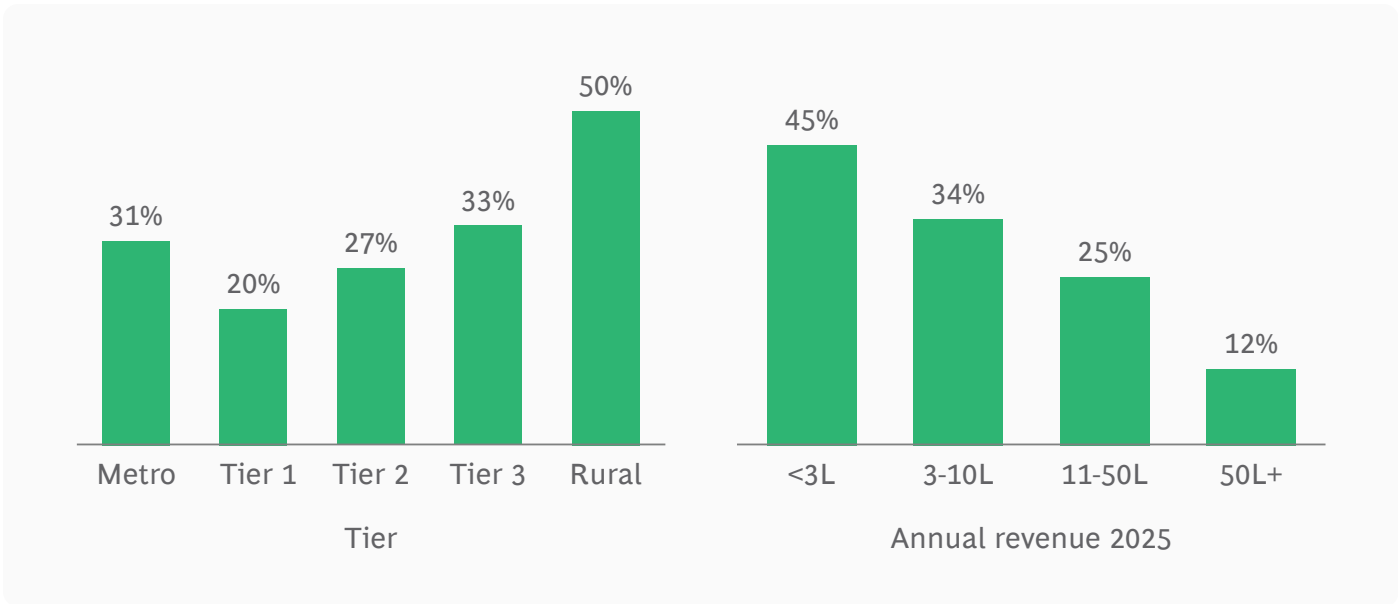
With UPI, merchants can now track all their transactions digitally. This reduces their dependency on cash registers that are plagued with missed entries due to customer pressure or just plain hurry at rush hours and are also prone to human errors. UPI has also helped merchants gain a sense of security at the workplace with business owners comfortable in delegating cash counter duties to other workers, allowing them more time to conduct core business duties.

Specifically for businesses with a front-end, the introduction of soundbox provided by the third-party apps played a major role in scaling adoption. Two-thirds

of the merchants today use the soundbox⁴⁹. These merchants no longer demand a look at the customer phone from behind the counter to confirm payment.

UPI accepting merchants in the survey⁵⁰ reported a reduction of around 30% in cash management costs (compared with 10-20% as per 2023 merchant survey). About 61% of the merchants reported that they are comfortable delegating cash management to other staff and 82% merchants reported ease in tracking transactions and no need to carry cash as top benefits of using UPI⁵¹.

Exhibit 22: % drop in monthly cash/cheque management cost for merchants before vs. after UPI



Source: 2025 BCG Merchant Survey, BCG Analysis

Swati, a 27-year-old clothing boutique owner and a mother of two, can track receipts better and spend more time scouting for newer products while the cash counter is managed by the staff. This has helped her explore new clothing material for expanding the product line.



Customers used to pay via cash earlier and because the average ticket size is INR 10-15K, I was always present at the store to collect cash. Now I usually spend two days in the market, while my staff handles the store end-to-end. I don't have the risk of losing cash since customers pay via UPI directly to me and I get SMS confirmation.

—Swati

49. Q: Do you use soundbox?; 50. Q: Have your cost management charges reduced post usage of UPI? If yes, how much?; 51. Q: Do you delegate cash counter duties after starting the use of UPI? Top 3 ranked reasons benefits of using UPI for your business according to you

UPI on delivery in e-commerce

The e-commerce industry, including giants like Flipkart and Amazon, experienced a big jump in their sales when COD (cash on delivery) was first introduced. However, it came with its own set of challenges—cost of carrying cash, more time required to receive payments, and pilferage. Estimates show that e-commerce merchants incur 20% higher costs⁵² in COD deliveries due to higher tariff demanded by logistics companies. While some merchants cap the value of COD purchases, others completely disallow COD purchases. With customers adopting UPI as a primary mode of payment, they are paying via UPI for COD deliveries as well. This has solved many challenges involved in COD orders.

It has also addressed the challenge of working capital to some extent, with e-commerce platforms receiving the payments for their sales paid through UPI settled with a turnaround time of 1 day vs. 7-10 days in COD.

As per a senior leader in a leading e-commerce marketplace, “Many of the COD orders are being fulfilled using UPI at the last mile when the delivery agent is collecting money.”

Reflecting this shift, COD is increasingly being redefined as ‘UPI on Delivery (UOD)’, signaling a broader move towards digital-first payments. Going forward, as recent UPI’s features such as Single Block Multiple Debits scale-up, users will be able to opt for postpaid using UPI, where the users can block the amount in account, which gets paid only after product delivery through UPI. With the provision of single block and multiple debits, the customers retain the money in their bank account while the merchants remain assured that the payment would be received after satisfactory delivery. This enhances trust in COD of the entire ecosystem. This even eliminates the step of scanning a QR and paying the delivery person. In addition, for prepaid orders, merchant plug-in instead of getting redirected to third party application providers (TPAPs) or payment gateways, will further simplify online purchases leading to a better experience.

UPI embedded in the lives of merchants

Unsurprisingly merchants adopting UPI are now fully dependent on the platform. With increased access to credit, reduced costs and enhanced convenience, merchants now see value in UPI payments in their business and are even willing to pay for UPI services.

With rise in digital adoption of consumers, this scenario for merchants is only going to get better. The share of

UPI in P2M transactions will continue to increase, and the merchants who use UPI will be able to grow their business faster and with more efficiency.

As a testimony to the stickiness, as many as 63% of the merchants⁵³ said that they are willing to pay a fee for using the platform.

52. BCG Analysis; 53. BCG Survey: N = 500 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details Q: What is the fixed percentage amount for each transaction that you will be willing to pay?

Key Takeaways

Chapter 5: Catalyzing growth of micro and small businesses

MSMEs contribute to more than 30% of India's GDP and employ more than 20% of the working population. UPI has unlocked multiple levers to unlock growth and catalyze these businesses.

Micro and small businesses have traditionally struggled to get their full credit needs met by the formal banking sector and thereby have resorted to informal sources of credit where interest rates are upwards of 30% per annum. UPI, by enabling digitization of the records of micro and small businesses, is contributing to facilitating easier and faster access to financing. This is helping formalize the ~65 Million merchants who now use UPI.

UPI volume growth has high correlation with business loan growth across districts. Districts with high UPI volume growth (>100%) showed a strong positive correlation with business loan growth, recording a 4.2x higher CAGR in business loans compared to districts with modest UPI growth (<25%) between FY23 and FY25.

UPI has helped improve merchant cash flow due to faster and easier collections of payments. Lesser transactions in cash also lead to lesser pilferage as merchants are able to do away with miscounting, torn, soiled and fake notes.

A street hawker in Indore said that with UPI, she no longer incurs pilferage of INR 1,000 (~USD 11.3) every month due to torn notes given by customers or due to her own wet hands damaging the notes during monsoon. She also feels that she can track her earnings better with UPI.

Further, time spent in cash management, maintaining cash registers, and tendering exact change for small value items is now allowing for more time on customer centric activities.

A tour guide at Taj Mahal mentions that with UPI payments, he doesn't have to wait for people to withdraw cash at the end of tours and thereby is able to do five tours instead of four.

UPI has also transformed the e-commerce space. The problems faced by companies due to cash-on-delivery are reducing as more customers are opting to make payments using UPI even at the last mile. COD is evolving to UPI-on-Delivery and innovations like Single Block Multiple Debit, will make this experience smoother.

Merchants adopting UPI are now fully dependent on the platform. With increased access to credit, reduced costs and enhanced convenience, merchants now see value in UPI payments in their business and are even willing to pay to use the UPI platform. The host of benefits offered by UPI will drive business faster and more efficiently for micro and small businesses, which would be key to fueling the growth of the economy.

Notes



Chapter 6

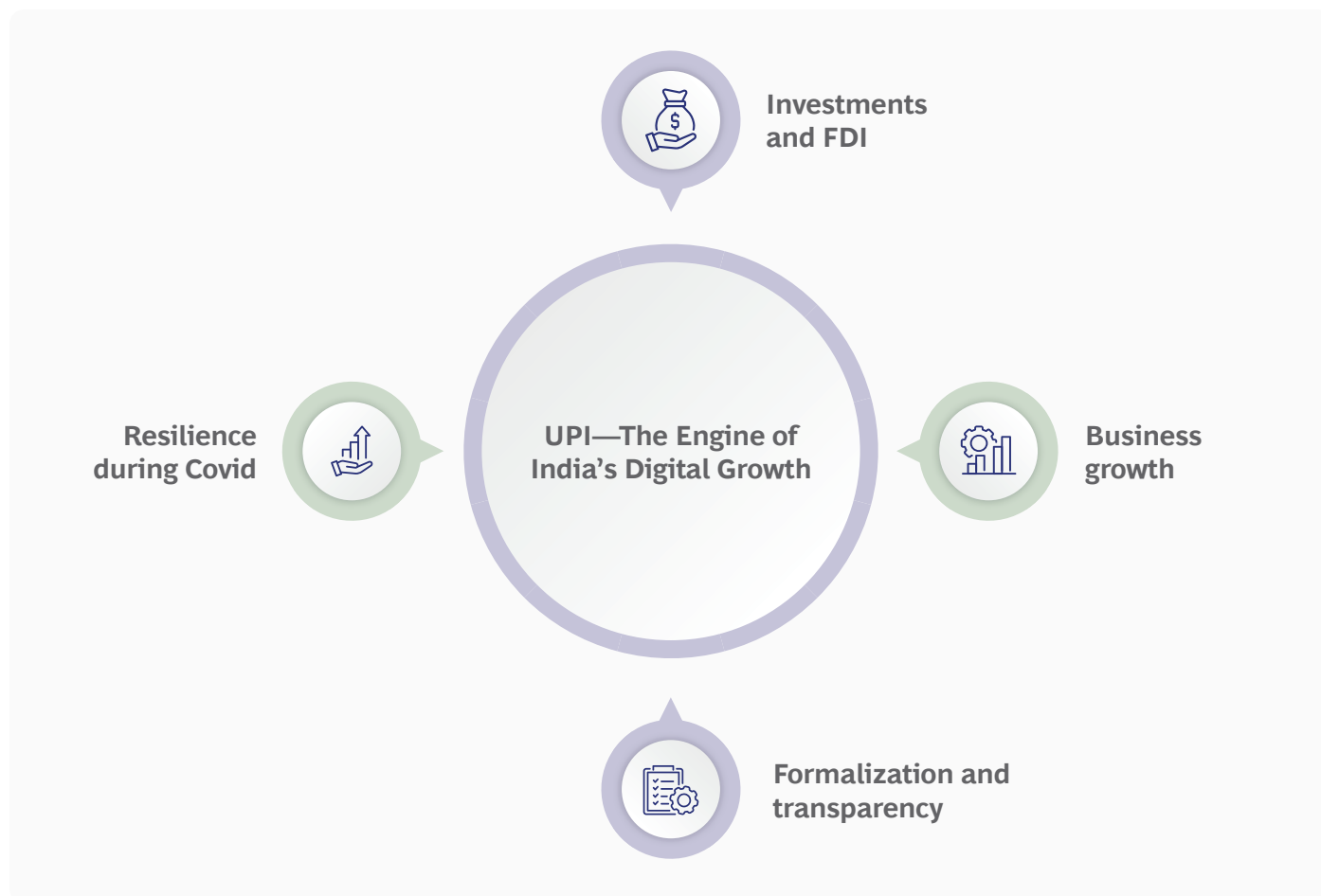
Benefits and influence of UPI on the economy

As we have discussed in the previous chapters of the report, UPI has clearly unlocked benefits for individual consumers and merchants. In this chapter we look at how all of that is influencing the macro-economic landscape.

Building on this widespread adoption, UPI has expanded rapidly across India, with transactions

recorded in every district. This ubiquity highlights not only the scale of digital payments adoption but also its ability to reach even remote and underserved regions. The resulting growth is not concentrated in a few urban centers; rather, it is broad-based, reflecting a structural shift in the financial behavior of both consumers and businesses.

Exhibit 23: UPI's influence on Indian Economy



Resilience during Covid

UPI helped the Indian economy to deal with the Covid shock better than most. In a period where there were lockdowns, UPI allowed spend to continue in a contactless manner and even enabled many businesses to quickly accept digital payments without any additional infrastructure. With UPI, people at all societal levels could do contactless transactions and hence kept commerce going. A comparison of India's private consumption to that of other cash heavy countries with similar national lockdowns to India, shows that India's private consumption during Covid fell by 6.6%,

i.e., ~2% lower than the average fall of ~9% in the other benchmark countries⁵⁴.

While there are many factors that would have contributed to this, UPI is definitely a critical factor. Jaspal, a 40-year-old kirana store owner in Delhi, says "My delivery person used to keep the goods outside the gate of the customers, and I would receive payments via UPI app. This helped me run and sustain my business during Covid lockdown."

54. BCG Analysis, Euromonitor database, Oxford COVID-19 Government Response Tracker, BBC Research

Contributing to formalization and transparency

While experts differ on the size and scale, it is well acknowledged that India has a large shadow economy. In the last few years, many structural steps have been taken to improve the formalization of the economy and help bring more efficiency through organized commerce. This includes launch of GST, introduction of NETC for tolls, UPI for digital payments, etc.

UPI is playing its role by rapidly replacing cash in P2M transactions. Merchants in our survey also reflected this change when they mentioned that they are receiving ~40% of their payments through digital modes, as against ~20% in the pre-UPI era⁵⁵. This formalization is not restricted to merchants, it also includes several professions such as doctors, lawyers, and tuition teachers, who were historically cash-intensive and have now moved to UPI.

The shift from cash to digital, along with many other Government of India initiatives, such as, Digital India, GST, etc., is driving more formalization of the unorganized sectors. Formalization will have two clear benefits for the economy—transparency and reporting of previously unreported commerce and additional addressable taxable revenue pools.

To estimate this impact, we can deep dive into the retail sector where 50-55% of the unorganized sector is informal. Since UPI has had its largest impact on micro and small merchants, we estimate that with continued penetration, UPI can potentially take up to ~20% more share in P2M payments in the next 2-3 years (reaching overall 60% of P2M commerce). Basis industry experts' estimates, this penetration can lead to around 10% of unorganized, informal retail trade getting recorded.

Fueling new businesses

UPI led to emergence of new business models which were not considered essential earlier but cannot be lived without today. UPI brought about remarkable efficiencies and

scale in e-commerce and hyper local commerce services by enabling a huge segment of the population to go digital with payments.

Acceleration of e-commerce

The total retail sales value of e-commerce took 15+ years to reach USD 15 Billion in 2017, and took just 5 years to reach USD 55 Billion by 2022 and then another 3 years to reach USD 145 Billion by 2024⁵⁶. UPI provided millions of people who didn't have access to debit and credit cards with a means to go online and shop.

Companies have also innovated to make the m-commerce checkout journeys seamless with the 'intent call payment' feature. The user does not need to enter the transaction amount or other card/net banking details and can just enter the PIN to complete the transaction. The volume of such intent call payments in m-commerce checkout has increased from less than 20 Million transactions in

FY20 to 5 Billion transactions in FY23, a growth of ~250x in three years⁵⁷.

UPI is soon becoming a preferred mode of payment for e-commerce and taking share from cash on delivery (COD) orders. One of the largest e-commerce players in India, mentioned that the value share of prepaid orders has increased from 30% to 50% from 2019 to 2023. The share of UPI payments in the prepaid order value has doubled from 10% to 20%, while in "pay on delivery" order value it has reached 10% from zero in the same period. Experts expect this trend to continue and for UPI to take up more share in e-comm sales.

55. BCG Survey: N = 950 merchants surveyed across Metro to Tier-6 cities, gender, employment, revenue, payment acceptance point; Refer Survey Methodology for details Q: Out of your monthly revenue from customers, approximately how much is contributed by online methods now vs prior to using UPI?; 56. Euromonitor; 57. NPCI data

New platform business models

Payment digitization with UPI has provided third party application providers (TPAPs) with a huge customer base to cross-sell multiple products. Fintechs have developed new offerings such as banking, digital loans and credit cards, insurance, e-commerce, deals and cashback, gaming, equity and options trading, travel, food, and entertainment, etc. Paytm, Jio and TATA Neu today have almost all the above

services and have transformed themselves into SuperApps. Other apps are also on their way to becoming SuperApps. While non-payment apps like Amazon and WhatsApp have entered the world of payments through UPI, the existing TPAPs (PhonePe, Google Pay) have entered other services like insurance, lending, shopping, entertainment, etc.

Attracting investments and FDI

UPI facilitated FDI of USD 6.8 Billion for businesses valued at USD 38.1+ Billion

More than 50 UPI facilitating fintechs, that created front end applications, UPI infrastructure and included UPI in payment gateways, collectively raised more than USD 6.8 Billion from foreign investors in the form of FDI⁵⁸.

The valuation of these fintechs combined is USD 38.10 Billion⁵⁹. Exhibit 24 shows the key statistics on the FDI raised by UPI facilitating fintechs.

Exhibit 24: FDI raised by UPI facilitating fintechs



Note: 1. The above considers FDI in UPI supporting fintechs since August 2016. Investments to the tune of USD 1,249 Million were classified as “Co-investments” by Indian as well as foreign investors for which a bifurcation was not available in the public domain; 2. Invest India Sources: Tracxn; Venture Intelligence; BCG Analysis; Invest India

58. Tracxn; Venture Intelligence; BCG Analysis; Investments to the tune of USD 1,249 Million were classified as “co-investments” by Indian and Foreign investors for which a bifurcation was not available in the public domain; 59. Does not include valuation of companies for whom details are not publicly disclosed

UPI revolution has just begun and will play a material role in India's 2047 vision

The Honourable Prime Minister of India has laid out the vision for 2047 for India to become a developed nation and the Honourable Commerce and Industries Minister has predicted that by 2047, India will become a global powerhouse of USD 35 Trillion⁶⁰. Achieving this vision will require unlocking many dimensions of transformation—accelerated growth of micro and small businesses, ease of doing business, rapid formalization of economy, strong investments in infrastructure, financial inclusion, large scale digitization, enablement of the nanopreneurs and self-employed community, beyond many other measures.

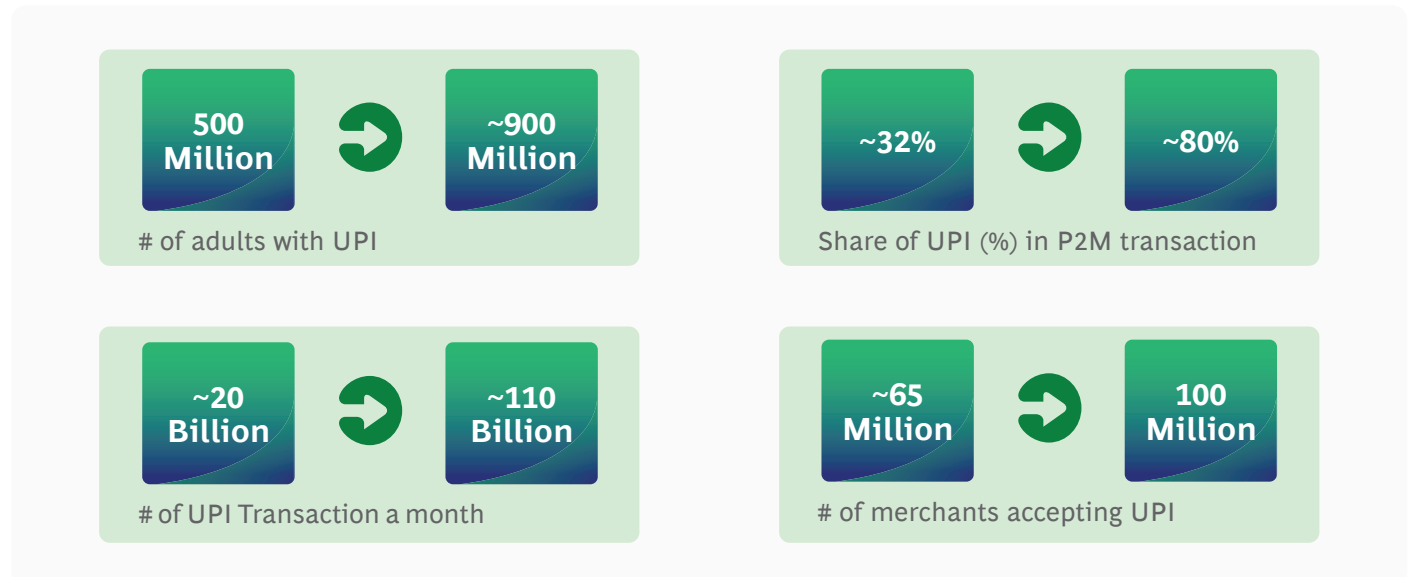
UPI even at its current penetration levels has had an influence on many critical factors contributing to growth of an economy which we have covered in the report, including:

- Increasing access to credit for micro and small businesses that contribute to 30% of the GDP⁶¹
- Increase in productivity for the nanopreneurs, self-employed gig workers

- Efficiencies and better margins for businesses with lower pilferage, cost of cash
- Contribution to increased private consumption expenditure with frictionless payment modes leading to higher velocity
- Contribution to formalization of the shadow economy together with GST and other Government reforms
- Fostering of new business models and growth in commerce
- Reduction in the burden of cost of cash on the ecosystem

Most important of all, UPI has also contributed to a significant lift in digital behavior at scale and strong financial inclusion. It is undeniable that UPI will have a large impact in transforming India over the next 10 years (Exhibit 25).

Exhibit 25: Expected growth in the various dimensions of UPI in the next 10-years⁶²



60. Developed India: Vision and Progress Towards 2047; 61. MSME Annual Report 2022-23; 62. (1) # of adults with UPI: Using the month-on-month data on the number of UPI users for 33 months, the M-o-M growth rate of UPI users was modelled using an exponential equation. Using this, a 10-year projection of the M-o-M growth rate was made, and the number of UPI users was forecasted accordingly. (2) # of UPI transactions a month: Has been computed as a product of (#UPI users in 2035) and (Average number of txns per user per month in 2035). #UPI users in 2035 has been projected in (1) above. (3) Share of P2M transactions through UPI: Has been computed as the ratio between projected value of P2M transactions through UPI to projected total value of all P2M transactions. As per BCG estimates, the total value of P2M transactions in 2035 is projected to be USD 7,155 Billion. The projected value of P2M transactions through UPI is computed as UPI Transaction Value (as computed in (3) above) × Share of P2M txns in UPI txns. As per BCG analyses, the share of P2M transactions in the overall volume of transactions is ~80%. As UPI scales, it is also expected to mirror this ratio. (4) # of merchants accepting UPI: Has been computed as a factor of the total number of VPAs. The number of VPAs have been projected using a forecast of the growth rate of VPAs. The growth rate of VPAs has been modelled using an exponential function. From empirical sources, it has been assumed that a merchant would have 2.5 unique VPAs on average. Using this, we project the number of merchants as a factor of the total projected VPAs.

Key Takeaways

Chapter 6: Benefits and influence of UPI on the economy

UPI played an important role in India's resilience during Covid, while other comparable countries struggled to keep the economy and private consumption afloat, UPI helped India to deal with the Covid shock better than the rest. India's private consumption fell by 6.6% vs. ~9% of other benchmark countries.

Along with other Government initiatives, UPI is playing a role in formalization of retail trade by moving transactions away from the shadow economy.

UPI has also fostered the acceleration of e-commerce with more consumers going digital. In addition, new platform business models are being created by fintechs riding on the UPI rails. More than 50 UPI facilitating fintechs, that created front end applications, UPI infrastructure and included UPI in payment gateways, collectively raised more than US\$ 6.8 Bn from foreign investors in the form of FDI. The valuation of these fintechs combined is US\$ 38.10 Bn.

With such influence on the macro parameters, it is undeniable that UPI would play an instrumental role in achieving India's vision for 2047 – of becoming a developed nation and a US\$ 35 Tn economy and transforming India.

Notes



Chapter 7

Decoding UPI's billion a day architecture

UPI is not just any other real time payments system, it is a first-of-its-kind real time digital payment system. UPI has been a pioneer in creating unparalleled user experiences and innovative use cases. With interoperability, it has solved for financial inclusion by democratizing payments and going beyond the banking system. It is designed to operate at low-cost, and this has cascaded on to the other fintechs that are building their own innovations on top of the rail.

But all of this has been possible only because of the state-of-the-art architecture. This architecture was built keeping in mind what would be instead of what exists

now. The architecture is ready to support the goal of handling a billion transactions a day. This chapter explores how UPI's architecture makes it superior to traditional payment modes on a range of parameters, including experience, security, privacy, resilience, scalability, replicability, and cost.

As illustrated in Exhibit 26, UPI has imbibed design which is different from traditional payment modes in not just architecture, fraud management, privacy, etc., but also in terms of use cases and experiences facilitated.

Exhibit 26: Comparing UPI with other digital modes of payments

	Key parameters	UPI	Bank transfers	Debit card	Credit card	E-Wallets
Architecture	Device bound	✓	✗	✗	✗	✓
	Interoperability ¹	✓	Limited	✓	✓	✓
	Open architecture	✓	✗	✗	✗	Limited
	Transaction completion TAT ^{2,3}	Real time	IMPS: Real time NEFT& RTGS: Batch	Batch	Batch	Real time
	Payee pre-registration	✗	✓	✓	✓	✗
Data	# Identifiers available	>1	1	1	1	>1
	Authentication	UPI Pin	OTP	OTP	OTP	MPIN
	Fraud rate (per Million)	Lesser than 0.02	0.5	———— 10 ————		0.02
Feature	Request to pay	✓	✗	✗	✗	✗
	Acceptance Infrastructure	QR Codes and POS Machines	NA	POS Machines		QR Codes
	Ease of confirmation	Audio confirmation via soundbox	NA	NA	NA	Audio confirmation via soundbox

✓ Yes ✗ No

Note: 1. Defined as access of different bank accounts for making payments using identifier and paying via multiple third-party apps;

2. Real-time: Payments which get debited from payer and credited to payee in real-time; 3. Batch: Payee not credited instantly

Source: NPCI data, RBI data, BCG Analysis, Press search

Scalable and resilient architecture

UPI has been designed to sustain high transaction volumes keeping in mind the future increase expected in its usage. One of the hallmarks of UPI is its Active, Active, Active (AAA) architecture. UPI's servers have been strategically positioned at three different sites and each of these sites boast the capacity to handle at least 200% of the current transaction volume. The servers collectively enable an AAA system in which the transactions are swiftly switched to alternate servers in case of failures, guaranteeing continuous, uninterrupted services to its users.

UPI's distributed hardware enables horizontal scalability, when needed, as well. This ensures that the systems

can process more transactions with every increase in server block, as and when required. Each server block is continuously monitored using observability and deep metrics. As soon as a fault is detected, auto recovery is triggered and that fault is fixed, with minimum physical intervention.

UPI also employs throttles to detect slowness, unresponsiveness in infrastructure, to proactively protect the ecosystem and maintain transaction flow. UPI servers also create transaction footprint in multiple systems which allows systems to keep running even in the face of catastrophic failures.

Security embedded in design

Apart from its ability to scale up, while being resilient, UPI is also designed to be secure. UPI employs a multi-layered fraud and risk management framework that operates at both the bank level and the UPI switch level.

With device binding, UPI ensures higher security. In each transaction, the device/SIM is validated as the first factor of authentication. The second factor involves the use of a UPI PIN—a user-specific code that must be manually entered by the sender on their mobile device. This two-factor authentication eliminates risks such as card skimming, phishing, or cloning as it does not rely on a physical card.

However, security by design doesn't stop with the payments journey. In the context of such heterogeneous payments volume, it is essential to recognize and curb

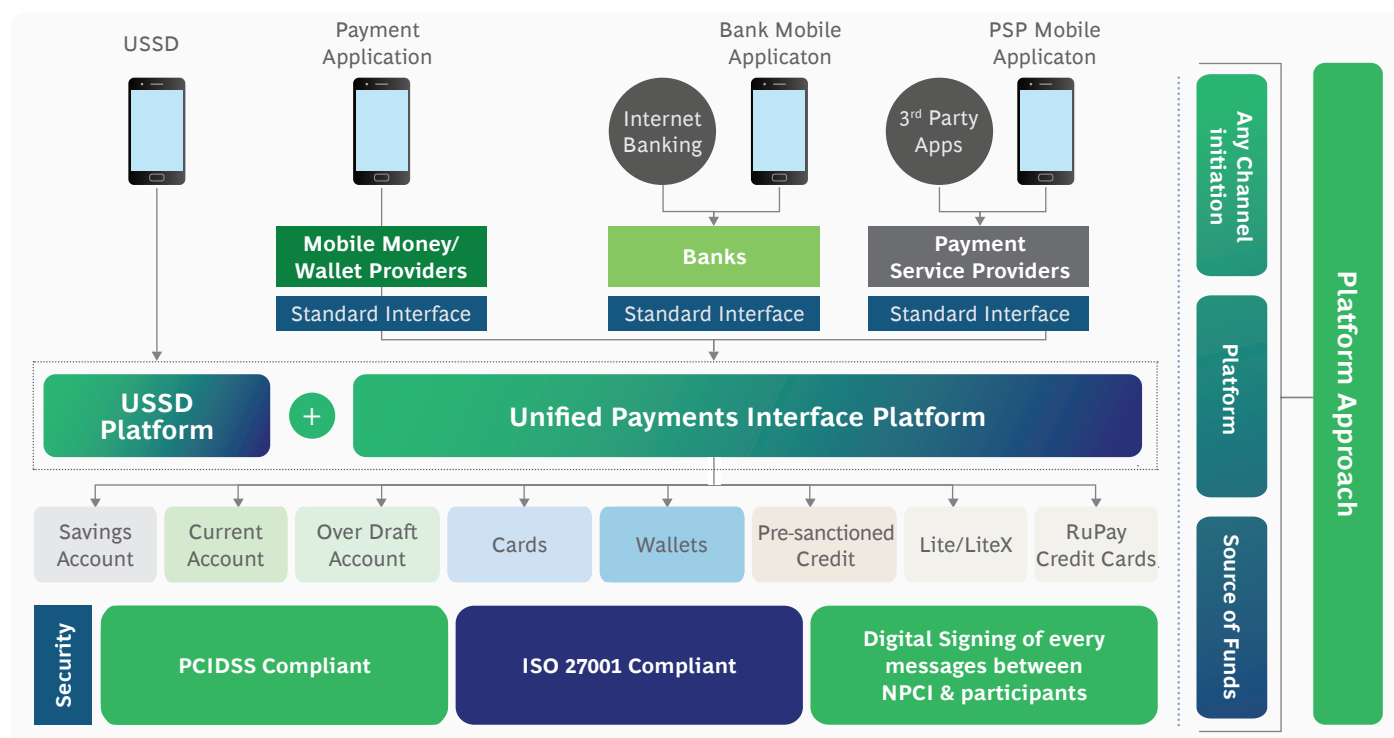
fraud patterns that can exhibit significant variations. To limit fraud, the system leverages behavioural intelligence to monitor spending patterns, applies stringent transaction and limit controls, and enforces binary spend-level checks to curb suspicious activity in real time. Further, NPCI utilizes both supervised machine learning models, such as random forests and boosting algorithms, as well as unsupervised models like auto-encoders to detect fraud. NPCI has also let go of traditional storage methods, such as relational databases and has employed graph technology to enhance predictive capabilities and strengthen defenses against fraudulent activities. This is complemented by continuous knowledge sharing with banks, ensuring that emerging fraud signals are rapidly identified and mitigated across the ecosystem.

Open source and open to all

UPI's open architecture has democratized payments, leading to fair competition. Open architecture fosters an environment of innovation where private sector players can introduce novel and user-centric products. With the rise of UPI, the number of people with the ability to make digital transactions has increased drastically.

This has allowed these fintechs to have a huge customer base, and hence they are now able to scale faster. They are also innovating more and providing services like insurance, credit, entertainment, trading, shopping, etc. to their users.

Exhibit 27: UPI's platform architecture



Source: NPCI

Built using open-source software and tools, UPI fosters a high level of scalability that greatly benefits both the platform and the fintechs that build on it. The choice of open source facilitates rapid and cost-effective evolution. It allows continuous update and adaptability, ensuring that UPI remains at the cutting edge of functionality. The absence of licensing fees also makes it cheaper for fintechs to innovate on the UPI rail.

The platform's native APIs allow for seamless adoption and rapid market entry given that there is no dependence on other software for integration and scaling up. In-house core APIs empower developers to integrate convenience features, authentication schemes, and user-friendly interfaces easily on UPI. The technical failure rates of UPI are 0.6%⁶³, which is very low in comparison with the other modes of payments, averaging at around 4% (for cards)⁶⁴.

Collaborative approach with ecosystem to drive innovation

Notably, the Third-Party Application Providers (TPAPs) of UPI process nearly 90% of UPI transactions⁶³. This is possible largely due to the interoperability offered by UPI which allows users to choose from multiple applications to access their bank accounts for transactions.

Development transpires across various strata of UPI's architecture, encompassing customer payment apps, payment aggregators, payment infrastructure, and Value-Added-Services (VAS). Managing and rallying this ecosystem has been a key element to the success of innovations on UPI. As new features or innovations are developed, it is done in consultation with all the stakeholders. Problem statements are laid out for every party to express their opinion and propose solutions.

The expected customer experience is aligned with the ecosystem. It is a democratic process that results in the best solution. With NPCI not dictating the process, the ecosystem members feel more involved and hence, feel greater ownership. With the ecosystem involved in the new development from the beginning, readiness for implementation begins simultaneously for all stakeholders.

New features are simulated within NPCI's certified test environment/sandbox prior to release. When successful, zero touch onboarding is carried out for all ecosystem members across the country. This ensures that most ecosystem members are live with the feature in one go and users can seamlessly start using the new feature. This collaborative approach ensures ecosystem success.

63. NPCI data (as of August 2025); 64. Pay.com; Midmetrics (15% of card transactions declined of which ~25% technical declines)

Online dispute resolution system

Adding to UPI's experience is its unique redressal mechanism. UPI Help is UPI's online dispute resolution mechanism which acts as a one stop solution for customers to raise any complaint for UPI related transactions through any UPI application. It enables customers to resolve UPI related complaints on the application itself and check the status of pending or failed transactions. It also enables merchants to initiate full or partial refund against the complaints raised by customers where goods and services are not provided against successful transactions. The entire process is online, real time and transparent. The process works with minimal human intervention and makes the systems

across the ecosystem talk to each other. The user is not required at any step to visit or raise complaints with the bank or the merchant, thus reducing the hassle and the time required for resolution significantly. In August 2025, 6.7 Million transaction⁶⁵ were resolved using the UDIR mechanism.

Additionally, in case of pending transactions, if a user does not take any action, UPI Help proactively attempts to auto-update the final status of the transactions on the application. It triggers an API to the remitter bank or beneficiary bank to check and retrieve the status of the pending transactions.

Committed to user data privacy

UPI is also unique amongst all digital payment systems because it comes the closest to protecting the privacy of users like cash transactions. UPI uses the principles of minimum data capture and data dispersion to provide data privacy. Conventional digital payment methods like credit card, debit card and net banking, store and disseminate an array of data elements, encompassing transaction specifics (TRN, RRN), account details, card information, and even merchant and terminal identities along with location, allowing easy profiling of the user.

On the other hand, the UPI ecosystem captures minimum data at every stage of the transaction. UPI

also disperses this transaction data across banks, Third-Party Application Provider (TPAP), Payment Service Providers (PSPs) and NPCI, ensuring no one entity holds the centralized repository for every transaction. This decentralization eliminates the concentration of data power and simultaneously makes the creation of user personas through transaction records impossible.

UPI's stringent privacy guidelines also compel TPAPs to uphold data privacy through user consent mechanisms at the time of registering on the platform.

UPI Chalega!

It is beyond doubt that the viral effect that UPI has set in motion in both consumers and merchants will only continue to deepen its presence in the country. Over the next few years, it is expected that UPI volume will grow 5X from the current 20 Billion per month to 100 Billion

per month. This growth will come from both increase in average transaction per users and addition of more users and the UPI architecture is clearly scalable, resilient, and ready to handle such volumes.

65. NPCI data

Key Takeaways

Chapter 7: Decoding UPI's billion a day architecture

UPI's architecture has been built keeping the future in mind. It has imbibed design that is different from the traditional payment systems in terms of its build, user experience, security, privacy, resilience, scalability, replicability and cost.

UPI's Active, Active, Active architecture provides resilience to the system and keeps large volume of transactions flowing without disruptions and delays. The ability to scale horizontally makes UPI ready to handle multifold transaction volume in the future. The device binding plays a huge role in security of each transaction.

The open architecture has democratized payments, allowing non-banks to equally participate. Nearly 90% of all UPI transactions are processed by TPAPs. The collaborative approach in the ecosystem created by NPCI to drive innovation is unique to UPI. The ecosystem members are made a part of innovations through consultations and laying out problem statements for every party to propose solutions. This approach ensures the best customer experience with every feature and makes the ecosystem members feel greater ownership for it.

Built using open-source tools and software, UPI is cost-effective and allows rapid go-to-markets. This also reduces costs for fintechs innovating on the rail. The in-house core APIs allow easy integration of convenience features and authentication schemes giving it the lowest technical failure rates (~0.6%) as well.

Transaction disputes on any UPI transaction can be raised online through the respective TPAP, without the hassle of going to banks and merchants.

UPI's privacy commitment to its users is also unwavering. It practices privacy by dispersion, where every entity stores minimum data, and no entity holds complete data of any transaction.

Notes



Chapter 8

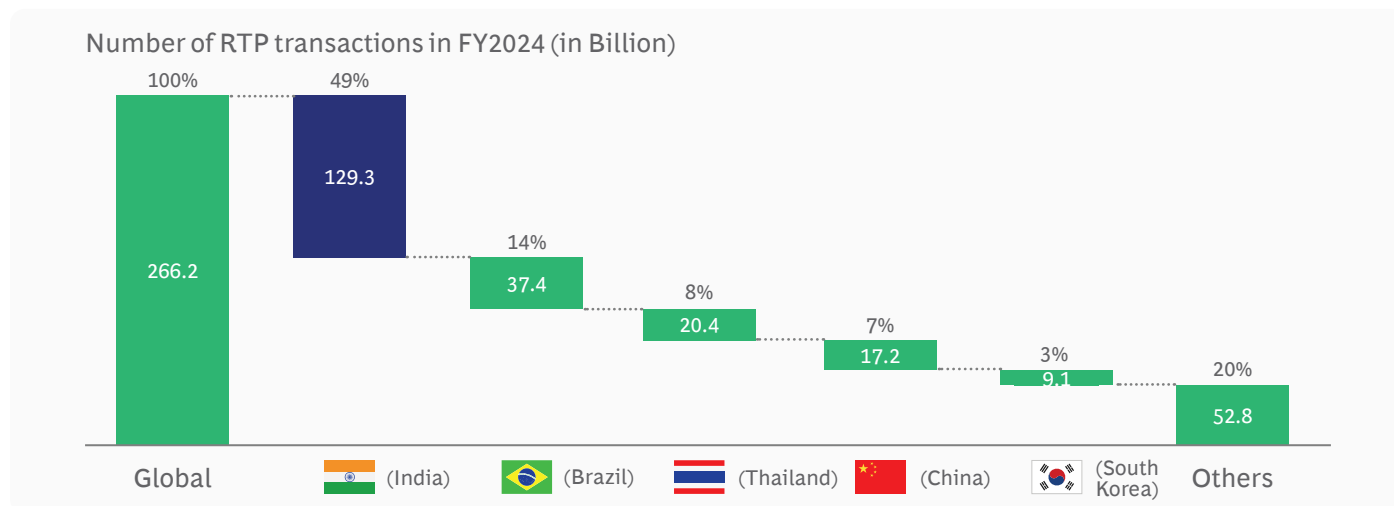
Global standard for digital payments

UPI is a global leader in real-time payments

UPI is currently the largest real-time payment system rail in the world. Exhibit 28 shows that UPI has around 50% (at 129.3 Billion transactions) share in the global real-time

payment volume (266.2 Billion transactions). It is followed by Brazil's PIX, which is almost one-third of UPI.

Exhibit 28: Share of global real-time-payment volumes of top countries

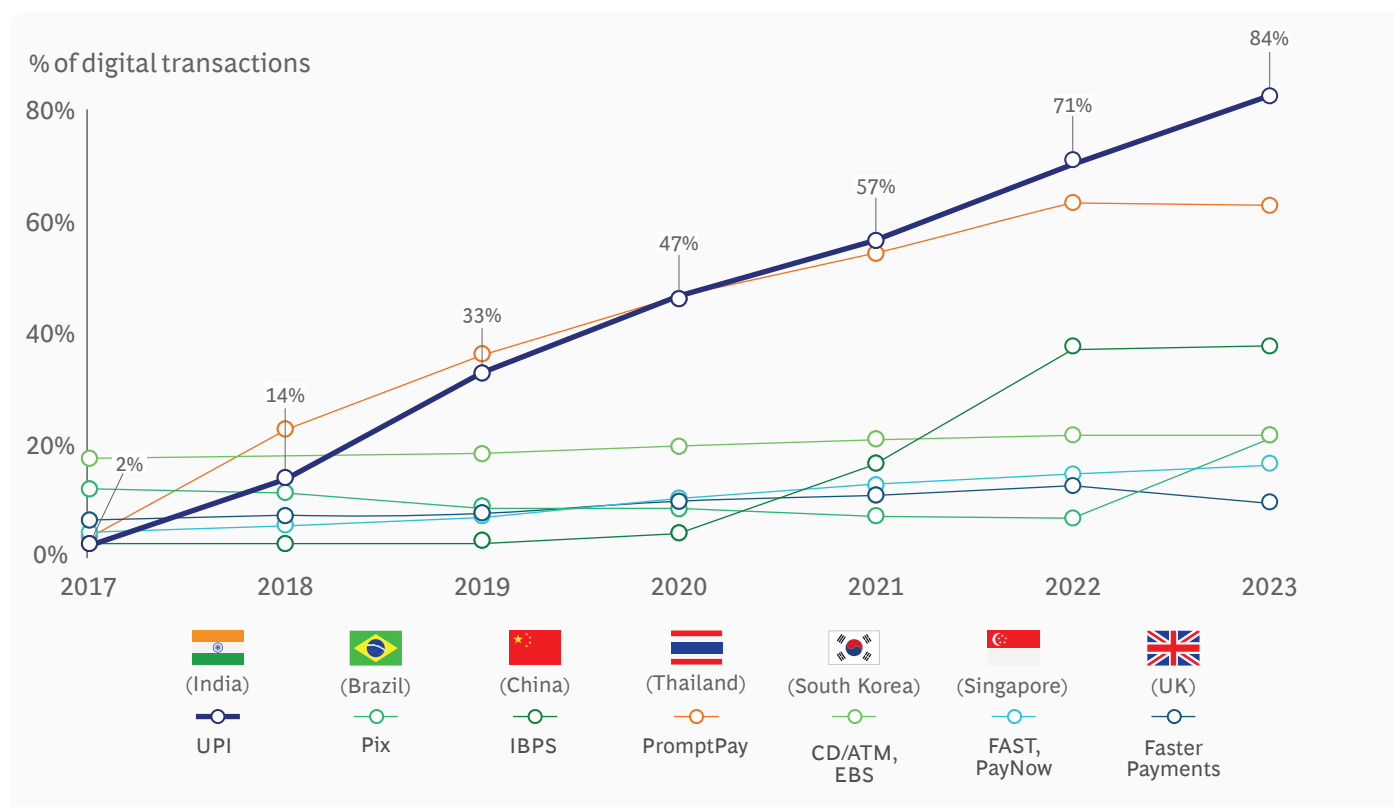


Source: ACI Worldwide Prime Time for Real-Time 2024

It is fascinating to observe that despite the complexities of dealing with a wide diaspora of consumers, significant cultural/behavioral differences between various states, cities, etc., UPI has been the fastest to scale in the world.

UPI's volume growth has achieved a CAGR of 221% between 2017 and 2025, even on a larger base, reaching 84% of total digital payments in India (refer Exhibit 29).

Exhibit 29: Comparison of countries on percentage of digital payments that are real time (India, Brazil, China, Thailand, South Korea, Singapore, UK)



Source: RBI data; ACI Worldwide Prime Time for Real-Time 2024

Comparative view of UPI and other successful fast payment systems

When comparing UPI to other successful digital payment systems, we see that UPI has innovated to solve for multiple use cases and made itself suitable for multiple transaction types.

Exhibit 30 shows a limited study of features and architecture of fast payment systems of Brazil, Singapore, and Thailand i.e., Pix, PayNow, and PromptPay, respectively in comparison with UPI. UPI, having been in the space for longer, has innovated more on its platform and has improved user experience through high interoperability and more features.

Some of the design aspects where UPI has taken a different approach from the other payments systems are messaging standards, inclusion of non-banks in the ecosystem, building the architecture on open source and being protocol agnostic, among others.

UPI uses XML as its messaging standard for India and ISO 20022 for international expansion. XML is not limited by data elements and tag lengths. Thus, it provides greater flexibility in communication. This allows UPI to develop new messages easily to accommodate new/better functions. UPI introduced third party applications, i.e., non-bank service providers to facilitate UPI transactions. The presence of TPAPs has made UPI 100% interoperable. Being open source, it provides a layer of innovation to these participants of the ecosystem, which elevates the level of private innovation. The innovation within UPI has made it protocol-agnostic so that payments can be made by scanning QRs or tapping on NFC enabled devices.

All the below factors exhibit the progress of UPI across the years and its journey to improve itself through continuous innovation making user experience better every day.

Exhibit 30: Comparison of successful digital payments systems

	Theme	Parameter	UPI (India)	PIX (Brazil)	PayNow (Singapore)	PromptPay (Thailand)
1	Messaging standard	-	XML (India) ISO 20022 (International)	ISO 20022	ISO 20022	ISO 20022
2	Inter-operability	Protocol Flexibility (type of a/c that can be added)	Savings, Current, Overdraft, Pre-sanctioned credit line, PPI, e-RUPI, RuPay Credit Card on UPI	Current, Savings, PPI	Savings, Current	Savings, Current
3		Participants in the ecosystem ¹	Banks and non-banks equally allowed to link to any bank account of the user	Banks and non-banks offering transaction accounts link to their respective accounts	Banks and e-wallets can participate and link to their respective accounts/wallets	Non-banks do not participate; Banks allowed linking to their respective bank account
4	Authentication on application	-	Device/SIM binding providing first factor of auth; Static PIN used as 2 nd factor auth	Txn. initiated through bank interface or wallet, following respective auth	Txn. initiated through bank interface (MB/IB) or e-wallets following respective auth	Txn. initiated through bank interface (MB/IB) following respective auth

	Theme	Parameter	UPI (India)	PIX (Brazil)	PayNow (Singapore)	PromptPay (Thailand)
5	Transaction limit	Transaction limit	INR 100 Thousand ² Limit of 20 txn per day for consumers	BRL 1k between 8pm to 6am on P2P payments	SGD 200 Thousand daily limit ³	THB 2 Million per transaction
6	User experience	Aliases/ Identifier	<ul style="list-style-type: none"> • Self-generated UPI ID • Mobile number 	<ul style="list-style-type: none"> • Mobile number • E-mail • Tax ID • Random number generated by BCB⁴ 	<ul style="list-style-type: none"> • Mobile number • NRIC/FIN number⁵ • VPA/UEN (Unique Entity Number) 	<ul style="list-style-type: none"> • National ID • Mobile numbers • Corporate registration (tax ID) • Merchant ID • E-wallet ID
7		Request to Pay	Yes	Yes	Yes	Yes
8		QR initiation	Yes	Yes	Yes	Yes
9		Mandates	Yes	Yes	No	No
10		Single block multiple debits	Yes	Yes	No	No
11	Credit confirmation to beneficiary	Request to Pay	Yes	Yes	Yes	Yes
12	Innovation	Autopay on QR	Yes	Yes	Not available (recurring mandates not supported)	Not available (recurring mandates not supported)
13		Tap and pay	Available	Available	Feature not available	Feature not available
14		Merchant Plugin	Allows banks to integrate their applications with merchants directly to accept payments	Merchant apps can use initiation service to launch Pix, however merchant plug-in not supported	As transactions are processed through the bank interface, merchant plugins do not exist	As transactions are processed through the bank interface, merchant plugins do not exist

Note: 1. UPI–Non-banks include third party applications and wallets. Pix–Non-banks include financial and payment institutions offering transaction accounts (demand, savings, and prepaid accounts); 2. Some MCC codes have been allowed INR 200 Thousand; 3. Subject to the user's bank's daily local transfer limit; 4. Central Bank of Brazil; 5. National Registration Identity Card (NRIC) number and Foreign Identification Number (FIN)

Fast receiving global acclaim

Given its tremendous success in India with rapidly expanding use cases and its forward-looking innovations, UPI is ready to go global. Apart from providing recommendations to countries on

the best approaches to develop their real-time payment systems, some eminent organizations and tech giants have lauded UPI for its massive scale and open architecture. Here are some notable mentions:

FedNow should be an open system (akin to UPI) because this openness fosters collaboration between technology and financial services providers.



—Mark Isakowitz,
Vice President, Government Public
Policy (US and Canada) at Google ⁶⁶

India's Unified Payments Interface is an excellent example of technology boosting financial inclusion.



—Kristalina Georgieva,
MD, IMF ⁶⁷

India has created something 'truly special' and is opening a world of opportunities for micro and small businesses that are the backbone of Indian economy. And frankly, I think that a lot of other places around the world are going to be better off when they follow some of this lead that India has set, in creating public goods like this.



—Mark Zuckerberg,
CEO, Meta ⁶⁸

Look at what India has accomplished with the UPI, Aadhaar, and the payments stack, and you will see the value of having an open, connected stack which works. I use it [UPI] as an example around the world.



—Sundar Pichai,
CEO, Alphabet ⁶⁹

66. US Federal Reserve Actions to Support Interbank Settlement of Faster Payments, Docket No. OP—1670; 67. Policy Priorities for the G20: One Earth, One Family, One Future—by Kristalina Georgieva; 68. Fuel for India 2021; 69. Interview to Economic Times dated Dec 22, 2022

Key Takeaways

Chapter 8: Global standard for digital payments

UPI handles the largest real-time payments volume in the world at around 50%. It has been the fastest to scale among its peers to take over the volume share in digital payments. UPI's volume growth has achieved a CAGR of 221% between 2017 and 2025, even on a larger base, reaching 84% of total digital payments in India.

It is fascinating to observe this growth which has overcome the complexities of dealing with a wide Indian diaspora of consumers that exhibits significant cultural and behavioral differences between various states, cities, localities, etc.

A study of UPI with other successful digital payments systems—PIX in Brazil, PayNow in Singapore and PromptPay in Thailand—provides insights into the factors contributing to UPI's growth. While each system has evolved to meet the specific needs of its local market, UPI has taken a distinct approach in certain design elements, including the adoption of open-source architecture, support for non-bank participants, use of unique messaging standards, and a protocol-agnostic framework. These choices have enabled the development of an interoperable and inclusive digital payments ecosystem tailored to the Indian context.

With the forward-looking architecture and innovations, UPI has received acclaim from global entities such as Google, IMF and Meta, among others.

Notes



Chapter 9

Journey has just begun, stage is set for Global Interoperability

UPI is just less than a decade old and has transformed the payment ecosystem in India. Yet, it has only scratched the surface. The current network effects are expected to bring more consumers onboard and spur more innovation. The opportunities on this platform are limitless.

UPI has been continuously innovating across the payment value chain and trying to make every step of the payment process seamless with exceptional experience. UPI has evolved at every part of the payment experience—from the onboarding onto a UPI app, to accessing funds and

spending avenues, to the ways of making payment. However, it does not stop here. There are more features that UPI is working on, such as, single block multiple debits, to solve for not just complex financial payment journeys but also for the non-financial journeys that help simplify the lives of its users further.

In this chapter, we would like to highlight some of the developments and envision the art of the possible on this platform along the payment journey (as highlighted in Exhibit 31).

Exhibit 31: UPI's innovation across the value chain



Source: NPCI

Onboarding simplified

Onboarding using Aadhaar with OTP

Since its launch, the only mechanism of coming onboard a UPI application was through debit card and PIN. In September 2021, NPCI introduced another onboarding mechanism of Aadhaar with OTP. The move enables inclusion of people who either do not own a debit card or their debit card is inactive. For credit lines and e-RUPI vouchers, Aadhaar with OTP has been made the primary method of linking with account. Since Aadhaar remains the same throughout the lifetime, unlike a debit card

which might change every few years, this move has reduced the hassle significantly. In August 2025, around 3.9 Million users⁷⁰ have already used Aadhaar to change their UPI PIN.

With time, UPI may also start biometric based onboarding, such as, iris and fingerprint scans binding the UPI account with the user completely.

Expanding source of funds

UPI allows its users to access funds through a multitude of different sources, unlike any other payment system. Users can link their savings account, current account, overdraft account, prepaid account (wallet) and RuPay Credit Card

with UPI. They can also use e-RUPI as a source of funds. With recent developments, RBI has also brought credit accounts in the ambit of fund sources, enabling pre-sanctioned credit line linking to UPI.

RuPay Credit Card on UPI

The introduction of linking of credit cards to UPI, (started with RuPay Credit Cards), provides the best of both worlds—UPI and credit cards. While experiencing the convenience and wider acceptance of UPI, customers can also accumulate benefits like cashbacks and take advantage of offers that make credit cards lucrative. It will also enable merchants who cannot afford POS machines to accept credit card payments.

RuPay Credit Card on UPI has the potential to save costs on physical cards for the banks since the payments can be done directly through mobile phone. This can completely revolutionize the point-of-sale experience for all.

Pre-sanctioned credit line on UPI

In Sep 2023, the scope of UPI was expanded to include credit lines as a funding source. Under this use case, payments through a pre-sanctioned credit line issued by a Scheduled Commercial Bank to individuals, with prior consent of the individual customer, are enabled for transactions using the UPI system. This has the potential to revolutionize the way credit is administered with a simplified user interface to consume credit lines. It allows the consumers to utilize UPI functionalities such as AutoPay, one-time mandates, etc. using their credit line accounts.

The banks can delve into flow-based lending where the credit line can be increased based on user behavior and repayment patterns. For merchants, access to credit line based on the revenue flow will greatly help in working capital management without adding to costs to the income statement.

A credit line linked to UPI also allows users to enjoy the feature of converting purchases through UPI into EMI—during or post transactions, further improving the capacity of purchase for customers and translating into increased sales for merchants.

70. NPCI Data

Categories of transactions are ever expanding

Users can do a plethora of purchases and transactions with UPI. While UPI started off as a method of peer-to-peer transfers, it has moved on to person-to-merchant transactions. Today UPI can also be used to subscribe to set one-time mandates, set EMIs and make recurring loan payments, purchase e-RUPI vouchers for pre-specified purposes among many others.

Mandates: Recurring

UPI autopay allows setting recurring payments for a preferred merchant using a static QR that can be scanned through any TPAP. The user no longer needs to navigate through the merchant app/website to set autopay, thus enhancing convenience for both businesses and customers.

Autopay proves valuable for businesses aiming to lower their customer acquisition cost (CAC). The reduction in

Mandates: Single block multiple debit

Single Block Multiple Debit combines UPI's one time mandate and autopay features. It is an enhanced version of the mandate services of UPI as it allows funds to get blocked at the time of creation of the mandate and debits the funds only after the service or good is delivered. This provides assurance that the payee has sufficient funds to pay once the obligation is fulfilled. It is also a boon to the customer who has the security to wait till service delivery before making the payment. In case the service is denied/is unsatisfactory, the customer does not have to go through a long refund process.

Such mandate services are specifically useful in making payments to stockbrokers or e-commerce merchants where the fulfilment of delivery of goods/service shall happen on later date. In case of payment to brokers, the customer need not transfer the trade amount to the brokers account prior to trade. The customer can simply block the amount in their account for repayment later on a successful trade.

UPI Global

UPI also launched UPI One World that allows foreign travelers and NRIs to onboard onto the UPI platform using a valid passport and visa document. It enables a

The scope of UPI payments is ever increasing, and it would not be difficult to imagine that in the future, all of a user's daily needs would be fulfilled through UPI payments.

friction for customers, who otherwise must go through the checkout process repeatedly, reduces the customer churn. Autopay on QR further reduces the friction by allowing the customer to subscribe to goods/services with utmost ease by enabling minimum time and minimum navigation that too without opening the merchant application.

Similarly, for e-commerce orders, where there are multiple items in a single purchase, the value can keep on debiting from the blocked amount after each individual item is delivered.

The refund process can be replaced in such cases where the merchant saves costs and time, since payment reversal becomes as simple as releasing a block with an online request, while for the customer the money never leaves the account and hence the customer is not anxious for the refund.

Another use case for single block and multiple debits is in cases of travel, such as, hotel bookings. The merchant can place a block on the amount at the time of booking and remain assured that the customer has sufficient funds in the account and hence can pay at the end of the service completion. This acts like the pre-authorization functionality of cards world.

prepaid account which the travelers can use to make UPI payments anywhere.

Innovation in payment experiences

While there have been improvements in the journey of onboarding, accessing funds in different account types, and the number of use cases for UPI, the biggest innovations have come along the act of payment itself. UPI is moving towards a protocol agnostic payment method. One can pay through any method—scan and pay, tap and pay, set recurring payments, block funds and debit later, sending

vouchers and so much more. While some of these features are already live, such as Lite, LiteX and pre-sanctioned credit line on UPI and have gained momentum, others are scaling up, such as, conversational payments, autopay on QR and fuel payments from the car. And yet many more are being developed.

Lite: Easing the load on banks

NPCI, to bolster the accessibility and utilization of digital payments, launched UPI Lite. UPI Lite is an indigenous wallet system whose primary goal is to induce pin-less or one-click transactions for the customer and reduce the load on the CBS. While it started with the limit of INR 200 (~USD 2.3) per transaction and then expanded to INR 500 (~USD 5.6). RBI has recently announced that the limit can go up to INR 1,000 (~USD 11.3) per transaction, with a ceiling of INR 5,000 (~USD 56.4) within the in-device wallet or UPI LITE account due to high transaction volume of INR 1,000 (~USD 11.3) and below transactions nearly 70% of the UPI transactions.

Since the wallet-based payment eliminates multiple micro-transactions hitting the banking system in real-time, it efficiently supports the future goal of billion a day while reducing critical load on the core banking system. UPI Lite also brings UPI closer to cash by allowing a model where the user withdraws cash from the bank account and stores it in the wallet for all spends. This also declutters the user's passbook while at the same time maintaining an easily trackable digital record of all the expenses. As of August 2025, UPI Lite already has more than 95 Million transactions⁷¹.

LiteX: Unlocking offline payments

While UPI Lite has eased the strain on the core banking systems of banks, consumers still face challenges in using UPI in low network areas. To address this issue, NPCI announced LiteX—a solution designed to enable offline payments between two electronic devices using NFC (Near Field Communication) technology.

LiteX transactions are even faster since the payment data is transmitted directly between the payer and the payee device and does not involve an intermediary

system. Its transaction value limit is set at INR 2000 (USD ~22.5) or below, to ensure that all high value transactions are approved online for greater security and risk minimization. This revolution cuts through the economic differences and allows all users to access digital payments equally. LiteX allows UPI to operate in terrains that face connectivity concerns. Users in such areas can now make all their transactions in the offline mode through the wallet and once the devices are online, money is settled in the payer and payee wallet.

Tap and Pay

The offline transactions unlocked by UPI can take multiple forms such as, pay to a smart QR, NFC enabled soundbox or a UPI smart tag. Tap and pay operates like scan and pay, except that the receiver UPI ID is picked up through NFC instead of a camera. A smart QR is NFC enabled allowing tap and pay in the offline mode. The

soundboxes can also be enabled with NFC and the user can simply tap on the soundbox to make the payment. The introduction of UPI smart tags has the capability to turn every feature phone into an NFC enabled one for accepting payments. With this, UPI again demonstrates its principle of inclusion.

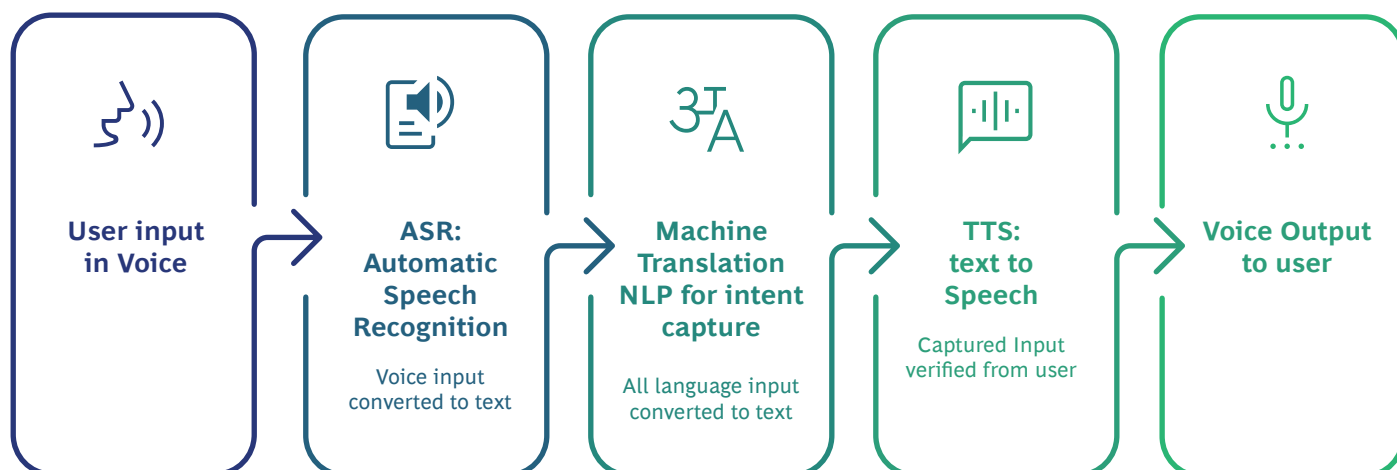
Conversational payments

In August 2023, RBI approved the development of “conversational payment” in UPI. The solution uses Reinforcement Learning and Natural Language Processing (NLP)-based speech recognition models where the UPI apps will be able to collate all the payment

information by voice command and only require the user to input the UPI PIN, making it a “uni-input” solution. The solution can be accessed either over a telecom call or a UPI app. Exhibit 32 below shows the process flow in conversational payments.

71. NPCI Data

Exhibit 32: General process flow in Conversational Payments⁷²



While UPI was the only payment service that offered multiple languages to drive inclusion, conversational payments will now allow further inclusion by allowing voice commands in multiple languages. The scope of conversational payments when integrated with other

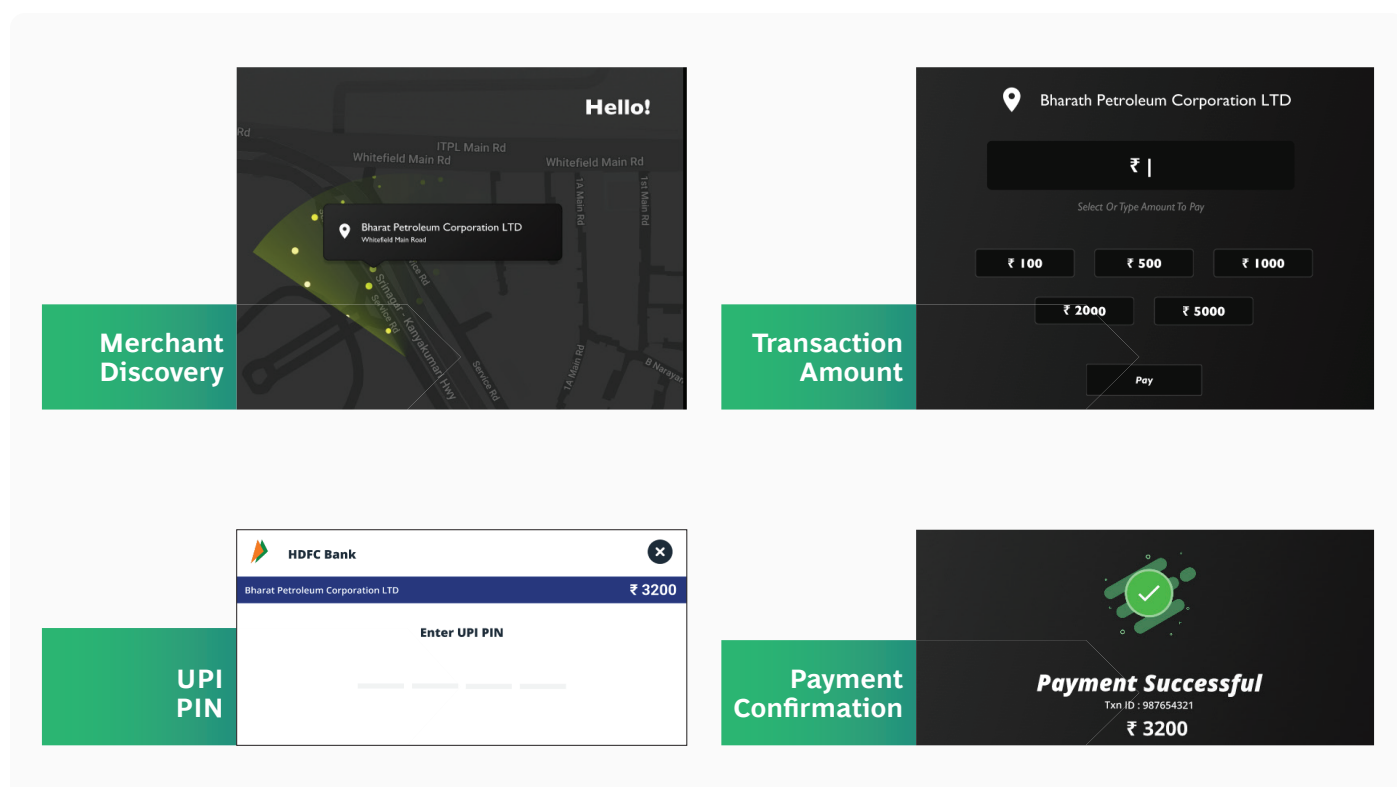
service platforms can open a range of use cases, such as, making P2P and P2M payments, booking movies tickets, making healthcare appointment, trading stocks—all through voice commands.

Payments at fuel-filling stations

UPI is solving for customer convenience at an unparalleled level, where the user does not even have to step out of the car to make payments for fuel. The user can simply check near-by fuel stations on the car's infotainment system and select the preferred station. The beneficiary details of the station are automatically fetched from a central database.

After refill, the user only needs to enter the fuel amount followed by the UPI PIN on the infotainment system to make the payment. The fund is directly transferred to the respective pump company and the personnel at the station gets a confirmation on the POS machine. The user can then just ride away from the station. Exhibit 33 shows the consumer journey for this use-case.

Exhibit 33: Consumer journey for making payments at fuel-filling stations⁷³



72. NPCI Data; 73. NPCI Data

Merchant plug-in

Merchant plug-ins are a way to shorten the cycle of making payments for purchases done on e-commerce applications. The merchant UPI plug-in allows the merchant application to operate as a non-exclusive PSP and during cart checkout lists the UPI ID and the associated remitter account of the user on the merchant app itself. This is in addition to the option of payment through UPI along with others (cards, net banking, pay on delivery, etc.).

UPI Circle

UPI Circle, introduced at the Global Fintech Festival 2024, allows primary UPI users to delegate payment responsibilities to trusted secondary users. This feature enables secondary users to initiate or complete transactions within defined limits, enhancing financial

The user simply selects the UPI account displayed, enters the PIN on the next page and makes a successful purchase. In the entire journey, the user is nowhere redirected from the merchant application to the TPAP/bank application for payment and then back to the merchant app to confirm payment and order status.

management for dependents without needing a separate UPI-linked bank account. The system allows delegation to up to five secondary users, with security measures such as biometric authentication and transaction limits.

Non-financial journey for user convenience

With so many developments to make payments smooth and accessible to all, UPI is trying to solve the non-financial journeys associated with payments as well.

One of the examples of this is in the field of mobility. Imagine purchasing a metro ticket while sitting at home.

At the metro station, the user only needs to scan the QR code from the phone at the metro entry and board the train, thus eliminating the entire journey of purchasing a ticket at the station or keeping track of the balance on the metro card through card reading machines available only at the metro station.

White-labelling BHIM: Innovation for the ecosystem

In a recent strategic move, BHIM devised an ingenious B2B2C approach for its UPI build. This approach involves open sourcing the BHIM app and Payment Service Provider (PSP) code to regulated entities. This will empower the entity to deploy and customize the BHIM app and PSP solutions, ensuring a consistent user experience across platforms. The move has the potential to scale BHIM's user base significantly.

Moreover, BHIM is also offering a plug-and-play Software Development Kit (SDK) tailored for banks, ensuring

seamless UPI (Unified Payments Interface) compliance in a multi-tenant environment. This will help banks reduce their development time and costs significantly.

This initiative fosters flexibility, efficiency, and innovation in the digital payment landscape. In the future, BHIM may also start offering customization services to entities, tailoring the app and PSP solutions to meet specific requirements, thus improving experience for the user as well as for the banks.

Looking beyond domestic payment

Global interoperability of payment systems is the natural antecedent to global commerce becoming a reality. Globally interoperable payment systems will be faster, affordable, and more secure than other cross-border payment mechanisms and will promote global commerce further. The ability to conduct real-time transactions seamlessly regardless of jurisdictions is what would truly enable international economic and financial integration.

Such a network of mutually compatible payment systems would unlock a host of benefits to all participants of the ecosystem. First and foremost, it would reduce the infrastructural costs and complexities involved in establishing a link between multiple payment systems.

This, by extension, would increase efficiencies in payment processing viz. lower transaction fees, faster processing, and enhanced transparency. A globally interoperable system would also provide impetus to healthy competition and innovation as operational complexities and switching costs would be eliminated. As per a report by World Bank⁷⁴, interoperability of payment systems can also allow system operators and Governments to gain a more holistic view of payment flows. Such a view can help these entities combat fraud more effectively, such as, identifying mule accounts. Looking at the broader picture, interoperability of payment networks has the potential to enable ubiquity of reach and boost financial inclusion at the global front.

114. Interoperability in Fast Payment Systems (Focus Note) dated September 2021

Bringing the payment world together

With the success achieved in India and the state-of-the-art visionary architecture, UPI has the capability to boost the financial interoperability of nations. It is already rapidly expanding beyond the physical borders of India. NPCI, through its subsidiary NIPL, is strategically partnering with countries to help their Governments/central regulatory bodies to uplift their existing domestic payment systems by directly transferring technology under the 'Digital Public Goods' initiative, launched by the Government of India. It is also working with other countries to integrate their payment systems with UPI to enable efficient cross border payments for remittances as well as merchant payments on foreign grounds.

India has established partnerships with Singapore, UAE, France, Mauritius, Nepal, Bhutan and other countries on similar lines. UPI's planned expansion to over 20 countries by FY29 is poised to transform cross-border remittances, making them faster, more affordable, and seamless. With UPI infrastructure also being cheaper as compared to other networks, the overall cost of remittance in the economy decreases, not just for India but also for the partner country. As more and more merchants start accepting UPI, it will have the potential to unlock affordable, fast, and efficient global commerce.

Exhibit 34: Roadmap of UPI going international



PayNow-UPI linkage

With Singapore, India has established a network for P2P transactions between the citizens of these two countries. Powered by PayNow on Singapore's end and UPI on India's end, the users of these platforms can send and

receive payments at a much lower cost than traditional methods⁷⁵. The beneficiaries also receive the funds instantly, unlike in other systems where the turnaround time is usually more than one day.

Remittance and merchant payment architecture

The transaction flow for receiving inward remittances involves four additional parties over those involved in a domestic transaction—an International Remittance Partner (IRP), NIPL's Fraud Risk Management (FRM) engine, a compliance screening bank, and a settlement bank. The IRP is the intermediary between UPI and the payer's international bank. The compliance screening bank performs anti-money laundering and compliance checks while the FRM engine runs limit and velocity checks. However, the user does not experience any observable difference and receives the remittance instantly.

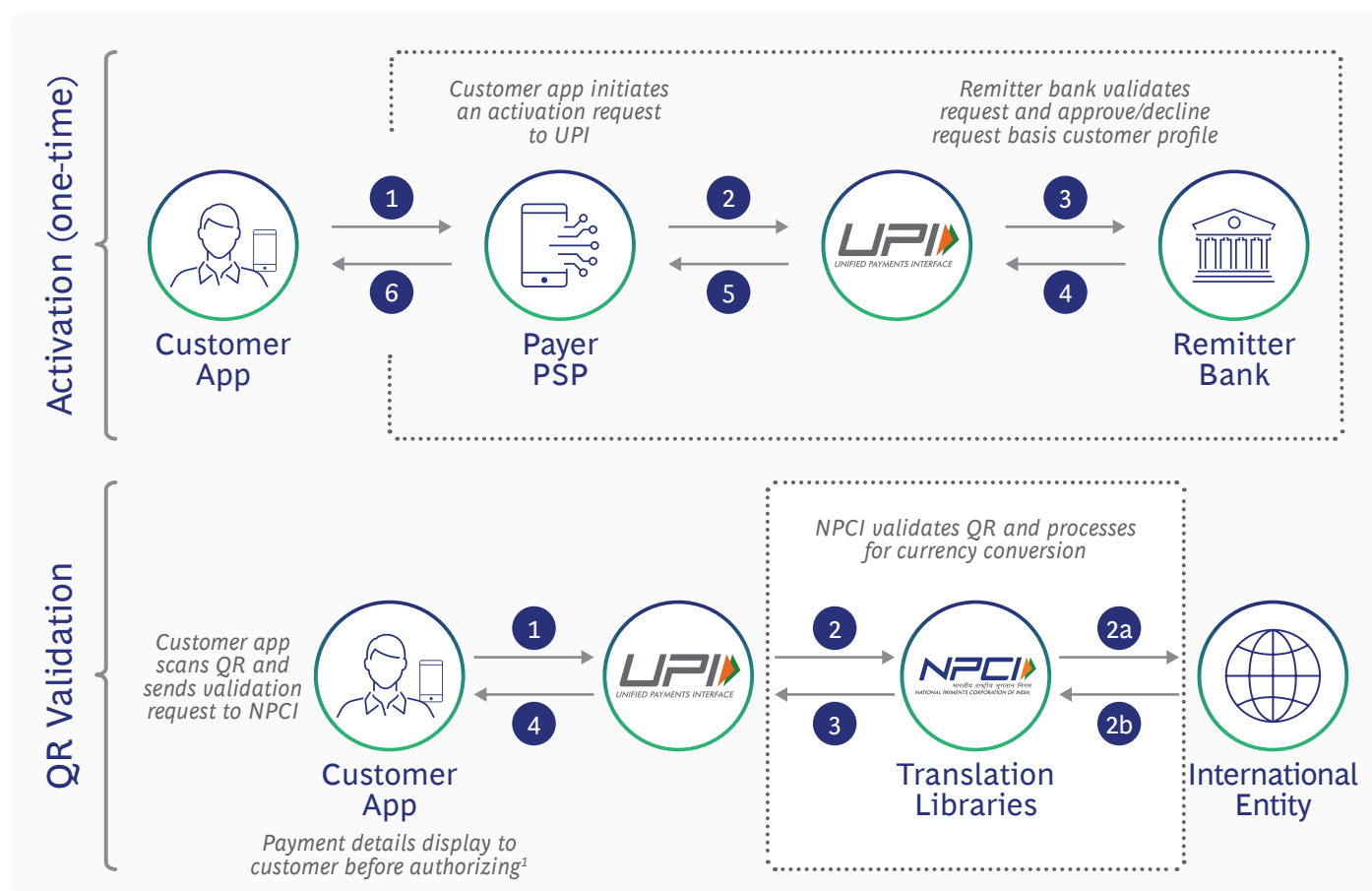
Similarly in outward remittances, once a user initiates the transaction, the payer bank⁷⁶ first validates the payee details with the IRP. The payer bank is required to run a compliance screening of the payer to ensure that RBI's Liberalized Remittance Scheme (LRS) norms are met.

Once validated, UPI authorizes the IRP to debit the payer bank's nostro account. The IRP runs a compliance screening, credits the beneficiary account, and responds with the transaction status, all within seconds.

Essentially, the UPI-PayNow linkage ensures that none of the required regulatory compliances are compromised but, at the same time, the transaction is executed in real time.

The collaboration between UPI and NETS of Singapore also allows tourists from both countries to make purchases at point-of-sale using UPI. Tourists do not need to carry forex cards or carry higher amounts of cash for emergencies. Payments through UPI are also cheap with low forex conversion charges applied on either end. Adding to this, is the user experience that is the same as making a payment domestically.

Exhibit 35 (I): UPI transaction flow for international P2M transactions ~ Non-Financial Flow



75. NIPL data; 76. Payer's bank to be an Authorized Dealer (AD) Bank as per RBI norms.

Exhibit 35 (II): UPI transaction flow for international P2M transactions ~ Financial Flow

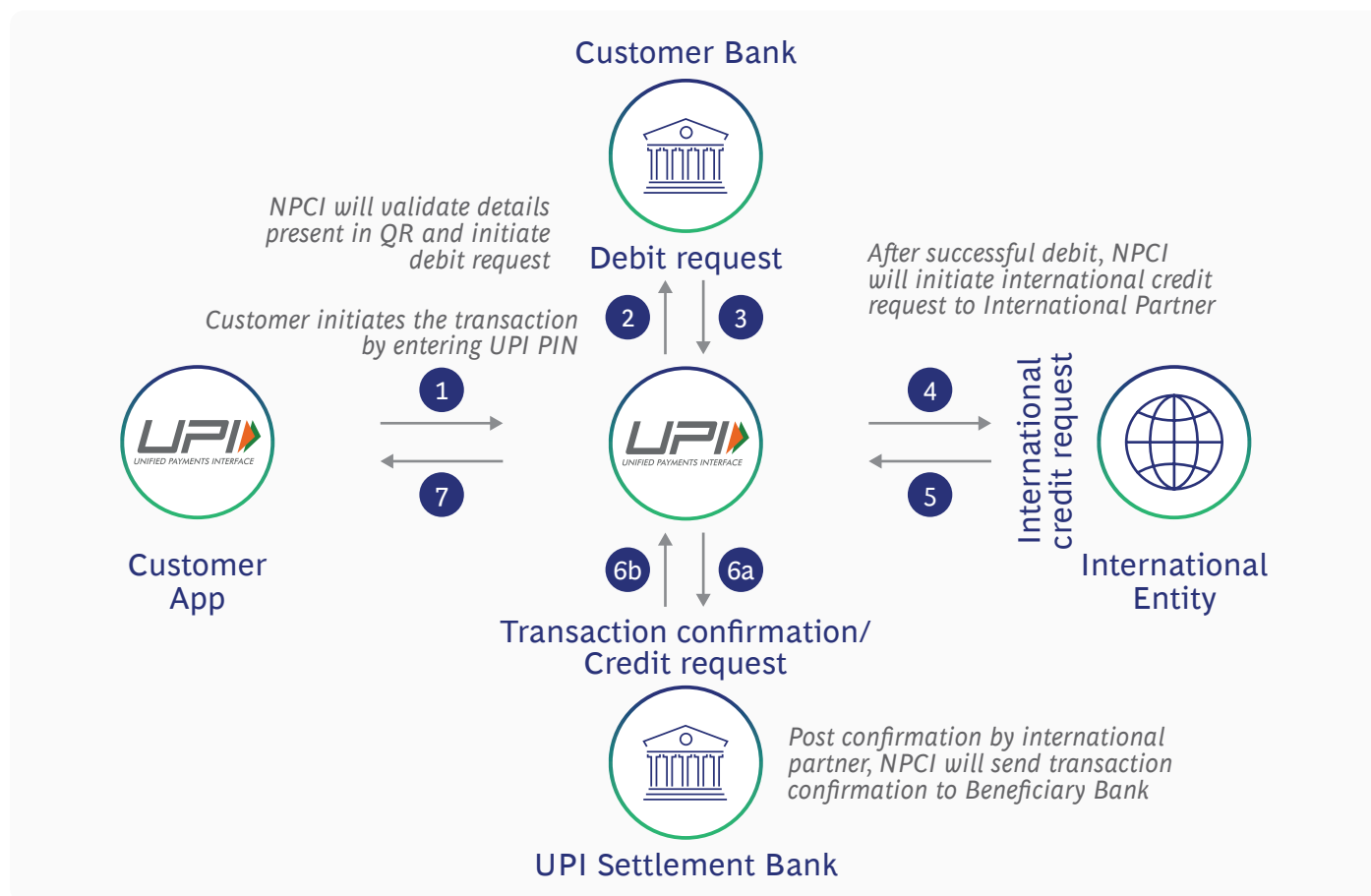


Exhibit 35 above illustrates the transaction flow of P2M scan-and-pay mode. The transaction flow is like domestic payments, except that it involves an international partner that interacts with NPCI. Another party—an FX partner allows accurate currency conversion as per the

real time exchange rate and displays the exact amount to be deducted. While all the processes run in real time, the user feels no difference in experience in payments. This allows hassle free spends and has the potential to uplift foreign spends.

Furthering strategic partnerships

UPI's partnership with other countries and its endeavor to uplift other countries by enhancing their payment capabilities through technological assistance, consulting and infrastructure is a huge contribution to the global financial net.

The structure, operating model and design of UPI make it a very replicable model for other countries and hence can help solve the challenge of cash. Many emerging markets in the Global South and even developed economies in the North can benefit by replicating the architecture, operating model, and approach of UPI.

The UPI technology transfer to other countries that have potential but lack the financial or technological

resources will allow these countries to have sovereignty over their UPI based domestic platform. Due to UPI's build on open source, it will allow the country to digitize at a much lower cost as compared to digitization through the traditional method of cards.

As per the Global Partnership for Financial Inclusion (GPFI), Digital Public Infrastructure has the potential to help countries leapfrog digital transformation and advance financial inclusion and productivity gains.⁷⁷

While the reality of global interoperability is a few paces away, the journey has already begun. And UPI has a huge role to play in this journey.

77. Global Partnership for Financial Inclusion under the G20 India Presidency

Key Takeaways

Chapter 9: Journey has just begun, stage is set for Global Interoperability

UPI has been an exemplary innovator throughout, continuously improving the payment value chain—onboarding, funding sources, transaction categories and payment experiences. Onboarding was eased with Aadhaar with OTP and passport and visa for foreign travelers in India.

The funding sources have increased from CASA to overdraft, pre-paid (wallet), credit card and now credit accounts. e-RUPI voucher—one of the most interesting sources can be given to any individual irrespective of whether they have a UPI or a bank account, thus taking financial inclusion to a whole new level.

The transaction categories have expanded from peer-to-peer and peer-to-merchant to mandates on QR, IPO subscriptions, EMI on QR and single block multiple debit for COD payments and secondary market trade. UPI has also innovated on the payment experience by introducing Lite wallet, offline payments with LiteX and tap and pay, conversational payments and vehicle payments.

With such rapid progress, UPI is now ready to go global. The UPI-PayNow linkage and India's strategic partnership with Singapore, Bhutan, UAE, Mauritius, France, Sri Lanka, Nepal, Namibia, Peru, Trinidad & Tobago, and Qatar on similar lines illustrate its ability to become a globally interoperable payment system. UPI can make global commerce a reality with faster, cheaper and more secure transfers than any other cross-border transfer mechanism. Its structure, operating model and design make it a very replicable model to help solve the challenge of cash for other countries.

As per the Global Partnership for Financial Inclusion (GPFI), Digital Public Infrastructure has the potential to help countries leapfrog digital transformation and advance financial inclusion and productivity gains.

Notes

Survey Methodology

The insights in this report are based on qualitative and quantitative surveys. The surveys were conducted twice—first between July and August 2023, and then again between August and September 2025.

Quantitative survey

Over 2,000 Indian consumers and 1,000 Indian merchants participated in the quantitative survey. All the participants surveyed had made/received UPI payments at least once. The survey covered North, East, West, South and North-Eastern zones with participants spread across Metro, Tier-1, Tier-2, Tier-3 and rural towns¹.

Among the merchants' strata, all revenue ranges from below INR 300,000 (~USD 3379.7) to above INR 4 Million (~USD 45063.3) and all relevant business types i.e., trade (retail products), self-employed professionals², self-employed non-professionals³ and agriculture (trade or services) were covered.

The consumer demographic covered male and female population aged 18 years and above. The consumers surveyed had a mix of occupations—salaried employees, self-employed, homemakers, unemployed consumers and students and their household incomes ranged from below INR 300,000 (~USD 3379.7) to above INR 2 Million (~USD 22531.6).

The merchant and consumers surveys were conducted separately via mix of online and face-to-face interviews.

Qualitative survey

Interviews were conducted to cover a broad set of archetypes of UPI adopting and non-adopting consumers and businesses. The interviews covered a varied demography of interviewees from Metro, Tier-1, Tier-2, Tier-3 and rural towns¹ having a household income ranging from below INR 300,000 (~USD 3379.7) to above INR 2 Million (~USD 22531.6).

The interviewees covered male and female genders with all age groups above 18 years. Along with this, the interviews spanned across education levels of <12th standard schooling, graduation, post-graduation and across occupation types—service, self-employed and unemployed. The qualitative survey was conducted in indexed interview format.

Goal of the survey

The goal of both surveys was to derive a comprehensive understanding of the consumer and merchant behaviors towards UPI, impact on their day-to-day accounts receivables and payables due to UPI.

We have corroborated and substantiated our findings with real-time payments transaction data, multiple industry reports and expert interviews as well.

1. As per the Classification of Indian Cities Office Memorandum, Department of Expenditure, Ministry of Finance, Government of India—Jul 2015

2. Example—Doctors, Chartered Accountants, Lawyers

3. Example—Carpenter, Electrician

Glossary

UPI: Unified Payments Interface
DPI: Digital Public Infrastructure
GDP: Gross Domestic Product
ITES: Information Technology Enabled Services
UN: United Nations
PAN: Permanent Account Number
KYC: Know Your Customer
UIDAI: Unique Identity Development Authority of India
JAM: Jan Dhan, Aadhar, Mobile
RBI: Reserve Bank of India
NOFN: National Optic Fire Network
QR: Quick Response
AePS: Aadhar Enabled Payment System
BBPS: Bharat Bill Payment System
DBT: Direct Benefit Transfer
APBS: Aadhaar Payments Bridge System
NETC: National Electronic Toll Collection
ONDC: Open Network for Digital Commerce
OCEN: Open Credit Enablement Network
NDHM: National Digital Health Mission
CoWIN: Covid Vaccine Intelligence Network
CC: Credit Card
NPCI: National Payments Corporation of India
SBI: State Bank of India
BHIM: Bharat Interface for Money
MDR: Merchant Discount Rate
TAT: Turnaround Time
PSB: Public Sector Banks
CEO: Chief Executive Officer
IPO: Initial Public Offering
ATM: Automated Teller Machines
PPI: Prepaid Payment Instruments
IMPS: Immediate Payment Service
NEFT: National Electronic Funds Transfer
HDI: Human Development Index
FY: Financial Year
CY: Calendar Year
POS: Point of Sale
CAGR: Compound Annual Growth Rate
P2P: Peer-to-Peer
P2M: Peer-to-Merchant

SIP: Systematic Investment Plan
CVV: Card Verification Value
OTP: One Time Password
BR: Bihar
MH: Maharashtra
MSME: Micro, Small & Medium Enterprises
RAMP: Raising and Accelerating MSME Performance
FIT Score: Finance, Income and Trade Score
SMS: Short Message Service
COD: Cash on Delivery
D2C: Direct to Consumer
GST: Goods and Services Tax
TPAP: Third Party Application Provider
CIC: Cash in Circulation
VPA: Virtual Payment Address
FDI: Foreign Direct Investment
IMF: International Monetary Fund
RTP: Real Time Payment
IMEI: International Mobile Equipment Identity
MPIN: Mobile Personal Identification Number
RTGS: Real Time Gross Settlements
TRN: Transaction Reference Number
RRN: Retrieval Reference Number
PSP: Payment Service Provider
USSD: Unstructured Supplementary Service Data
PCIDSS: Payment Card Industry Data Security Standard
ISO: International Organization for Standardization
API: Application Programming Interface
VAS: Value Added Service
UK: United Kingdom
US/USA: United States of America
NFC: Near Field Communication
NLP: Natural Language Processing
AI: Artificial Intelligence
UAE: United Arab Emirates
NIPL: NPCI International Private Limited
SRO: Self Regulatory Organization
FACE: Fintech Association for Consumer Empowerment
DLAI: Digital Lending Association of India
IAMAI: Internet and Mobile Association of India
NTC: New-to-Credit

About the Authors

For NPCI

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For Boston Consulting Group



Dr. Janmejaya Sinha

Chairman—BCG India
Managing Director and Senior Partner
Sinha.Janmejaya@bcg.com



Pranay Mehrotra

Managing Director and Senior Partner
Mehrotra.Pranay@bcg.com



Vivek Mandhata

Managing Director and Partner,
Lead—India Payments
Mandhata.Vivek@bcg.com



Ayush Kanwar

Partner
Kanwar.Ayush@bcg.com



Sahil Ginoria

Principal
Ginoria.Sahil@bcg.com



Jitin Vohra

Consultant
Vohra.Jitin@bcg.com

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