May 2023

The Indian payments handbook – 2022–2027

Preface

Dear readers,

We are pleased to bring to you the third edition of 'The Indian payments handbook' for the period 2022–2027. Like the previous editions, this year's publication focuses on India's fast-growing digital payments industry. We have analysed the year gone by and captured the key learnings for the industry along with the progress made by the Indian payments ecosystem in the last few years, key growth factors and emerging trends.

We have considered the change in customer's habits who now prefer digital transactions due to the ease of use, well-built digital payments acceptance infrastructure and secure transaction flows.

Based on the insights gathered from our discussions with key stakeholders in this space, we cover the latest developments in the payments space, such as regularising the payment aggregator space by granting licences to entities, the launch of Central Bank Digital Currency (CBDC), product innovations by payment system operators (PSOs) and payment service providers (PSPs) which has expanded the use cases of transacting through digital payments, introduction of market-driven pricing model in a regulated manner for few payment instruments that has further enhanced the growth prospects of this industry in India.

India is already at the forefront when it comes to digital payments innovations across the globe and with the efforts and initiatives of key stakeholders, such as regulators, banks, payment/FinTech companies, card networks and service providers, we are confident that the industry is going to see tremendous growth in the coming years.

We hope you will find this report to be a useful and insightful read.

Regards,

Mihir Gandhi
Partner and Leader, Payments Transformation
PwC India

Executive summary

India has become a model for digital payments adoption for countries across the globe. Digital payments are one of the most important pillars of a financially inclusive country and helps in bringing people together under an organised financial system. In the last two editions of our report, we focussed on revenue streams of different payment instruments and identified areas to increase the use of these instruments. In this edition, we aim to decode how different payment instruments are evolving and identify some of the developments in payments space which have the potential to act as a catalyst for the future growth of this sector.

Digital payments in India continues to grow at a massive rate with a Y-o-Y transactional volume growth of 56% in FY 2022–2023 and is expected to grow four times by FY 2026–2027. This growth can be attributed to the policies implemented by the Government of India and the Reserve Bank of India (RBI) for promoting digital payments, the emergence of FinTech with new technologies to ease user experience and PSPs building infrastructure to support smooth transaction flows. Over the next five years, UPI is expected to constitute almost 90% of total transactional volume in retail digital payments by expanding its adoption to rural areas and tier 3 and 4 cities. Credit card, national electronic toll collection (NETC) and Bharat Bill Payment System (BBPS) are some of the other instruments which are also expected to grow at a healthy rate.

Consumers are increasingly adopting digital payments. With new innovations and additions of new use cases, India is at the verge of another boom in increased digital payments transactions. The Government and RBI's focus on regulating the digital payments ecosystem is fuelling the growth in the digital payments space.

UPI continues to maintain its incredible growth story with a Y-o-Y growth in transaction volume of 80%. In FY 2022–2023, the total transaction volume was a little over INR 83 billion and it is expected to grow four times by FY 2026–2027. UPI now accounts for over 75% of the overall retail digital payments in India. In FY 2022–2023, the RBI launched new features in UPI like UPI 123Pay, UPI Lite, credit card linkage on UPI, UPI on NRE accounts, UPI for foreign tourists and single block multiple debits to further increase the scope of UPI payments and increase the number of UPI users.

Amongst cards, while credit cards had a Y-o-Y growth of 41% in transactional volume in FY 2022–2023, debit card transaction volume grew by 6% during the same period. One of the reasons for a flat growth in debit card volume is the shift in preference to pay using UPIs for face-to-face transactions. Credit card transaction is expected to grow in the coming years with the linkage to UPI and new entrants entering the credit card issuance space.

The infrastructure for face-to-face payments, point of sales (PoS) and QR has also been growing not only in metros and tier 1 cities but also in tier 2 and 3 cities. The Y-o-Y growth of PoS machines and QR codes is nearly 31% and 43% respectively in FY 2022–2023. Innovations in this space like Tap-to-Pay, soundbox have also promoted the use of digital payments by enhancing the user experience while making payments.

Table of contents

1.

A look at the year gone by

In 2022, the payment processing sector led the market accounting for more than a quarter of the worldwide revenue. The growing popularity of e-commerce and the shifting focus towards quick payments throughout the world is forcing shops to implement payment processing solutions to give customers flawless checkout experiences.

There is a growth in the use of digital payments with over 40%[1] of individuals in middle-income nations (excluding China) making in-store or online payments using a card, phone, or internet banking for the first time. More than one third of individuals in all low and middle income nations paid their power bills from a formal account. Globally, two-thirds of individuals make or receive digital payments, with developing economies increasing their participation from 35% in 2014 to 57% by 2021.[2] Globally, FY 2023 has also seen economic, political and geographical issues which have affected the financial industry.

Evolving geopolitical alignments among countries

The removal of Russia from Society for Worldwide Interbank Financial Telecommunications (SWIFT) and the suspension of operations by international card schemes have served as a wake-up call to the rest of the world. Russian assets were frozen by the EU, the US and the UK who prohibited their citizens and corporations from doing business with them. In response to this move, the Russian Central Bank has utilised its SWIFT counterpart, the Financial Message Transfer System (FMTS), which was formed in the aftermath of Crimea's 2014 incursion. However, the volumes transacted through the system are quite less when compared to the overall requirement of Russia.

Many Russian residents started transacting and investing in cryptocurrencies to safeguard their savings, as the value of the Ruble diminished and the financial system became more restricted and vulnerable. Its impact was also seen in the India–Russia trade. To deal with this, in July 2022, the RBI put in place a mechanism where trade invoices will be settled in INR and the exchange rate will be market determined. But this arrangement is limited to the import of defense equipment. There have also been discussions on the concept of a common currency for the BRICS nations (Brazil, Russia, India, China and South Africa). The outcome of such a move can affect the dominance of the US dollar. However, global acceptance of the same is still a major challenge. The conflict in Ukraine and the recent shift in focus towards the crisis between China and Taiwan might bring changes in the Indian payments system.

1 https://www.worldbank.org/en/news/press-release/2022/06/29/covid-19-drives-global-surge-in-use-of-digital-payments

2 https://www.worldbank.org/en/news/press-release/2022/06/29/covid-19-drives-global-surge-in-use-of-digital-payments

An overview of the Indian payments landscape

In recent years, India has risen to the forefront of digital payments by developing an ecosystem that facilitates the adoption and use of digital payments. In comparison to other countries, the rate of adoption of digital payment is very high and as a result, many countries are planning to replicate the ecosystems adopted by India. Digital transactions are expected to show a growth of 56% in a single year rising from INR 71.97 billion in FY 21–22 to INR 112 billion in FY 22–23.[3] The increase is due to the payment infrastructure improvements, a responsive regulatory framework, and a stronger emphasis on customer-centricity. Owing to the competition created by FinTechs and the services they provide, established banks have been pushed to conduct research and develop better products.

UPI's popularity has grown to the point that peer-to-merchant (P2M) transactions surpassed peer-to-peer (P2P) transactions in terms of volume. Though UPI transactions volume contributed 63.4 % of the total digital payment in FY 21–22, the total transaction value contributed only 16.1% of the total digital payments which hints that the ticket size of the transactions is lower. UPI which was primarily used for P2P transactions has transitioned towards person-to-person-mobile (P2PM) and P2M transactions. Growth in mobile app-based payments is another indicator of the affinity towards digital payments. In FY 2022–23, the number of transactions has grown by 80% from INR 46 billion to INR 83 billion with an increase in the transaction value by 64%. This growth in transaction volumes has been complemented by growth in QR code-based payment infrastructure i.e. UPI QR and Bharat QR by 43.5%. UPI transaction volumes are predicted to grow in the future at a compound annual growth rate (CAGR) of 42% and 30% in the case of the transaction value.[4]

Cards, mainly credit cards, have maintained a consistent contribution to the growth of digital payments in India where the increasing number of physical acceptance points, expanding e-commerce use and increase in awareness about credit cards has created easy access points for the consumers to use their credit cards for payment. Credit and debit cards have contributed to 8.5% of total transactions volume but contributed only 0.9% in terms of transaction value with a major increase observed in number of credit cards. The reason behind this is that the growth percentage of debit card has started to plateau while credit cards has increased due to a low transacting base and customer preference towards them has just picked up in the last couple of years.

With the hype around digital payments, growth in offline payment system infrastructure has slowed down, especially for ATMs. Even though cash in circulation has increased by 28% till March 2022 from March 2020, ATM infrastructure has increased by only 2%. This is because of the high maintenance cost in comparison to the revenue generated by them. A major shift was seen towards micro ATMs in 2022. According to RBI figures, there are 14.19 lakh micro ATMs in the country as of December 2022.[5]

The focus of the industry has shifted towards new developments like Digital Rupee and 5G which will boost digital payment systems in the coming years. These innovations have created an opportunity for new players to come in with innovative products which will further boost customer experience.

3 https://www.rbi.org.in/Scripts/PSIUserView.aspx?Id=21

4 https://www.rbi.org.in/Scripts/PSIUserView.aspx

5 https://www.rbi.org.in/Scripts/PSIUserView.aspx?Id=19

Investment in FinTech

Funding in Indian FinTechs has drastically reduced to USD 5.5 billion (approx.) in 2022, as compared to USD 10 billion (approx.) in 2021.[6] The funding inflow in 2023 is expected to decrease further this year. Some of the reasons for the decline in funding are:

1. Global economic slowdown and changes in the economy of some countries

2. Introduction of regulations by the RBI for FinTechs along with guidelines to streamline and better monitor the sector due to increasing cases of fraud and malpractice

3. The RBI's regulation on restricting non-banks from loading prepaid payments instruments (PPIs) through credit lines – this has highly impacted the buy now pay later (BNPL) industry, where players are either innovating their product features or shifting towards other digital products

4. Shift in evaluating FinTechs from gross revenue to net profit and not considering the number of customers or loans disbursed.

With the help of technologies like artificial intelligence (AI) and blockchain, FinTech is now evolving and aims to understand consumer behaviour and offer new products customised to their requirements. FinTechs are being directly regulated by the RBI and are an integral part of RBI's ecosystem now. There is also a rise in the number of collaborations between banks, non-bank financial companies (NBFCs) and FinTechs. This has resulted in exploring new segments like widening targeted customer segments, supply chain payments and cross-border payments, where digital payments help consumers address existing pain points.

6 https://economictimes.indiatimes.com/tech/startups/2022-year-in-review-fintec.h-firms-gear-up-for-tumultuous-ride-in-2023/articleshow/96500512.cms?from=mdr

Policies and regulations supporting digital payments

A number of initiatives have been taken by the Government and the RBI in the digital payments space this year. The RBI is focused to regulate and streamline the entire payments ecosystem to secure the end-consumer and also lay the path for further growth in digital payments adoption in the country. To make this industry more inclusive and to better understand the concerns and growth prospects, the RBI continuously releases consultation papers through which it intends to understand the perspective of the various stakeholders. For the first time, the RBI conducted two industry workshops and discussions with Indian FinTechs in FY 2022–2023, held in Kashmir and Kochi, where the RBI and participants deliberated upon various topics and the discussions were later formalised into policies and notifications. Some of the key initiatives taken by the RBI in FY 2022–2023 have been given below:

UPI123PAY: The RBI launched UPI123PAY in March 2022[7] to enable feature phone users to make payments through UPI. This will enable 400 million feature phone users to adopt digital payments.

DigiSaathi: In March 2022, the RBI and NPCI launched DigiSaathi[8] – a 24x7 helpline with a website, chatbots and toll-free calls, which addresses user queries and shares information about all digital payment products to increase awareness of digital payments.

Framework for geo-tagging of payment system touch points[9]: In March 2022, the RBI issued a framework to capture geo-tagging information of payment system touch points provided by banks and non-banks payment service operators. The same information needs to be reported to the RBI to help them monitor and understand the penetration of digital payment devices.

Master direction – credit card and debit card – issuance and conduct directions, 2022: In April 2022, the RBI released master directions for issuers to regulate the issuance and conduct of credit, debit and co-branded cards. These guidelines aim to further improve card security and ensure that proper communication is shared with the cardholders.

Ban on non-bank PPIs loading through credit lines[10]: In June 2022, the RBI issued a notice to non-bank PPI issuers to not load their wallets and cards through credit lines. This has impacted the BNPL industry as most non-bank BNPL service providers and PPI issuers were allowing customers to load their wallets through credit lines.

7 https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=53385
8 https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=53385
9 https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=12260&Mode=0
10 https://www.thehindu.com/business/rbi-stops-non-bank-ppi-issuers-from-loading-wallets-cards-via-credit-lines/article65550360.ece

UPI Lite[11]: The RBI launched UPI Lite, an on-device wallet-based UPI system in September 2022. Through this, users can load money up to INR 2,000 in their wallet, which can be used to make payments in offline mode. This will assist users to make UPI payments even in places which have low or no internet connectivity.

Linking RuPay credit cards to UPI[12]: In September 2022, the RBI announced the linkage of RuPay credit cards to UPI. This will increase the adoption of digital payments and benefit its stakeholders due to the following reasons:

- lack of PoS machines in rural areas
- increase in credit card usage
- Earnings to payment facilitators by charging merchant discount rate (MDR) to merchants for all UPI transactions made through credit card
- increase in sales to merchants as consumption is expected to increase.

Inward, cross-border remittance through BBPS[13]: In September 2022, the RBI launched BBPS cross-border payments for inward remittance. This will help non-resident indians (NRIs) to now pay utility, water, and telephone-related bills directly from their mobile phones.

BBPS open for all categories of payments and collections[14]: In December 2022, the RBI enabled both recurring and non-recurring payments and collections in all categories. This will enable payments like education fees, tax payments and rent collections, to be made through BBPS.

Payment mandate in UPI[15]: In December 2022, the RBI enabled payment mandates in UPI. With this feature, UPI users can block money in their UPI linked accounts for specific merchants, which can be later paid in multiple debits.

CBDC: The RBI launched a pilot project for both retail and wholesale segments on 1 December 2022, within a closed group. The RBI will take a phase-wise approach for the pilot, starting with four banks out of the eight shortlisted banks. The digital currency will operate for both P2P and P2M models.

Two examples of developments of promoting digital payments in other sectors are:

National Logistics policy: In order to better manage the logistics sector, the Government of India plans to regularise it. Presently, the logistics sector is mostly defragmented and has a market size of INR 160 billion.[16] The Government aims to bring all stakeholders in the logistics sector under a single platform – the Unified Logistics Interface Platform (ULIP). Among other things, this platform will digitise most of the financial transactions in this sector resulting in increased digital payments.

ONDC: Open Network for Digital Commerce (ONDC) is an ecosystem through which the e-commerce industry is going to be revolutionised by moving out of a marketplace or platform-based model. ONDC will enable small merchants and local retailers to build their businesses online. Presently, the Indian e-commerce market penetration is around 8% which ONDC aims to increase to 25% by FY 2024–2025.[17]

Consumer behaviour compliments policy implementations

India has come a long way in terms of digitisation with technological and public policy interventions and an ecosystem for the acceptance of payment systems in India. Consumer behaviour has evolved and user experience (UX) while using the payment system has gained more importance. This behavioural change has also been attributed to the rapid adoption of digital payments. Digital payments users now prefer to pay digitally for most daily transactions for both small and big-ticket value. Consumers have moved from the era of cashback offers as using digital payment methods has become more of a habit. To monitor the extent of digitisation of payments in India, the RBI has constructed a Digital Payments Index (DPI) in January 2021 with March 2018 as the base period with a DPI score of 100. The DPI score increased by approximately 30% and 29% in the year 2020–2021 and 2021–2022 respectively when compared to 2019–20 and 2020–21 respectively.[18]

11 https://www.thehindu.com/business/rbi-stops-non-bank-ppi-issuers-from-loading-wallets-cards-via-credit-lines/article65550360.ece

12 https://www.livemint.com/news/india/how-will-rupay-credit-cards-linkage-upi-lite-bharat-billpay-cross-border-payments-help-customers-11664080427946.html

13 https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=12386&Mode=0

14 https://www.outlookindia.com/business/rbi-monetary-policy-upi-will-now-allow-blocking-money-for-multiple-debits-bbps-to-include-all-payments-news-242998

15 https://www.outlookindia.com/business/rbi-monetary-policy-upi-will-now-allow-blocking-money-for-multiple-debits-bbps-to-include-all-payments-news-242998

16 https://commerce.gov.in/press-releases/national-logistics-policy-will-be-released-soon-policy-to-create-a-single-window-e-logistics-market-will-generate-employment-and-make-msmes-competitive-nirmala-sitharaman/

17 https://www.livemint.com/companies/news/what-is-ondc-india-s-project-for-an-open-e-commerce-network-11654097068290.html

18 https://rbidocs.rbi.org.in/rdocs/PressRelease/PDFs/PR602D-PI147FB19811794BBB8CCBF29AF13B09CA.PDF

Increase in the acceptance of digital payments: As per RBI data, there has been an increase of over 500% in the acceptance of digital payment by merchants for the period April 2021 to September 2021 compared to the period October 2018 to March 2019.[19] In the same period, UPI payments have increased by more than 1200%. Digital payments have increased by 216% in the month of March 2022 as compared to March 2019.[20] Paper instrument usage, on the other hand, has decreased dramatically during the same period with its proportion of total retail payments falling from 3.83% to 0.88% in terms of volume and from 19.62% to 11.47% in terms of value.

Influence of payment behaviours of Gen Z and millennials in the growth of digital payments: Millennials and Gen Z are expected to form 50% of the country's population by 2030. These tech-savvy individuals spend over two hours online per day. These age groups have a faster adoption of digital payments, unlike Gen X who still prefer cash transactions. At present, Gen Z holds over 30% of the overall digital transaction share.[21]

E-commerce continues to gain momentum: Another change in consumer behaviour is the move from local retailers to online e-commerce. E-commerce platforms have seen a huge increase in their sales during this period, specially from tier 2 to tier 4 cities. Many local retailers have also moved their business online and now offer their services in the e-commerce space. Some of the main reasons for this change are:

1 Multiple options of products on online platforms for the consumers

2 Positive word of mouth

3 Safe, secure and easy digital payment options online

4 Ease of shopping and quick home delivery

5 Change in behaviour of consumers to buy online

An increase in the salaried employees customer base

In comparison to FY 2020–21, the number of credit cards has increased by 19% and the transaction volume has increased by more than 1.5 times in FY 2021–22. The trend has continued in FY 2022–23 as per the data shared by the RBI. Financial literacy rose after the COIVD-19 pandemic and customers are now more likely to rely on credit cards for short-term loan rather than personal loans. The expansion of business in tier 2 and 3 cities have increased the salaried customer base, and the new competitive product propositions in credit cards have driven the adoption of credit cards in the market.

19 https://www.rbi.org.in/Scripts/PublicationVisionDocuments.aspx?Id=1202

20 https://www.rbi.org.in/Scripts/PublicationVisionDocuments.aspx?Id=1202

21 https://bfsi.economictimes.indiatimes.com/news/fintech/millennials-at-fore-front-of-online-finance-products-contribute-44-of-total-lending-report/97308820

2.

An overview of the top payment instruments

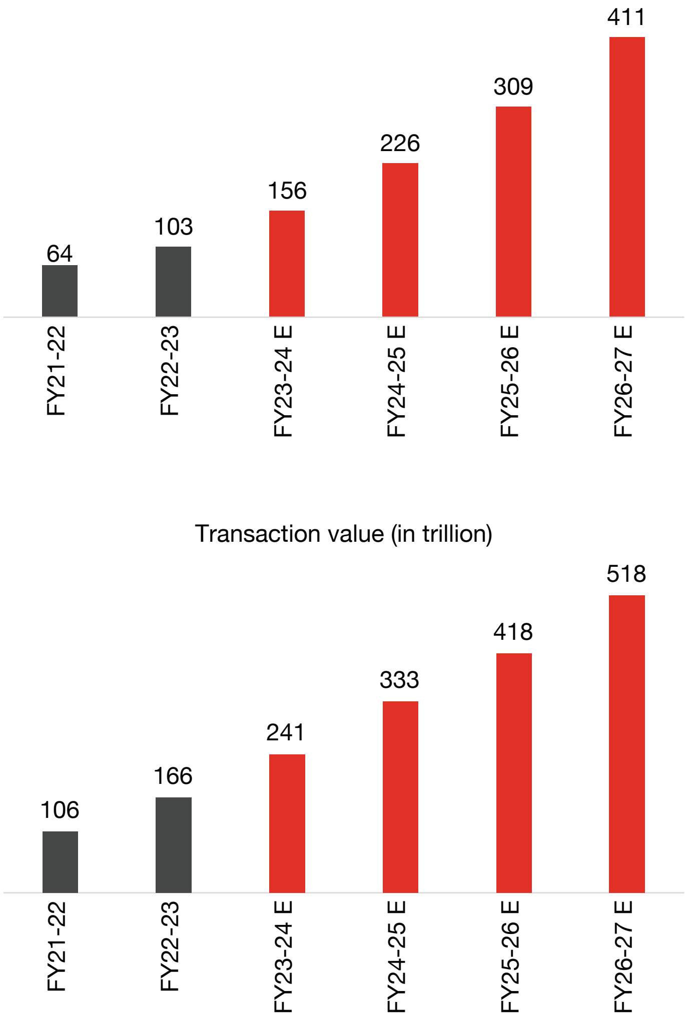
Although there has been a preference for cash transactions in India, UPI has gained popularity and is encouraging a culture of digital payments. The share of digital transactions has increased from 11.26% in FY16 to 80.4%[22] in FY22. The rise of digital payment options has contributed to this shift in consumer behaviour. Customers can make payments at any time and from any location using a variety of payment options, including net banking, UPI payments, credit cards, debit cards, and e-wallets. The shift can also be attributed to the growing acceptance of digital payments by retailers.

Future possibilities for growth

The Indian digital payments industry has been expanding steadily in the last five years at a CAGR of 50% transaction volume-wise and 60% transaction value-wise respectively. The Government of India and the RBI's efforts to make India a digital payments-first nation is one of the reasons for this increase. New players and evolving payment systems in the market are enhancing the user experience by offering quicker digital payments and providing a unique user journey to make it their preferred payment method/partner. This approach has increased transaction volume, particularly in metropolitan and semi-urban regions. The reach in rural regions has also increased due of the availability of infrastructure and the willingness of the masses to adopt digital payment methods.

22 https://timesofindia.indiatimes.com/business/india-business/power-of-digital-transactions-currency-in-circulation-declines-in-diwali-week-for-1st-time-in-20-years/articleshow/95276968.cms

Figure 1: Overall digital payments market**



Source: RBI, NPCI, PwC analysis

**Includes UPI, cards, NETC and PPIs

UPI is expected to remain the nation's fastest growing payment mode and a key contributor towards digital payment adoption in the country. Payments have become more straightforward and practical for end users owing to the ease of use of UPI QR codes and the interoperability of payment service providers (PSPs) which contributes to the rise of its share in total digital payments.

Payments made using credit and debit cards continue to increase across the country due to the growing awareness about the use of cards among customers. Some of the elements driving this rise include the introduction of new companies with a focus on digital experiences and a rising customer base in tier 3 and tier 4 cities. With features like tokenisation and EMI it has become safer and more convenient to use for transactions.

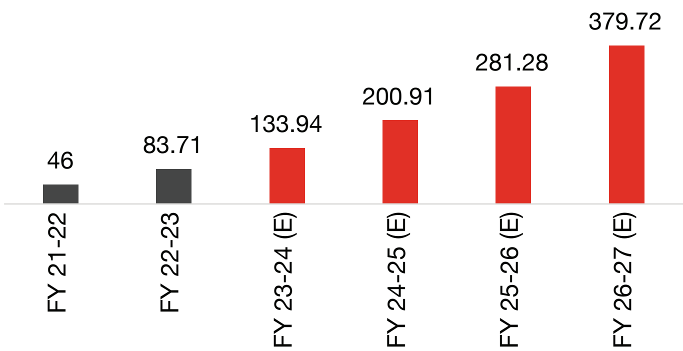
National Electronic Toll Collection (NETC) is another consistent contributor to the development of digital payments, growing at a CAGR of 110% in the last five years. The reason behind this is the ease of obtaining and using a FASTag which saves customers time while travelling.

Let us look at some of the digital payment instruments in detail:

A. UPI

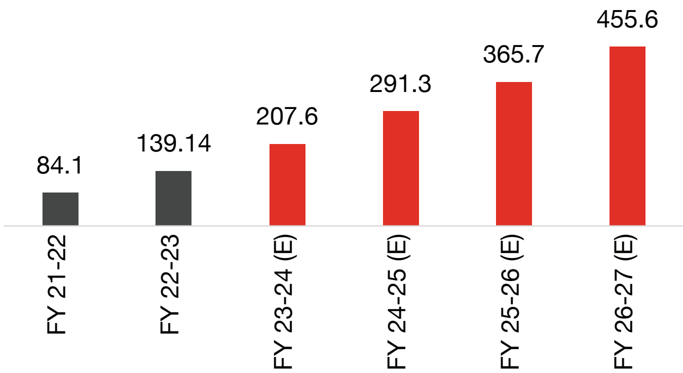
Payments through UPI grew at a rate of 80% from the last financial year. In February 2023,[23] UPI accounted for over 75% transaction volume of the overall retail digital payments in India. As per PwC's analysis, it is estimated that UPI will record 1 billion transactions per day by FY 2026–2027. As users continue to increasingly opt for UPI for small-value transactions, the average ticket size has seen a decline. By end of FY 2022–23, it is expected that the volume of P2M transactions will surpass P2P transactions with P2M accounting for 52% of the overall UPI transaction volume.

Figure 2: Transaction volume of UPI (in billion)



Source: RBI, NPCI, PwC analysis

Figure 3: Transaction value of UPI (in INR trillion)



Source: RBI, NPCI, PwC analysis

23 https://www.rbi.org.in/Scripts/PSIUserView.aspx?Id=21

Key trends observed in UPI payments

1 billion transactions per day

UPI to achieve 1 billion transaction per day by FY 2026–2027

UPI is the prefered mode for low value transaction

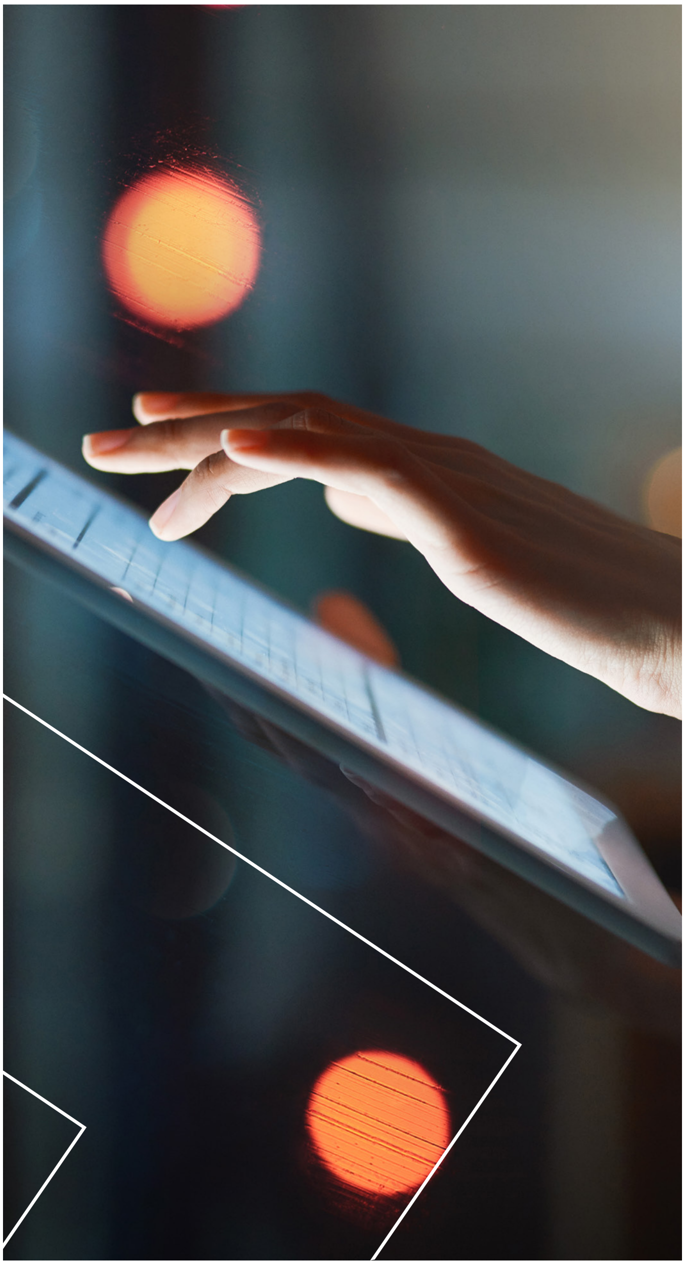
Reduction of average ticket size while increase in transaction volume shows that UPI is gaining popularity as the prefered mode for low value transaction

P2M vs P2P

Transaction volume of P2M is expected to surpass P2P in FY 2022–2023 with P2M accounting for 52% of the overall UPI volume

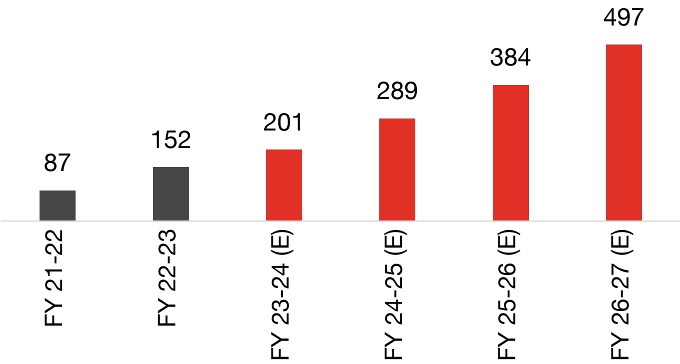
Another key aspect to consider is the revenue source and business opportunity UPI offers for its service providers. Given below are some of the key revenue streams UPI offers its service providers:

- **Per transaction cost (MDR):** Currently, UPI is largely transacted on NIL MDR but from 1 April 2023, P2M transactions of over INR 2,000 done through PPI on UPI will have an interchange charge of 1.1%. Considering the calculation shared by the RBI in its discussion paper on 'Charges in Payment Systems,[24] the combined cost to all PSPs is 0.23% for a P2M transaction. For an expected transaction value of around INR 1,37,000 billion in FY 2022–2023 and one-fifth of it to be P2M, the approximate revenue opportunity is INR 60 billion.
- **New customer acquisition:** Since it is a mass product, UPI TPAP is one of the quickest and cheapest source of acquiring new customers. Many NBFCs and FinTechs offer cashbacks and rewards to users transacting through their TPAP to attract new customers.
- **Engaging with existing customer base:** Many FinTechs, NBFCs and banks have started to offer UPI payment services through their mobile application to engage more with their customers and increase customer stickiness towards their brand. This also helps banks, NBFCs and FinTechs to understand the spending behaviour of the end-consumers and offer curated products as per customers' requirement.
- **Cross-selling:** Most of the UPI TPAPs cross-sell other products like insurance and loans to existing customer base.
- **Advertisements/endorsements:** Brands which seek visibility to acquire new customers, endorse their products on these platforms by offering discounts due to the magnitude of the transaction volume and the number of users.



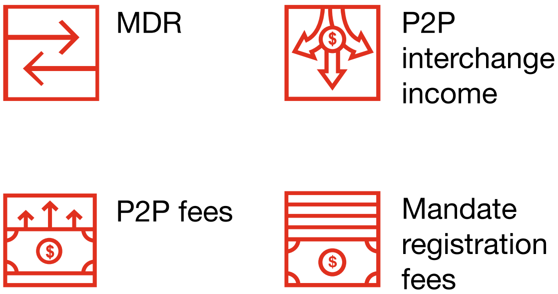
24 https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/DPSSDISCUSSIONPAPER5E016622B2D3444A9F294D07234059AA.PDF

Figure 4: Revenue of UPI (in INR billion)



Source: RBI, NPCI, PwC analysis

Income lines for UPI



To promote digital transactions through RuPay debit cards and UPI, the Government has increased the financial incentives provided to the acquiring bank from INR 1,300 crores in FY 2021–2022 to INR 2,600 crores in FY 2022–2023. This incentive is provided to cover the cost incurred by PSPs and to strengthen the payments infrastructure.[25]

UPI has been a game-changer for the exponential growth of digital payment acceptance in India as it has provided an alternative payment option for small value transactions which were earlier done mostly in cash.

With the motive of further increasing the user base, the RBI and NPCI launched two new products – UPI 123PAY and UPI Lite. These products enable users to make payments through feature phones and even without internet connectivity. The RBI has also expanded the acceptability of UPI by enabling UPI for multiple new use cases.

1. UPI 123PAY

There are approximately 40 crores of feature phone users in India. In March 2022, the RBI launched UPI 123PAY through which feature phone users in India can make payments digitally.[26] This product has the potential to be the next big disruptor in the digital payments space and increase the use of digital payments in rural areas.

With UPI 123PAY, users can make UPI payments through IVR numbers, missed calls, sound-based technology and functionality implemented by original equipment manufacturer (OEM).

2. UPI Lite

UPI Lite – an on-device wallet feature in UPI – was launched on 16 March 2022. Users can maintain up to INR 2,000 in their UPI wallet at any given instant by allocating funds from their account to UPI Lite. Users will then be able to make UPI transactions in offline mode of up to INR 200 per transaction through UPI Lite.

As per NPCI, at present, 50% of all UPI transactions have a transactional value of up to INR 200. With 75% of the total volume of retail transactions (including cash) in India having a transactional value of less than INR 100, this feature will further enhance digital payment adoption in the country. Many national banks and small finance banks see great potential in this feature and have enabled it in their platforms.

This feature will also be beneficial in semi-urban and rural areas where internet infrastructure is still not as established as it is in metro cities. Merchants will be able to accept payments through UPI even with minimum internet connectivity infrastructure.

3. Credit on UPI

The RBI announced the linkage of credit cards with UPI in September 2022. The service is introduced on RuPay which might be followed by other networks in the future. Acceptance of all card types are also enabled through Bharat QR.

In FY22, P2M transactions contributed 43% in volume but only 19% value with a very small ticket size. This trend may change as the ticket size of UPI on the credit card may increase.

Connecting credit cards to UPI is a great move which may lead to a multi-fold increase in UPI volumes and act as a booster for more credit card penetration in the market and increase the credit card volume. Cardholders will also be able to reap benefits from rewards and loyalty programmes of credit card issuers. Subsequently, it can also lead to a shift from offline to online payments.

25 https://pib.gov.in/PressReleasePage.aspx?PRID=1890314

26 UPI 123PAY: https://www.npci.org.in/what-we-do/upi-123pay/product-overview

Another latest move by the RBI is to allow banks to offer pre-sanctioned credit lines like overdraft to customers which can be accessed through UPI. This will create additional revenue lines for banks.[27]

4. UPI access to NRE accounts

Non-residential external (NRE) accounts mapped with international phone numbers are now allowed to use UPIs. Presently, this feature is enabled for 10 countries, where the majority of the 200 million NRIs reside. Customers can now do real-time P2P transfers to their family members in India and can also make bill payments like utilities and tax payments easily. This feature is expected to further increase foreign inward remittance.[28]

5. UPI One World – enabling UPI for foreign travellers

Through UPI One World, the RBI has allowed foreign travellers to load PPI wallets linked to a UPI, which they can use for making payments across all merchant outlets in India accepting QR-based UPI payments. This feature is presently enabled for tourists coming from G-20 countries and the wallets will be available at select airports in India.[29] To offer this wallet to foreign nationals outside airport, the RBI has also permitted four entities (two banks and two non-bank PPI issuers) to provide this facility.[30]

In future, this facility can be offered to all foreign nationals coming to India. Apart from the increase in UPI transactions, this feature will also help foreign nationals to make hassle-free payments in India. It will also reduce the burden of converting currencies and carrying cash in INR. Efforts should be made to build a system in which foreign travellers coming to India can load their wallets by themselves.

6. Single block multiple debits

The RBI has enabled a single block multiple debit feature in UPI, through which customers can now block specific amounts for a particular merchant. The customer can do multiple debits of this blocked amount until it gets exhausted. This feature can act as an alternative to cash-on-delivery and will be highly beneficial in P2M transactions, especially in the e-commerce sector where it will give more trust to merchants by assuring timely receipt of money. Merchants or sellers in the marketplace will also reduce the cost involved in the realisation of payments in cash-on-delivery. Cash-on-delivery requires manual interventions and cash received passes through the delivery executive or logistics partner before the seller finally receives it.

From the end-consumer perspective, this feature will also help the customers gain more trust to make payments to merchants as the amount gets debited from their account once the product/service is received.[31]

This feature will also be helpful in subscription-based payments like OTT platforms, education fees and insurance premiums. Presently, merchants offering subscription-based services are facing issues after the RBI released guidelines on standing instructions or e-mandates on cards in 2021 which mandate issuing banks to notify cardholders before debiting subsequent payments and providing an option to cardholders to opt out of the subscription. The guidelines also mandated the issuing banks to obtain second level authentication (OTP) from the cardholders before debiting subsequent payments of ticket sizes more than INR 5,000, which was later increased to INR 15,000 in 2022. The single block multiple debit feature of UPI will enable merchants to seamlessly receive subsequent payments from the customers.

27 https://timesofindia.indiatimes.com/business/india-business/rbi-allows-banks-to-offer-pre-approved-credit-on-upi/articleshow/99309703.cms

28 https://timesofindia.indiatimes.com/business/india-business/upi-access-to-nre-a/cs-with-intl-sims/articleshow/96920541.cms

29 https://travel.economictimes.indiatimes.com/news/technology/foreign-tourists-travellers-in-india-can-now-make-payments-using-upi-know-more-details/98179802

30 https://travel.economictimes.indiatimes.com/news/technology/foreign-tourists-travellers-in-india-can-now-make-payments-using-upi-know-more-details/98179802

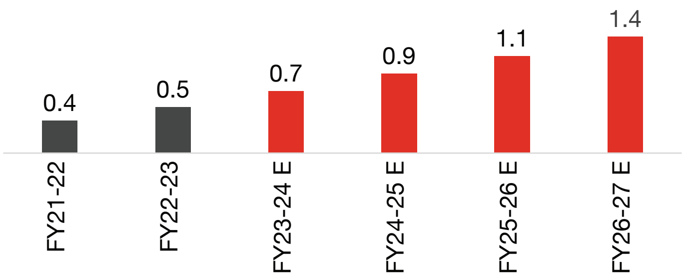
31 https://timesofindia.indiatimes.com/business/india-business/explained-upis-single-block-and-multiple-debit-facility-will-see-many-switch-from-cash-on-delivery-to-new-functionality/articleshow/96100933.cms

B. NETC

There was an increase in the movement of vehicles across India after the COVID-19 pandemic as the economy started recovering. Moreover, since the Government mandated the installation of NETC tags on four-wheelers, the usage of tags has increased steadily. Furthermore, the number of four-wheeler vehicles has increased in the country, thereby increasing the number of tags issued.

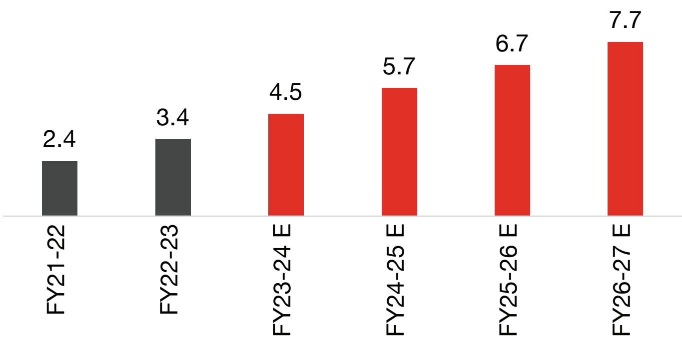
In FY 2021–22, the NETC programme which was deployed throughout the nation, processed 2.4 billion transactions (84% growth YoY) worth INR 380.8 billion (67% growth YoY) and cut the average wait time at toll booths in half to less than two minutes per car.[32] Through the NETC programme 36 issuers issued a total of 49.585 million FASTags in FY 2021–22. In FY 2021–22, the initiative had a 2.1 times increase YoY, with an average daily collection of INR 107 crore. The number of transactions is expected to grow by 23% CAGR in the next five years and the values are expected to surpass the volume growth, as travel is expected to grow and the increase is expected to be 26% CAGR for the next five years.

Figure 5: Transaction value of NETC (in INR trillion)



Source: RBI, NPCI, PwC analysis

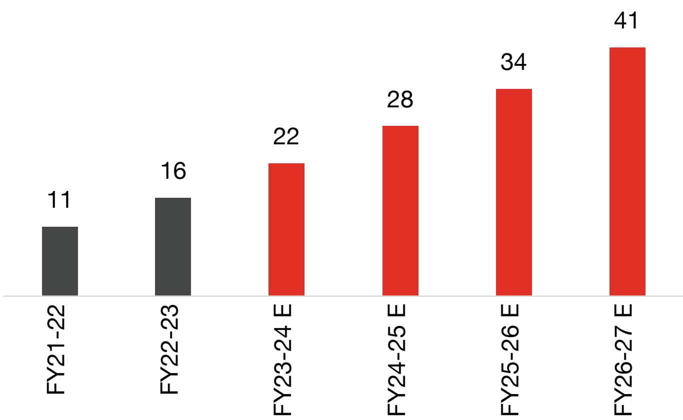
Figure 6: Transaction volume of NETC (in billion)



Source: RBI, NPCI, PwC analysis

32 https://www.pwc.in/assets/pdfs/consulting/financial-services/fintech/payments-transformation/evolving-toll-payments-landscape-in-india.pdf

Figure 7: Revenue of NETC (INR billion)



Source: RBI, NPCI, PwC analysis

Income lines for NETC

- Tag issuance fee
- MDR

NETC at a glance as of January 2023

11
Number of acquirer banks live on NETC

28
Number of issuer banks live on NETC

1,050+
NETC is live at 1,050+ toll plazas across the country

50+
Number of parking plazas accepting NETC

Source: NPCI, NHAI

Factors affecting the NETC industry

- **GPS-based toll collection system:** The union minister of India conveyed the plan of introducing the new system of toll collection which will be rolled out in the next six months. To enable automated toll collection without halting the cars, the Ministry of Transport and Roads is implementing a pilot project for automatic number plate recognition systems (through automatic number plate reader cameras). This move will further bring down the waiting time and the toll charge will be deducted as per the amount of distance covered by the vehicle on these roads. Though it will improve the collection of tolls, maintaining the equipment in the vehicles can be a difficult task for the Government
- **Other value added use cases:** Innovative ways to make payments for charges like EV stations, in-vehicle payments technology, traffic violation challans, and payments at drive-through restaurants and drive-in theatres as this will become a convenient payment and secure method with the semi-closed NETC platform. Certain changes regarding authentication of payments for these modes and the regulatory challenges needs to be addressed as data cannot be shared with multiple users. But the benefits surpass the efforts required to implement these use cases.

C. Cards

The card industry continues to grow at a healthy rate. Cards, both debit and credit, continue to be one of the most used payment instruments for retail digital payments.

A key trend observed is that the volume of transactions in credit cards is expected to surpass debit cards by FY 2024–2025. In FY 2022–2023, the transaction volume of debit card is expected to decrease by 6% from FY 2021–2022. Primarily, the major use case of debit card transaction is cash withdrawal, which can now be replaced by an easier way of withdrawing cash using UPI. Another reason for the decline is the replacement of debit card swipe on PoS to UPI payments.

The growing preference of consumers paying through credit card can be attributed to the following factors.

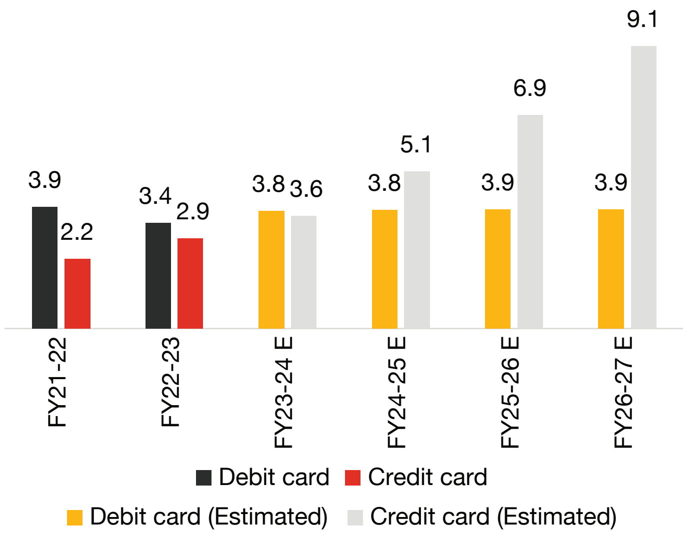
Widening of credit card user demographies like age group, self-employed

Loyalty programmes, discounts, cashbacks on credit card

Credit card penetration to tier 2 and 3 cities

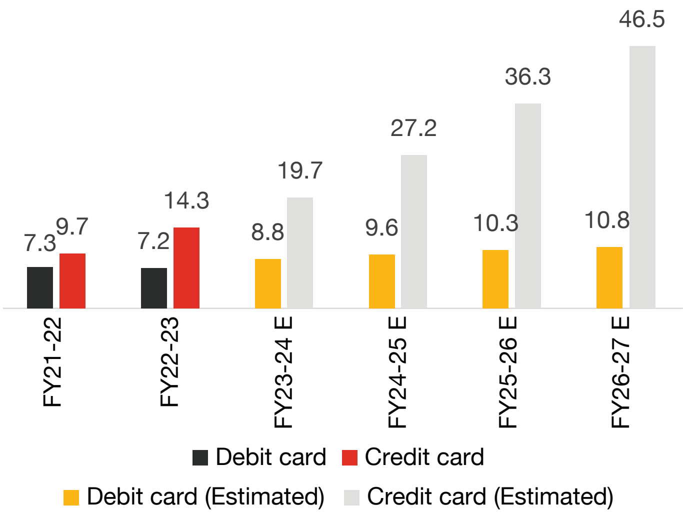
In FY 2022–2023, many new-age banks launched customised cards to target customers of different demographics.

Figure 8: Transaction volume of cards (credit and debit) (in billion)



Source: RBI, PwC Analysis

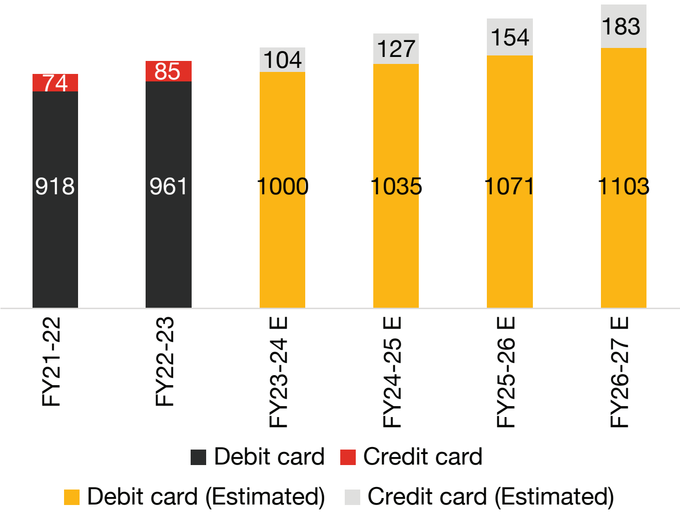
Figure 9: Transaction value of cards (credit and debit) (in INR trillion)



Source: RBI, PwC Analysis

While credit card issuance is expected to grow at a CAGR of 21% in the next five years, debit card issuance is expected to have a stagnant growth with a CAGR of 3% in the same period.

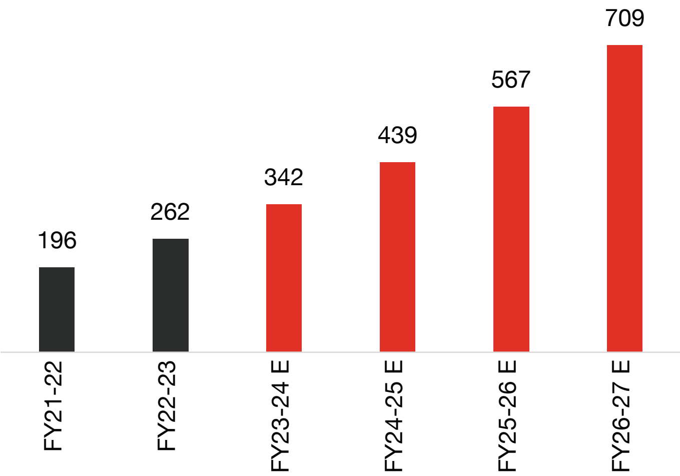
Figure 10: Growth in card issuance (credit and debit) (in million)



Source: RBI, PwC analysis

Revenue through the credit card business accounts for nearly 76% of the overall cards' revenue in FY 2022–2023, making it a lucrative business segment for banks, NBFCs and FinTech. The revenue for credit card issuance is increased by 42% in FY 2022–2023 compared to FY 2021–2022 and is expected to grow by a CAGR of 33% for the next five years.

Figure 11: Revenue of cards (credit and debit) (in INR billion)



Source: RBI, PwC analysis

Credit card transaction is expected to grow at a substantial rate after enabling it on UPI.

Income lines for cards

- Interest and float income
- Fee income
- Interchange income

Key trends on cards

Market landscape

- New-age banks issuing customised cards for different demographies of customer base
- More variations of co-branded cards between issuers and big merchants across different product categories
- Entrants of NBFCs and FinTechs in credit card business through co-branding arrangement with banks

Regulatory

- RBI regulating the entire ecosystem to further protect the cardholder from frauds and card misuse

Product innovation

- Launch of UPI on credit cards
- Stagnant growth in debit card volume

In April 2022, the RBI issued a master direction on the issuance of cards (debit and credit)[33] to further streamline the card business ecosystem and secure cardholders from existing frauds and card misuse. As per the direction on card issuance and closure, issuers can activate credit cards only after explicit consent through an OTP from the cardholder. In case of non-activation of the card within 30 days of issuance, the issuer should close the card. Issuer is responsible for any financial loss that may arise due to misuse of the credit card before it reaches the cardholder.

The master direction shows the RBI's intentions to allow NBFCs to issue cards. Before this circular, only two NBFCs had the licence to issue. Through this circular, the RBI has mentioned that any NBFC with a minimum net-owned fund of INR 100 crore that wants to issue cards can apply to the RBI to seek permission for the same.

33 https://rbi.org.in/Scripts/BS_ViewMasDirections.aspx?id=12300

Presently, four major banks constitute over 70% of the credit card market in India. Owing to this circular, it is expected that along with new-age and small finance banks, a few NBFCs will also enter the market and reduce the skewness of the current issuer presence. In addition to growing the overall credit card market in India, this circular is expected to bring about further adoption of credit cards by customers.

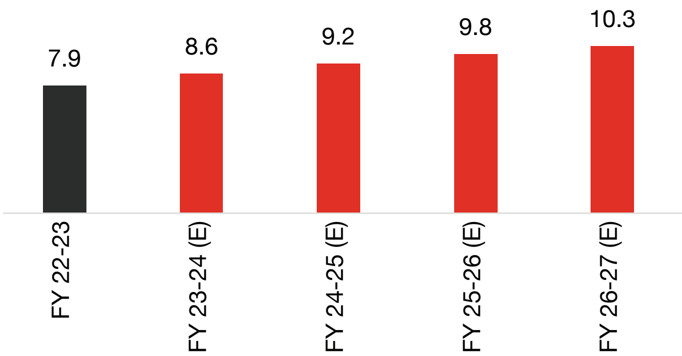
D. PPIs

Prepaid cards are a quick way to make payments. Due to the growing use of smartphones and the internet, India has made significant developments in the e-commerce sector in the last ten years, which has resulted in boosting the use of prepaid cards for online transactions. This is especially true for BNPL instruments, whose acceptance rate has surged over the past few years.

The industry is expanding exponentially – in large part due to the widespread usage of prepaid cards filled with credit. Nevertheless, the RBI became aware of this, and in a circular dated 20 June 2022, it restricted the loading of prepaid cards using credit lines. The future of several FinTech businesses' present business models was questioned by the RBI, and many of them had to change their business models in order to survive.

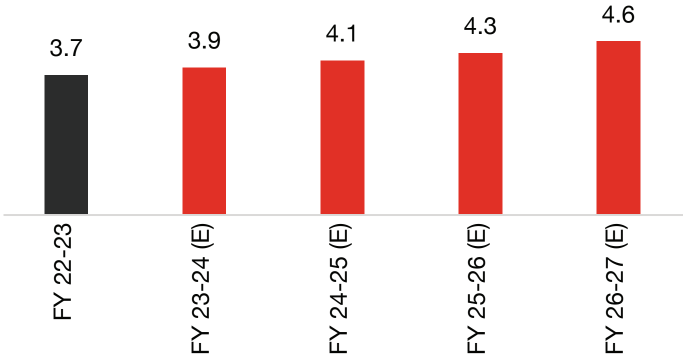
Even with such challenges, the industry was expected to grow by 16% in terms of transaction volume and 13% in terms of value in 2022–23. While the transactional value of travel and gift cards is expected to grow at a stable rate of 27% and 16% CAGR in the next five years, growth of m-wallets and prepaid cards has rapidly decreased after the June 2022 notice by the RBI.

Figure 12: Transaction volume of PPIs (in billion)



Source: RBI, PwC analysis

Figure 13: Transaction value of PPIs (in INR trillion)



Source: RBI, PwC analysis

Income lines for PPIs

- Transaction charges/ loading fee
- Float/ breakage income
- Interchange income

Factors affecting the future of PPIs

1. **Higher demand for innovative prepaid offerings:** Gift card is an example of prepaid offerings, which was linked with m-wallets for ease of use. Earlier, it was just like a normal closed-loop card which could be used for purchasing products from many outlets, but now many organisations – especially e-commerce giants – have started to offer customised gift cards that offer options to the customers which make it easier to use and customise as per the customer's requirements. The flexibility of having it as a physical card and in a digital form provides more options for consumers to choose from. Similar innovations are being expected in other products as well.

2. **Need for new use cases:** BNPL was instrumental in the growth of PPIs in India. After the latest RBI mandate, BNPL service providers are now collaborating with banks to offer their product. However, this is yet to gain significant momentum.

New use cases are required to replace the plateauing offerings of PPIs. With increasing prominence of wearable devices, exploring payments via smartwatches, home automation systems, etc., will provide convenience to the customers. Using latest technologies like artificial intelligence will also help to provide security and detect fraud, improving the customer's confidence.

E. Merchant acquisition

One of the major pillars in digital payments is the merchant-acquiring infrastructure. In order to promote digital transactions, it is important that merchants – both online and offline – have digital payments acceptance infrastructure. With new FinTech entrants, many innovative products are being developed that enable ease of payments for customers, reduce fraud, improve cybersecurity, decrease transactional failures and facilitate smooth settlements to merchants.

The 'tap to pay' option, which was previously enabled only for cards, has now been extended to smartphones and smartwatches. Fridge magnet QR codes are ideal for recurring payments like utility, mobile bills, taxes, education, loan EMIs and insurance premiums. 'Card on delivery' is another payment option which most e-commerce platforms offer, in order to reduce 'cash on delivery'.

The online space will now have more focus, with entities receiving in-principle approval to operate as a payments aggregator and being directly governed by the regulator. These entities offer embedded solutions to merchants, which include innovative payments solutions and lending and investment products. The simple payments gateway is now evolving into a model with additional features like dynamic routing of transactions to different acquirers, tokenisation and automatic OTP detection to enhance customer experience, thus reducing transaction dropouts and failures.

Merchants can now send payments links to customers directly through SMS, e-mail, messaging applications and other chatbots. Furthermore, multilingual checkout pages also help merchants to connect better with their customers from different demographics.

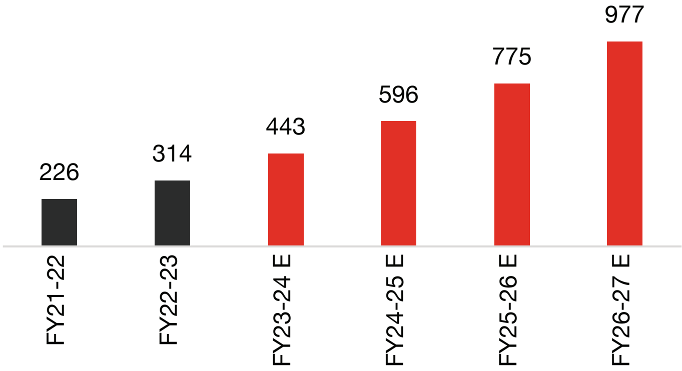
Risk-mitigation algorithms like transaction amount limit, frequency checks, data security blacklisting of bins, and transactions originating from certain geographies have reduced fraudulent activities to a large extent and helped in gaining confidence of both merchants and customers.

With physical stores opening up to pre-pandemic capacity, there is a rapid growth in PoS transactions. This growth can be attributed to the following factors:

- Innovative PoS and QR solutions like fridge magnets, card-on-delivery, smartphone PoS, dynamic QR
- Availability of PoS and QR payment options in all P2G (Person-to-government), utility bill payment outlets
- Brick-and-mortar stores seeing sales similar to pre-COVID-19 times due to increased PoS transactions
- Entry of new-age banks and FinTechs in card and PPI issuances
- Customised loyalty programmes, co-branded cards, cashbacks and incentives
- Changing consumer preference to carry less cash and pay digitally in physical stores

The gross revenue in merchant acquiring is expected to grow by over 200% by FY 2026–27 as compared to FY 2022–23.

Figure 14: Merchant acquiring gross revenue (in INR billion)



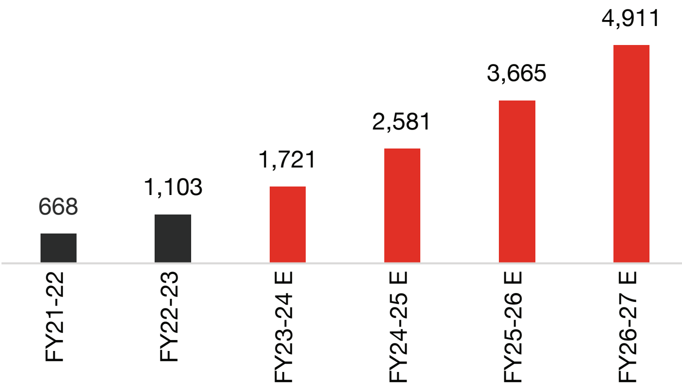
Source: PwC analysis

The future scope of development includes payments by biometric scanning (eyeball/fingerprint scan) in offline mode and interoperable tokenisation in online mode.

F. BBPS

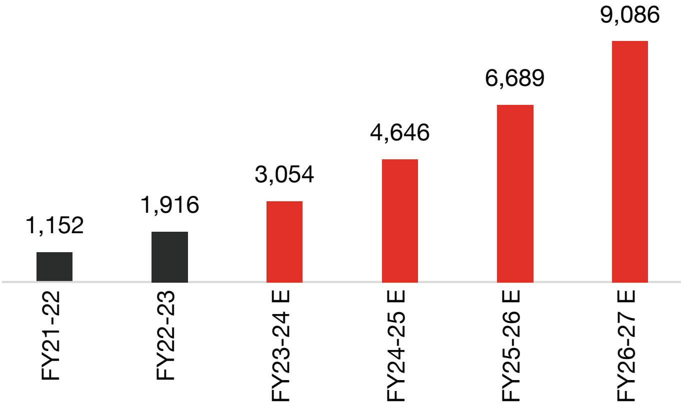
BBPS continues to grow at a substantial rate. The transactional value of BBPS has increased to a YoY growth of 66% in FY 2022–23. With all categories now open for BBPS and foreign inward remittance enabled through BBPS, the transactional volume is expected to grow by over four times in the next five years from 1.05 billion in FY 2022–23 to 5.4 billion in FY 2026–27.

Figure 15: Transaction volume of BBPS (in million)



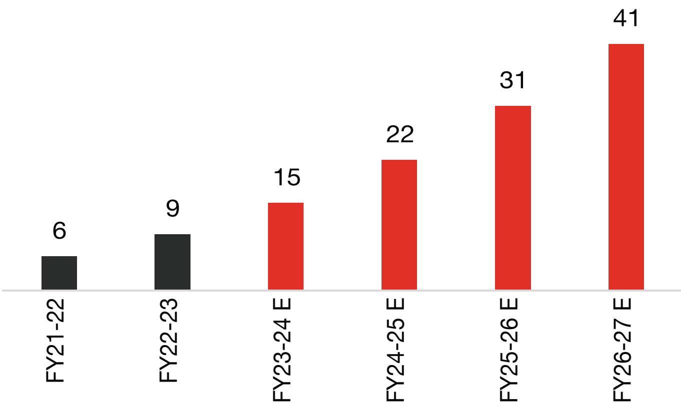
Source: PwC analysis

Figure 16: Transaction value of BBPS (in INR billion)

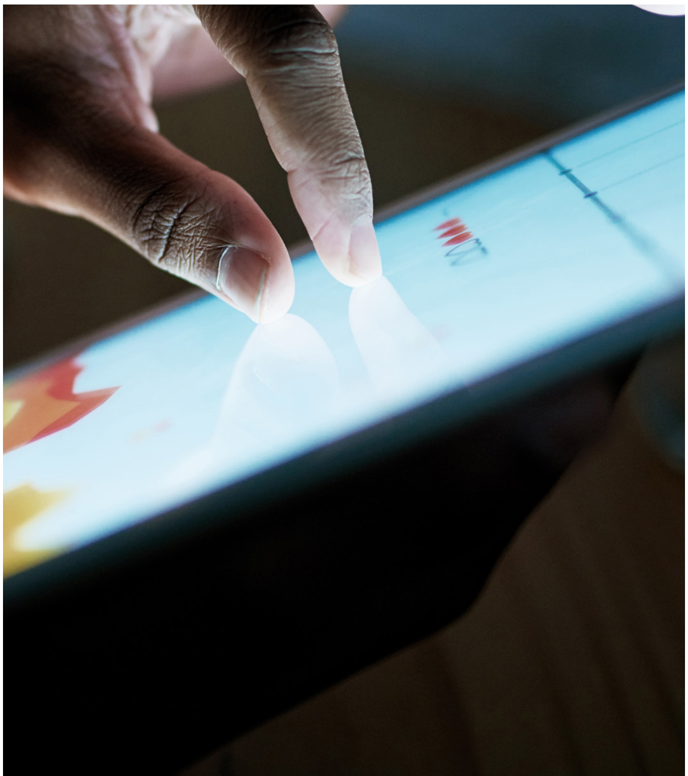


Source: NPCI, PwC analysis

Figure 17: Revenue of BBPS (in INR billion)



Source: NPCI, PwC analysis



Some of the major developments which have been a catalyst to the growth of BBPS include:

Foreign inward remittances	Foreign inward remittances through BBPS have been enabled for NRIs for tax/utility bill payments.
Net-worth requirements of BBPOU	The RBI has reduced the minimum net-worth requirement for entities to become BBPOU from 100 crore to 25 crore.
Open for all categories	The RBI has increased the scope of BBPS by including all categories of payments and collections – both recurring and non-recurring in nature.

Utility payments and loan repayments continue to account for the highest value in the BBPS ecosystem.

BBPS revenue line

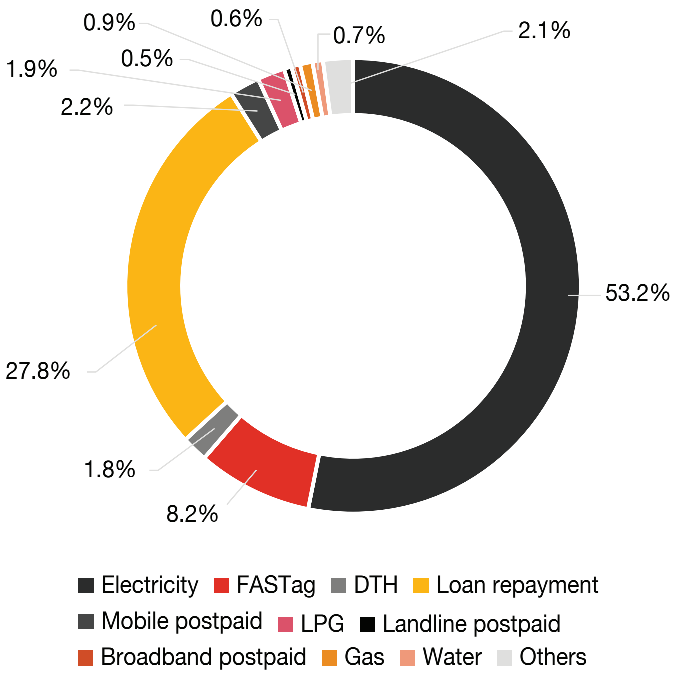
Interchange paid by biller operating unit (OU) to customer

Customer convenience fee

Float income

Interchange paid by biller OU to customer OU

Figure 18: Category-wise contribution of BBPS



Source: NPCI[34], PwC analysis

G. Cross-border payments

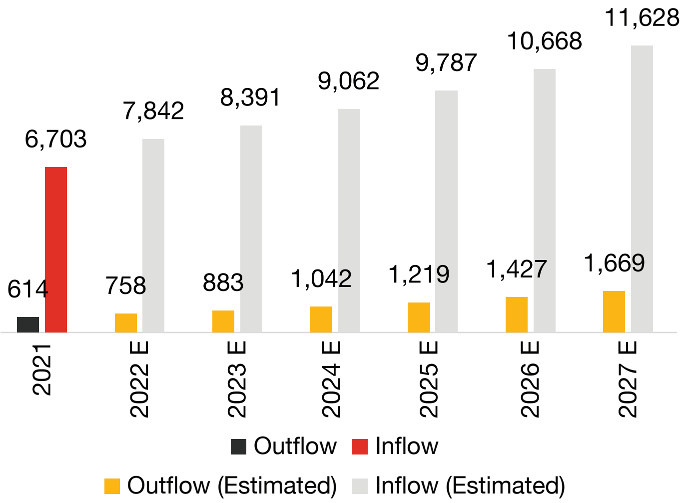
Cross-border payments have been growing rapidly due to the entrants of new-age FinTechs in this space. These FinTechs have developed and introduced new solutions that will further ease transacting across countries. With an estimated inflow of over USD 95 billion, India is the largest market for inward remittance flow.

The RBI has been working towards regulating and streamlining cross-border payments. For instance, by facilitating foreign inward remittances through BBPS, around 30 million NRIs will now be able to directly pay tax/utility bills for their home(s) in India. Moreover, the RBI has completed the second cohort of a regulatory sandbox for cross-border payments and approved the solutions offered by four entities. It has also extended the scope of cross-border payments for on-tap solutions and is welcoming applications for the same for regulatory sandbox testing and approval.[35]

34 https://www.npci.org.in/what-we-do/bharat-billpay/product-statistics/bharat-bill-pay-ecosystem-statistics

35 https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=54315

Figure 19: Cross-border remittances (in INR billion)



Source: RBI, PwC analysis

As per a World Bank report,[36] the average cost of remittance is around 6%. One of the Sustainable Development Goals (SDG) of the United Nations is to reduce this cost to 3% by 2030.

Traditionally, there are two major concerns regarding cross-border payments.

Time taken for end-to-end transaction flow and settlement	• Settlement cycle of traditional instruments in cross-border payments: Approximately 4–5 days
High transaction cost	• Complexities in settlement procedures due to multiple currencies involved • Transaction flows through multiple banks, payment operators and payment facilitators

The CBDC has the potential to resolve these two concerns in cross-border payments in India through the following:

1. **Decentralised operation:** Such an operation will ensure that payments transactions have fewer hops and regulators involved. This will reduce the cost otherwise paid to these regulators.
2. **Real-time settlement:** The payee can directly pay to the receiver's CBDC wallet.

The core technology enabling CBDCs is blockchain. However, due to limited exposure, there is a lack of awareness and trust among people towards blockchain technology handling financial transactions. The cryptocurrency market is also unpredictable. Therefore, the Government and RBI need to frame guidelines and regulations for enabling the widespread use of this technology in cross-border payments to create a stable payment mechanism for the consumers which is safe and will boost the confidence of the customers to use the payment method.

H. ATM transactions

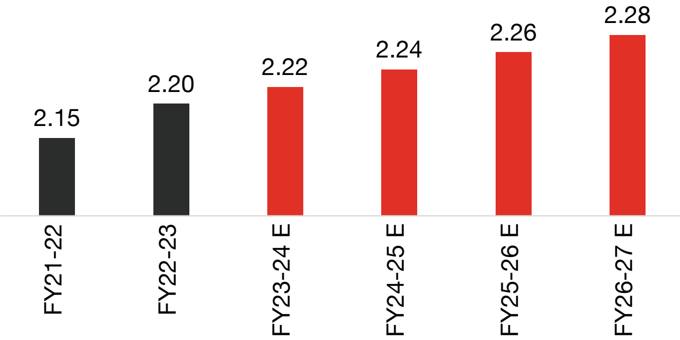
India is moving towards a digital economy after demonetisation. According to official data, the value and volume of banknotes in circulation increased by 9.9% and 5.0% respectively, during 2021–22, as opposed to 16.8% and 7.2% respectively, during 2020–21.[37] This underlines the fact that cash flow is necessary for a nation with a large population, and ATM networks play a crucial role in enabling and preserving the same.

In India, ATMs have become a popular delivery method for financial transactions. Although clients can use ATMs to conduct a number of banking operations, cash withdrawal and balance inquiries have been the primary uses of ATMs. Moreover, after the rule passed by the RBI regarding the activation of credit cards within 30 days of issuance, ATMs are being increasingly used for setting and resetting the card pins and activating cards. These factors have necessitated the establishment of ATMs on almost every street corner in the country. However, it is expected that the number of financial transactions via ATMs may dwindle after FY 2026–27 due to the increasing adoption of digital payments systems like UPI, CBDC and cards.

36 https://remittanceprices.worldbank.org/sites/default/files/rpw_main_report_and_annex_q122_final.pdf

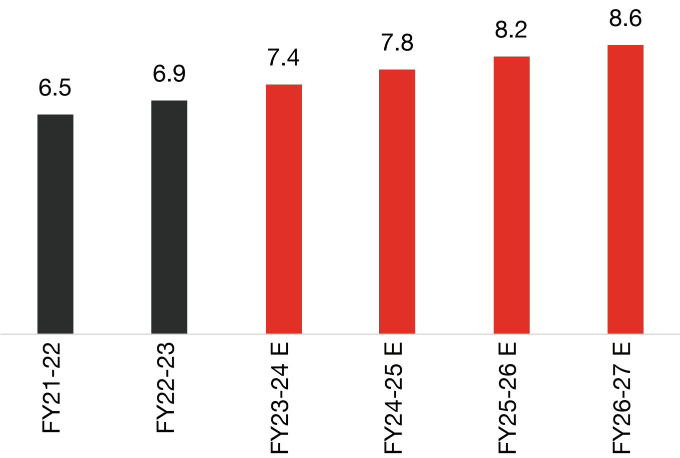
37 https://m.rbi.org.in/scripts/AnnualReportPublications.aspx?Id=1350

Figure 20: Number of ATMs (in lakhs)



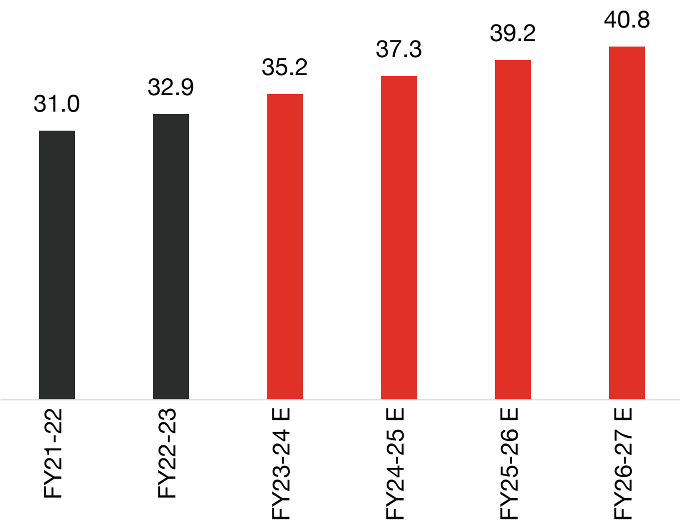
Source: RBI, PwC analysis

Figure 21: Transaction volumes of ATMs (in billion)



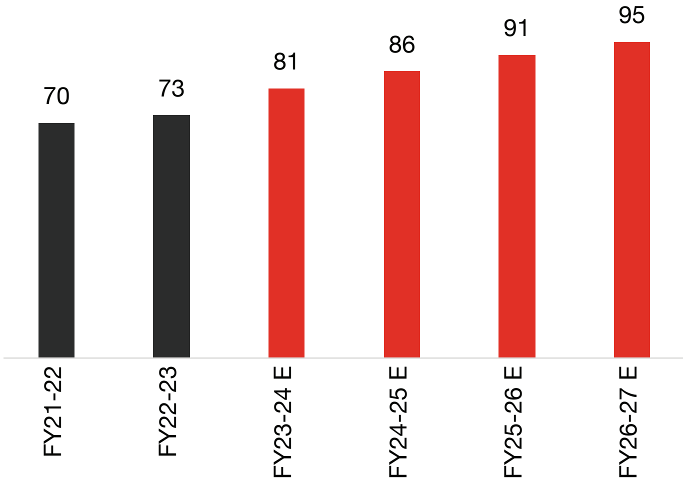
Source: RBI, PwC analysis

Figure 22: Transaction value of ATMs (in INR trillion)



Source: RBI, PwC analysis

Figure 23: Revenue of ATMs (in INR billion)



Source: RBI, PwC analysis

Factors affecting the ATM industry in India

1. **Rationalising of ATMs:** Urban areas in India generally have a considerable number of ATMs situated throughout the cities. With the development of rural areas and the increase in the reach of infrastructure in these areas, new ATMs are being installed to fill the gap. The average number of ATMs per one lakh people has come down from 21.44 to around 17 which implies that the number of ATMs is less than the population growth of India.
2. **Dependency on ATMs:** Although net banking can cater to maximum requirements of customers, activation of cards remains dependent on ATMs. In addition, India still uses cash for most of its transactions – especially in rural areas and unorganised sectors. This increases the requirement for ATMs in the country.
3. **Low returns on investments:** India continues to struggle with the low revenue generated from each ATM against the total cost of setting, maintaining and servicing the ATMs. This can be demonstrated by the fluctuating number of active ATMs throughout the year. While new players are expanding their reach by opening ATMs, many established ATMs have started to shut down due to its economic difficulties.

Income lines for ATM

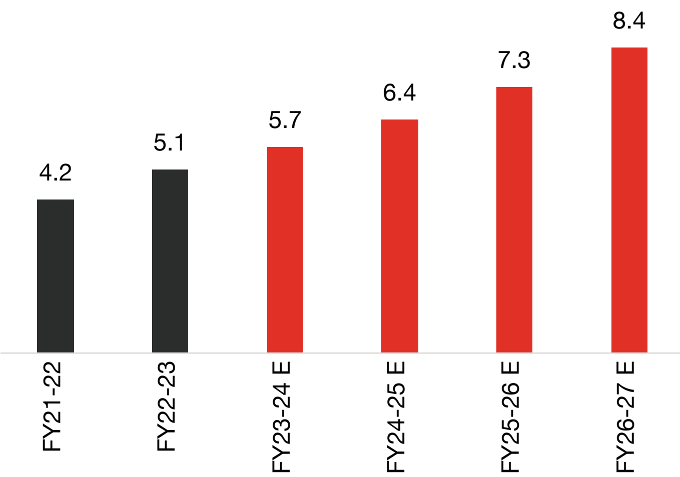
Non-financial transaction interchange fees

Financial transaction interchange fees

I. National Automated Clearing House (NACH)

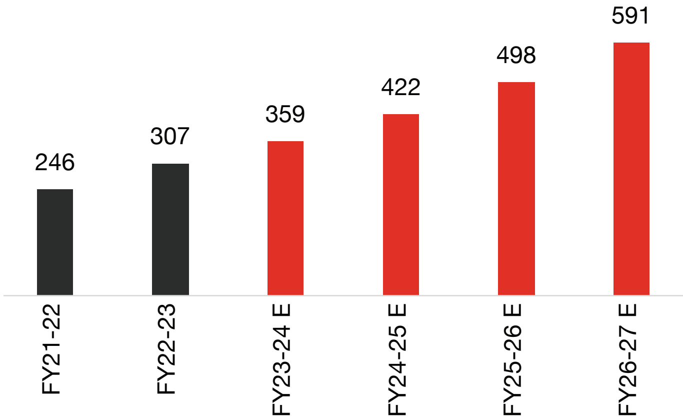
In the last four years, the NACH has grown at a CAGR of 11.6% in terms of the number of transactions and 18.6% in terms of the total transaction value. A similar increase of 13.5% and 17.8% CAGR in terms of transaction volume and value respectively, is expected in the future, as the use of direct payments will increase owing to the ease of payments.

Figure 24: Transaction volumes of NACH (in billion)



Source: NPCI, PwC analysis

Figure 25: Transaction values of NACH (in INR trillion)



Source: NPCI, PwC analysis

Benefits

For banks: It is a cost-effective solution that has high-security features and provides a near real-time cycle time. Moreover, it has a single set of rules for Indian Financial System Code (IFSC), Magnetic Ink Character Recognition (MICR) and Issuer Identification Number (IIN), which promotes interoperability. The system offers strong information interchange, a well-developed mandate management system (MMS), an online dispute management system (DMS), customised MIS capabilities with the ability to handle lakhs of transactions in one cycle, making it a future-ready solution.

For customers: It is a robust system which tracks the due date and debits the required amount using automated authentication. This not only saves time spent doing the paperwork but also prevents customers from defaulting in their transactions.

For organisations: As consumers start paying through NACH, companies can automate these tasks and increase the number of transactions per day. This automation can reduce the scope of human errors and improve the efficiency of the workforce.

3.

The future of digital payments in India

Digital payments in India is expected to experience accelerated growth in the coming years with new technologies and addition of new use cases in existing payment modes. It will play an important role in the transition of other sector towards digitisation.

1. Payments on track for simplifying cross-border transactions

A. BBPS inward payments

The RBI recently announced that it will now allow foreign inward remittances to be received under the Rupee Drawing Arrangement (RDA) and be transferred to the KYC compliant bank account of the biller (beneficiary) through BBPS.[38]

However, the following conditions need to be met in order to facilitate this:

- Bank accounts must be KYC-compliant. If the accounts are not KYC-compliant, money can be transferred or withdrawn once KYC is completed.
- The initiating bank must mark the transaction as direct-to-account remittance for the recipient bank to understand that the transaction is a foreign inward remittance.
- Information such as non-resident exchange house and initiating and recipient banks must be included by the initiating bank in the electronic message before the money transfer. These documents should be maintained by the recipient bank as per the provision in the rules mentioned under 'Prevention of Money Laundering' Act 2002. In case the recipient bank has any suspicions of fraud, the bank may ask for additional information and report the transaction, if not satisfied.

This initiative is being considered as a strategy to strengthen India's cross-border payments ecosystem. Moreover, it will allow NRIs to pay recurring utility bills such as electricity, gas, water and FASTag, as long as all required conditions are fulfilled.

38 https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=12386&Mode=0

However, the success of BBPS for inward remittance faces multiple challenges:

- facilitating partnerships with institutions in different countries
- expanding the current utility bill offerings of BBPS
- enabling a secure transfer policy with less lead time and smooth operations
- monitoring transactions for fraud and money laundering
- partnering the NPCI with large banks.

Once these challenges are addressed, the system will surely bring in a large amount of remittance which will help introduce more services into the BBPS category, thereby expanding the scope of payments. This will create a consistent source of inward remittance for India, and the volume will continue to grow as people keep migrating to various countries.

B. Partnerships with different countries on UPI

India has made considerable progress in developing the worldwide network of its UPI system. The NPCI International Payments Limited (NIPL) has formed alliances with several nations to develop a massive acceptance network for RuPay and UPI, allowing Indians to make payments through these channels from abroad, especially during foreign tours.

As per the circular published by the NPCI on 10 January 2023, UPI is now accessible to non-resident account holders with international mobile numbers across ten countries. This means that NRIs who wish to use UPI in these countries would not need an Indian cell phone number, therefore benefiting students, families and local businesses of Indian origins.

However, there are certain challenges which would have to be addressed in order to ensure a seamless customer experience.

1. **Transaction limits:** UPI currently has a cap of INR 1 lakh on most domestic transactions and a higher cap of INR 2 lakh on select transactions like capital market investments, bill collections and insurance payments. The lower limit has restricted UPI's appeal for larger value/business-to-business (B2B) payments. The payment limits in UPI would require reconsideration as cross-border payments tend to have larger ticket sizes due to the exchange rates.
2. **Individual partnerships:** The NPCI would have to enter into multiple partnerships to expand the reach of UPI.
3. **Transaction disputes:** Transaction-related disputes would be complicated to settle due to the immediate completion of payments with foreign-exchange considerations.

If the challenges listed above are overcome, the UPI infrastructure might be quite useful for cross-border payments. Making instant payments has become a simple and efficient process in the country. Therefore, it might potentially be used in collaboration with speedier payments systems in other nations as well.

2. ONDC

The ONDC is an initiative by the Government of India to revolutionise e-commerce by creating a platform that promotes local retailers to sell online and break the monopoly of large marketplaces.

In the present market scenario, large e-commerce giants follow a marketplace model in which the listing of sellers is decided by them. This creates an imbalance in the market which is unfavourable for small merchants, local retailers or kirana shops trying to grow their online businesses. Some of the common problems include massive discounting by burning cash, pre-decided seller listings and marketplace-owned inventories. Many small merchants belong to the unorganised sector – dealing with physical money and small revenue lines as they are not able to scale their sales on e-commerce.

Here, the ONDC can prove to be useful by enabling e-commerce businesses to move out of the current model where few platforms decides on how the buyer & seller interact.

By standardising product listing management, order management, logistics, payments and commissions, the ONDC will reduce the cost and increase the ease of doing business online for local sellers. Taking the business of local sellers on the e-commerce platform will help small merchants to have access to orders from across the country and abroad, thus growing their businesses.

3. CBDC

A. The CBDC is a digital form of legal tender which is issued by a central bank and can be exchanged with fiat currency. Central banks of many countries are currently exploring CBDCs as it is a risk-free and central bank-based asset which will gradually streamline global payments services.

In India, the RBI has chosen to opt for both retail and wholesale CBDC for the pilot phase. Furthermore, an intermediate approach – in which the RBI issues the CBDC to licenced intermediaries who then distribute it further (similar to the cash distribution approach) – has been taken. The CBDC would be non-interest bearing to preserve parity with cash and eliminate competition with bank-run interest-bearing deposits. Wholesale CBDC would be account-based, whereas retail CBDC would be token-based. Finally, CBDC will keep anonymity just like currency.

The retail and wholesale CBDC pilots were started in December 2022 and October 2022 respectively. As a part of the retail pilot, the RBI will cover only select locations, and the members participating will comprise some customers and merchants in a closed group. The learnings from this pilot will help in clearing the grey areas for stakeholders, bring more transparency, and decrease the chances of failure in various stages of implementation, usage and scaling.

Opportunities

a. **Dependency on physical currency:** According to the RBI's Digital Payments Index, CBDC has great potential for adoption and growth in the future

b. **Cross-border remittances:** Wholesale CBDC will prove to be instrumental in decreasing the time between cross-border transactions and settlement of funds. Solutions for the same are being explored by many central banks but are currently in the pilot phase.

c. **Reduction in costs of managing physical currency:** In FY 2021–22, INR 4,984 crore was spent for secure printing of banknotes. With the adoption of CBDC, the printing and circulation costs of physical currency will reduce, thus bringing down the overall expenses of managing the same.

Challenges

a. **Adoption of retail and wholesale CBDCs:** As internet availability is still a work in progress in some parts of the country, offline payments can be explored to bridge this gap and make CBDC the go-to instrument for cashless transactions.

b. **Strain on the balance sheet of central banks:** People may choose to obtain funds from banks and convert them into CBDC, thus forcing the central bank to issue liquid funds to these banks.

Even though CBDC will be a game-changer for the payments industry in India, factors such as unknown legal frameworks and technology requirements for scaling must be sorted out in collaboration with industry players and stakeholders. Although the process will be long and complex, it is necessary to ensure the smooth implementation and running of the instrument

B. **Web 3.0:** The third generation of web, Web 3.0, presents many opportunities in the financial services industry. This development has enabled the introduction of several financial products which are not controlled by traditional financial institutions but are operated outside the financial system. It has also provided opportunities for start-ups and other financial institutions to grow with the help of advanced centralised and decentralised infrastructures.

Major applications of Web 3.0 for payments are cryptocurrency, decentralised finance (DeFi) and the metaverse.

1. **DeFi:** The system of DeFi has evolved to eliminate intermediaries like banks and other banking service providers, and provide a free and fair financial opportunity to all – given that the consumer has internet access. The system uses blockchain technology to ensure a safe and a smooth user experience for all consumers.
2. **Cryptocurrency:** Cryptocurrencies are decentralised currencies in a digital form which operate without any governmental intervention in terms of operations or transactions. Cryptocurrency can be supported by DeFi, as digital banks can utilise DeFi elements to empower consumers to transact and obtain cryptocurrencies as it eliminates the intermediaries and is a safe way to transact.
3. **Metaverse:** The objective of the metaverse is to provide a virtual reality experience to consumers to boost businesses. Banks have already started to invest in and expand the applications of the metaverse. A PSU bank from India has announced the launch of a virtual lounge which will offer bank-like facilities to the customer virtually. Other applications and use cases of the metaverse can include virtual customer onboarding and enabling use of tokenised assets like non-fungible tokens for making payments.

Benefits of Web 3.0

a. **Cross-border payments:** Traditionally, cross-border payments involve a long and costly process for the customer while being a major revenue generator for banks. The adoption of Web 3.0 will improve the speed and lower the transaction costs, thus increasing efficiency and facilitating a robust network that eliminates multiple stakeholders from processing transactions. This will result in enhancing the security of transactions.

b. **Better banking experience:** The user interface of Web 3.0 will provide a more immersive, persistent and interactive version of the payment ecosystem. This will enhance the mobile and internet banking experience for users. It will also provide complete ownership of data to the customer, thereby increasing transparency and security, and earning customers' trust.

c. **Secure and uninterrupted service:** With P2P communication, security management in Web 3.0 is more distributed. Therefore, access to any information requires consensus from all the key stakeholders. In addition, Web 3.0 will have no single point of failure that results in a reduced service denial. This is because the distributed nodes will eliminate the need for multiple backups, and prevent server failure and help in hassle-free payments processing.

Web 3.0 is expected to bring in great opportunities which will allow consumers to explore new efficient and cost-effective payments options. However, there is still a long way to go as factors like data validation, accessibility and scalability need to be addressed – along with approval and validation from the Government – before developing it further to facilitate payments.

C. **Implementation of blockchain:** In recent years, the payments sector has embraced a slew of innovative technologies to streamline payments processes. Of these, blockchain follows the principles of secure financial transactions and decentralisation. Blockchains serve as a shared database, distributed across vast P2P networks, with no single entity owning a blockchain network or being able to modify the same without the consensus of its peers.

The 'National Strategy on Blockchain', released by the Ministry of Electronics and Information Technology (MeitY), Government of India, is a step towards allowing the development of trustworthy digital platforms and blockchain frameworks to create useful applications. The document highlights the challenges and concerns in addition to the mechanisms that will need to be deployed for the creation of the National Blockchain Framework.

Value proposition

According to the World Economic Forum (WEF), 10% of the global GDP will be stored on blockchain by 2025.[39] Blockchain is expected to generate major savings by reducing the number of intermediaries and the effort required for administrative activities.

Blockchain in payments

Blockchain technology was primarily developed to support the digital currency Bitcoin, but it is currently being investigated for a variety of other purposes. Blockchain offers various advantages to the payments industry – eliminates intermediaries and facilitates quick cross-border payments and self-paying contracts with high security and transparency.

4. Superapps and embedded finance

Superapps

Superapps are a one-stop solution that offers a bundle of services like fashion, entertainment, travel and food. Superapps have an inbuilt payments system specific to a single or multiple service providers. In India, the development of superapps is still at a very nascent stage. However, in future, it is expected to gather pace and expand to the payments industry as well.

Use cases

a. Cross-border payments

Blockchain-based payments mechanisms can offer faster transaction times with lesser expenditure.

b. Digital identity verification and KYC process

Post-COVID-19 practices have shifted from physical verification to e-KYC via video calls.

In the era of customers holding multiple accounts in different banks, multiple e-KYC checks can be a hassle and should be avoided. However, at present, customers cannot reuse KYC done by one bank for other banks and need to repeat the process.

With blockchain-based payment options, a customer will only need to go through the procedure once. This will also eliminate the security issue – with customers being able to rely on the bank storing their data securely on a platform which is decentralised and has high-security protocols in place.

c. P2P transfers

As blockchain use will eliminate the need for intermediaries, the limitation of area-based payments will also be removed. This will promote money transfer from and to anywhere in the world using blockchain technology.

d. Anti-money laundering solutions

Blockchain can assist banks in avoiding money laundering frauds by detecting these activities during the initial phase of the transaction. This is because every transaction on the blockchain produces a permanent trail of data that cannot be changed, which makes it easier to trace the origins of such unauthorised transactions. In case the destination account and other details like the amount and departure account are not verified, the money will not get transferred and the transaction will be blocked.

39 https://www.niti.gov.in/sites/default/files/2020-01/Blockchain_The_India_Strategy_Part_I.pdf

Many banks and financial institutions are competing to provide a one-stop digital app for all of their consumer's financial requirements. This will enable banks to receive a higher customer footfall and acquisition, which will further boost customer brand loyalty. On the other hand, some financial partners have chosen to collaborate with strategic partners from e-commerce and other industries to create superapps.

Embedded finance

Embedded finance is one of the fastest-growing segments of the FinTech industry. Owing to the rapid adoption of new technology and payments options in the country, the growth of embedded finance is expected to be significant in the near future. From the service provider's point of view, the user-friendly interface of new platforms contributes to consumer stickiness, which drives repeat purchases. With more information about the consumers, businesses may be able to serve them better by offering customised items, resulting in higher conversion rates for online stores/sites.

Embedded finance has created new avenues for growth – for instance, online payments alternatives at the PoS, where clients have the choice of paying via digital wallets, net banking and credit/debit cards. Similarly, there are many applications in insurance, such as luggage insurance while buying flight tickets. Lending options like BNPL and EMI are also being offered by many service providers to customers. In India, the largest online trucking platform has also adopted embedded finance for all its truckers for dealing with their pain points such as toll payments and refuelling. This shows that industry players have widened the scope of their offerings by extending beyond mass consumers and venturing into other niche sectors.

Banking and finance have long been restricted to a small number of industries while being vital infrastructures for commerce, business and economic prosperity. The move by new-age FinTechs to provide services like embedded finance to other traditional businesses is a significant change. The future of embedded finance is intimately tied to the creation of a policy infrastructure that incorporates regulatory norms into the procedures and gives institutions room to innovate since doing so will help to better integrate customers into the financial services ecosystem.

5. 5G, 6G, the internet of things (IoT) in payments

In today's industrial landscape, it is crucial to stay updated with the rapid technological advancements. Technologies like 5G, 6G and IoT can then be leveraged to enable industry players to improve processes and serve customers in an efficient manner.

IoT is a technological framework that allows networked objects to gather real-time data, send it to the cloud for processing and analysis, and respond to events in real time. IoT has huge ramifications for the banking and financial sectors since it allows for the digital automation of essential procedures, improves data collecting and processing, and increases overall security.

Faster transaction times and less engagement will benefit both customers and industry players, as the former will be willing to pay a premium for a seamless experience. In addition, as more data gets accumulated, AI algorithms and supporting systems will analyse this data to offer a personalised experience to customers.

With the ongoing roll-out of 5G, the next generation of telecommunications development was kickstarted with the announcement of the Bharat 6G Vision Statement. An apex council was appointed to look after the finances and implementation of the project. The project will be implemented in two phases. The first phase from 2023 to 2025 will explore ideas and concepts, while the second phase will focus on the development of the concepts formulated in phase 1 and establish use cases for the same and be completed by 2030. This development will boost the customer experience with better connectivity and speed.

Use cases

a. Smart homes

This can open new business opportunities for organisations. Smart appliances automatically send out repair or maintenance calls into your systems, reminding your clients to confirm the appointments and automatically charge their account after the service ticket is closed. Similar applications can also be developed for ordering essential items – for instance, refrigerators can be installed with trigger systems that can generate a list of items to buy and prompt the customer to approve the same with a single click.

b. Brick-and-mortar stores

The COVID-19 pandemic was the key reason for the exponential growth of, e-commerce platforms. However, as e-commerce players are slowly opening brick-and-mortar retail stores in cities, the latter is also gaining prominence. The idea behind implementing IoT in brick-and-mortar stores can be implemented by using an array of cameras and sensors to allow consumers to buy off the shelf and automatically bill their items on the way out. As traffic in retail outlets in India approaches pre-COVID-19 levels, the industry appears primed for such revolutionary shifts in buyer experience.

The 5G mobile network is a cutting-edge wireless technology that provides low-latency, dependable connectivity. The deployment of 5G networks has the potential to considerably assist the banking industry by improving the efficiency of websites and apps. This is, in part, due to 5G networks' enhanced speed and capacity, and because of the storage of data on the cloud.

The security will also be enhanced as companies will be able to monitor and, if required, send out security updates or timely improvements to the application. 5G will also support the expanded usage of multimodal biometric security methods to validate the identity of mobile users. However, all these functionalities will result in a high acquisition cost for network companies, thus increasing costs for both customers and financial institutions.

Despite the early difficulties and uncertainty, the benefits to businesses of all sizes and customers are far more than the investments required in 5G and IoT. With the right use of security best practices and adoption strategy, 5G and IoT-enabled digital payments can be one of the foundations underpinning India's economic threshold.

Conclusion

India's digital payments growth journey in the last six to eight years has been phenomenal and is considered as a case study globally. This growth has helped the country to move forward from being cash dependent to a less cash economy, focusing on digital-first transactions in metros, tier 1–4 cities and rural areas. In the coming years, it is expected that digital payments will further penetrate the Indian economy across all customer demographics, covering newer use cases and deepening existing businesses. Transaction volumes in retail digital payments covering various instruments is expected to grow by four times by FY 2026–27.

UPI is the flagbearer of the digital payments revolution, constituting over 75% of the overall transactional volume in retail digital payments in India. With addition of new features and use cases, UPI is expected to cross 1 billion transactions per day by FY 2026–27. UPI 123PAY and UPI Lite are expected to increase the adoption of digital payments in rural areas. UPI for foreign tourists, UPI linkage to credit accounts and tie-ups with real-time payments systems of other countries will further increase the foreign inward remittance.

India is becoming a credit-friendly market with the introduction of products like credit card linkage to UPI, innovations in credit card products and banks focusing on bring in new credit card offerings. Credit cards show a promising growth in future, with the transaction volumes expected to grow by three times by FY 2026–27 due to new players coming up in this space. Opening up the Indian market to credit has been well balanced by the conservative approach to mitigate elements of credit risk (by closely monitoring market behaviour), offering new products – covering new to credit and credit card segments – and also creating awareness about the pros and cons of these products.

A key trend observed this year is the formalisation of financial institutions (NBFCs and FinTechs) into the payments ecosystem by receiving in-principal approvals and licences from the RBI. Their inclusion is going to be crucial for the market, as it would benefit from the technology expertise and fresh business perspectives offered by these institutions.

The initiatives taken by the NPCI in last few years to take Indian indigenous payments products to global markets have also been noteworthy. The acceptance of UPI and RuPay cards in foreign global markets has made other countries appreciate the innovations made by India and created new use cases of transacting digitally. These initiatives will ease the transaction experience of international travellers and that of the nearly 20 million NRIs residing abroad.

Lastly, India has moved ahead of the stage where incentives, cashbacks and rewards acted as a catalyst to encourage users to transact digitally. We have observed that Indian customers are now habituated and more comfortable with digital transactions. This trend is expected to continue and grow in the future. This has been made possible due to the dedicated focus of the Government and regulator and the efforts of all operators and stakeholders in the payments ecosystem, who have enabled a safe, convenient and easy-to-use experience for customers.

Contact us

Vivek Belgavi
Partner and Leader, Financial Services Technology, Alliances and Ecosystems and Cloud Transformation
PwC India
vivek.belgavi@pwc.com

Mihir Gandhi
Partner and Leader, Payments Transformation
PwC India
mihir.gandhi@pwc.com

Geetika Raheja
Executive Director, Payments Transformation
PwC India
geetika.raheja@pwc.com

Zubin Tafti
Executive Director, Payments Transformation
PwC India
zubin.tafti@pwc.com

Contributors:

Kanishk Sarkar
Senior Manager, Payments Transformation
PwC India

Tanmay Bhatt
Manager, Payments Transformation
PwC India

Dipankar Duttagupta
Senior Consultant, Payments Transformation
PwC India

Shyam Patel
Consultant, Payments Transformation
PwC India

Editorial support

Rubina Malhotra

Rashi Gupta

Design

Kirtika Saxena

About PwC

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 152 countries with over 328,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

pwc.in

Data Classification: DC0 (Public)

In this document, PwC refers to PricewaterhouseCoopers Private Limited (a limited liability company in India having Corporate Identity Number or CIN : U74140WB1983PTC036093), which is a member firm of PricewaterhouseCoopers International Limited (PwCIL), each member firm of which is a separate legal entity.

KS/May 2023-M&C 28146