

September 2021



BEAT OF  
PROGRESS

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# Table of contents:

- Chapter 1:** Introduction: The digital payments landscape in India
- Chapter 2:** The PhonePe journey
- Chapter 3:** Digital payment use cases: From spends to investments
- Chapter 4:** Geographic trends: Opportunities for depth and growth
- Chapter 5:** Enabling trust and enhancing the safety of digital payments
- Chapter 6:** The path ahead for digital payments

# The story of how digital payments took off in India



It's Monday morning and Amit, who lives in Meerut is getting ready to start his week.



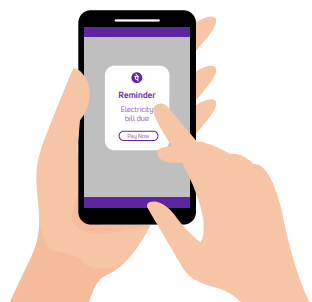
Amit owns a kirana shop and the first day of the week is always busy for him.



On the way to his shop, he stops at his favorite tea stall and starts sipping his morning cuppa.



Rather than fumbling for change, he just scans the displayed QR code and pays the tea vendor.



While sipping his tea, he gets a reminder notification that his electricity bill is due. He clicks on the notification and pays his bill in just a few taps.

**Welcome to a day  
in the life of India!**

Chapter 1



# The digital payments landscape in India

# The consumer story:

## How UPI is replacing cash from Kashmir to Kanyakumari

India has traditionally been a country that prefers cash. This preference stems from its ease of use, universal availability and acceptance. Over the years, multiple attempts were made to reduce the prevalence of cash in the country. However, it was only in 2016 that a confluence of factors finally led digital payments to take off.

Let's discuss these in detail.

Smartphone penetration and the availability of high speed data were the first big enablers of this change, and their ubiquitous adoption across the country was a necessary condition for the rapid acceptance of digital payments. The government then created via its Jan Dhan program, the largest bank account enrollment program of its kind, which itself rode on the rails enabled by 'Aadhaar' - the world's biggest exercise in giving citizens an irrefutable proof of identity. This exercise leapfrogged India from a previously underbanked country with poor bank account per citizen penetration to over 80% penetration for the eligible citizenry. Furthermore, demonetization gave a huge impetus with a rapid introduction to the benefits of digital payments to most Indians.

While India's diverse requirements necessitated the creation of various payment systems - EFT, NEFT, NACH, RTGS, IMPS and more, the biggest problem was interoperability. These systems didn't talk to each other. India's payment rails needed to be united by a system that enabled all ecosystem entities to talk to each other

seamlessly. That's how the Unified Payments Interface (UPI) was born<sup>2</sup>. UPI was envisaged and launched under the umbrella of *India Stack*<sup>3</sup> - a suite of Application Programming Interfaces (APIs) allowing governments, businesses, startups and developers to utilise a unique digital infrastructure to work towards presence-less, paperless, and cashless service delivery. Aadhaar, eKYC, eSign, UPI, DigiLocker are now all part of India Stack, each having been introduced progressively over the years.

UPI was solely created to solve the need for interoperability between banks, but it has unleashed a payments revolution as it addresses the 5 C's which underpin the vision for digital payments in India<sup>4</sup>; Coverage, Convenience, Confidence, Cost and Convergence.



<sup>1</sup><https://scroll.in/article/923798/over-80-now-indians-have-bank-accounts-how-many-are-actually-using-them>

<sup>2</sup><https://medium.com/wharton-fintech/your-guide-to-upi-the-worlds-most-advanced-payments-system-b4e0b3726f0b>

<sup>3</sup><https://www.indiastack.org/about/>

<sup>4</sup><https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/VISION20181A8972F5582F4B2B8B46C5B669CE396A.PDF>

Another key factor in the rapid adoption of UPI has been the role played by private players, who have been at the forefront by investing in two key areas:

## Launching user friendly payment products:

Payment apps are used by a wide demographic, covering both 'India' and 'Bharat'. Keeping this in mind, digital payment apps have made significant investments in designing intuitive user interfaces, while keeping the onboarding flows really simple. For example, first time users on PhonePe just need to download the app, which then sends a text message to verify credentials via their registered bank. A UPI ID gets created in seconds, allowing them to send money or pay at their favourite kirana store. This low friction in onboarding has helped attract users from across the country.



## Investments in consumer marketing to drive awareness:

India's fintech ecosystem today has ambitions of a big consumer play. This has led to the investment of millions in marketing dollars to create deeper awareness on the benefits, safety and ubiquity of digital payments. PhonePe's campaigns were run with the aim of expanding PhonePe's user base to 500+ million by December '22. Other leading digital payments players have also made significant investments in creating awareness and driving user adoption.

# The merchant story:

## How QR codes have revolutionised payments across small kiranas and large stores

In the last five years, from small kiranas to large department stores, there has been a rapid acceptance of digital payments aided by both pull (consumer adoption) and push (ease of use, low friction to set up, quick settlements).

As per industry estimates<sup>5</sup>, India has over 59 million merchants. Multiple dipstick surveys<sup>6</sup> have mentioned the barriers that needed to be overcome to get wide ranging adoption for digital payments.

### These included:

- Customer preference for cash
- High set up and running costs
- Infrastructural bottlenecks
- Lack of guidance on getting started
- Fear of fraud and lack of trust
- Demand from suppliers for cash

Let's take a deeper look at them.



<sup>5</sup><https://economictimes.indiatimes.com/industry/banking/finance/banking/mastercard-study-shows-young-merchants-likely-to-adopt-electronic-payments/articleshow/51812933.cms?from=mdr>

<sup>6</sup><https://www.centerforfinancialinclusion.org/the-digital-payments-push-what-50-micro-merchants-in-india-are-saying>

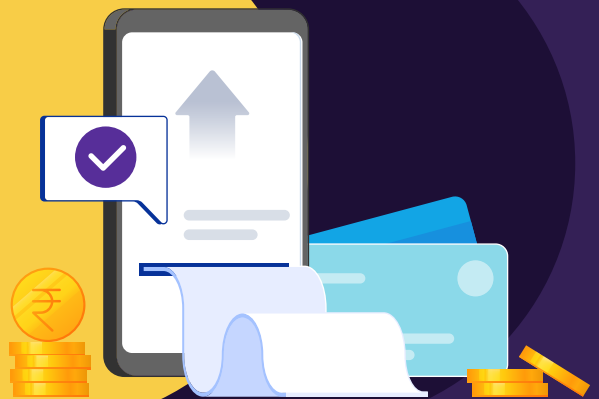
## Customers prefer cash

A Reserve Bank report<sup>7</sup> published in 2019 explained that traditionally, consumers in India have preferred cash because of its ease of use, availability and acceptance. While the pandemic has driven this downwards because of the need for contactless exchange of money, the RBI report points out India still has a lot of room for growth with respect to the frequency of mobile payments usage per capita.



## High set up and running costs

Micro merchants typically have smaller transaction values, about \$3 or even lesser per transaction, while operating with wafer thin margins. The costs of accepting payments digitally and paying a fee was often not palatable for them.



## Infrastructural bottlenecks

A Center for Financial Inclusion study<sup>8</sup> showed unreliable power supply, poor internet connections and lack of investment in technological infrastructure as big barriers to adoption. Any desire to provide a digital payment option would often face a further roadblock via local banks being unable to provide Point Of Sale (POS) machines.



<sup>7</sup><https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CDDP03062019634B0EEF3F7144C3B65360B280E420AC.PDF>

<sup>8</sup><https://www.centerforfinancialinclusion.org/the-digital-payments-push-what-50-micro-merchants-in-india-are-saying>

## Lack of guidance on getting started

Especially true in tier 3 cities and beyond, merchants often lacked access to information on how digital payments worked.



## Fear of fraud and lack of trust

Fear of fraud from employees handling POS systems was often cited as a reason for non-adoption of digital payments.



## Demand from suppliers for cash

Suppliers demanding cash can cause a cascading effect with merchants also asking for cash payments from customers. As per several dipstick surveys<sup>8</sup>, 78% of merchants were found to pay suppliers either via cash or cheque.



# How QR code adoption made payments seamless and easy

A confluence of factors came together to help solve all the above problems in one go.

## These included:

- Increase in smartphone penetration across the country
- The roll out of the 4G network
- An explosion in the growth of data usage

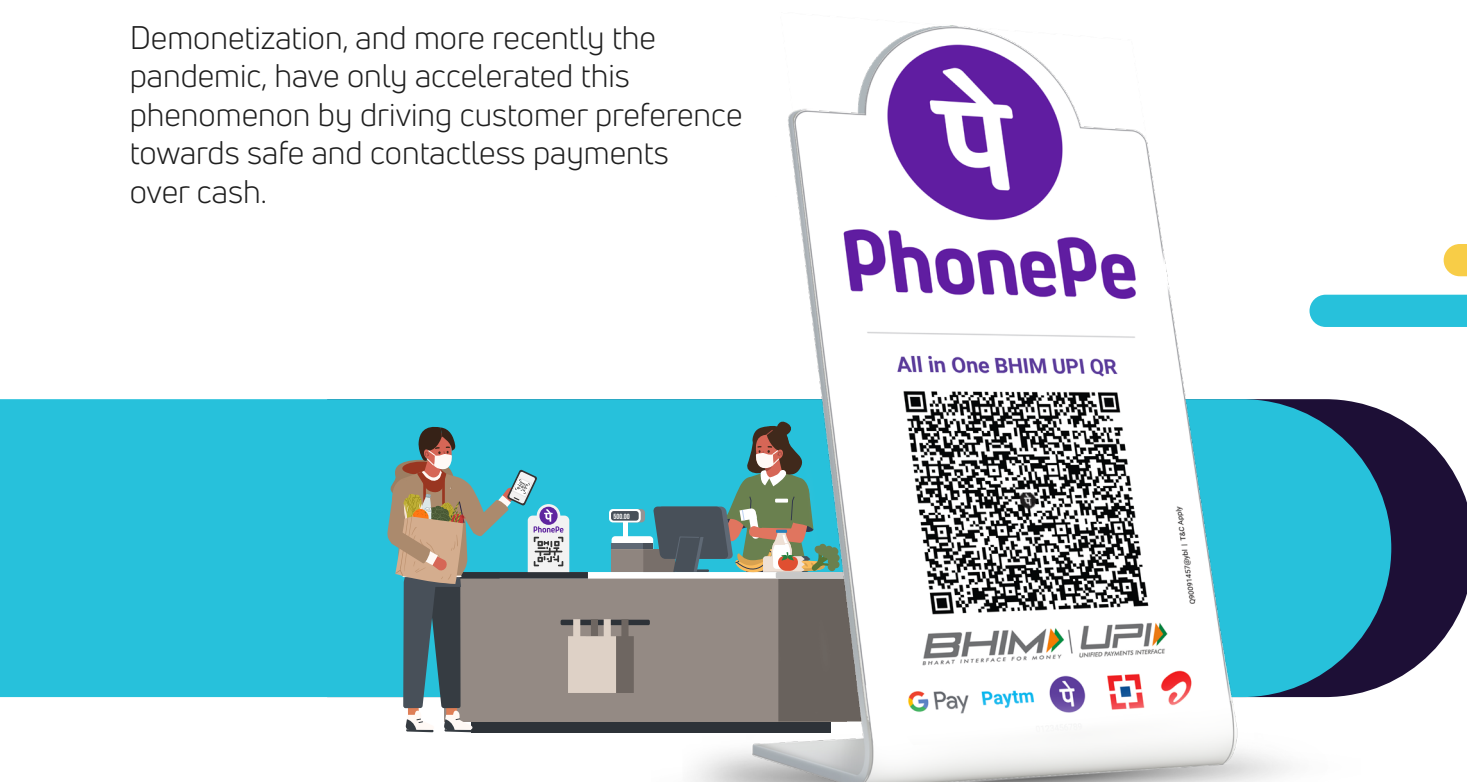
This finally paved the way for interoperable QR codes riding on top of UPI, which made digital payment acceptance attractive for merchants, as they could now accept payments from customers, and pay suppliers with little or no friction. This has also largely come about due to the huge investments and efforts of digital payment startups, in educating and enabling merchants to set up interoperable QR codes across the country.

Demonetization, and more recently the pandemic, have only accelerated this phenomenon by driving customer preference towards safe and contactless payments over cash.

Once both consumer and merchant adoption were solved as described above, the growth in UPI numbers have been truly phenomenal:

- **3247 M+<sup>9</sup>** transactions in July '21, making UPI the fastest payment rails in the world to hit such volumes.
- July '21 ending with **\$80+ B<sup>9</sup>** being transacted on the UPI platform.

*In the next section, we examine the PhonePe journey and our role in enabling digital payments for millions of Indians.*



<sup>9</sup><https://www.npci.org.in/what-we-do/upi/upi-ecosystem-statistics>

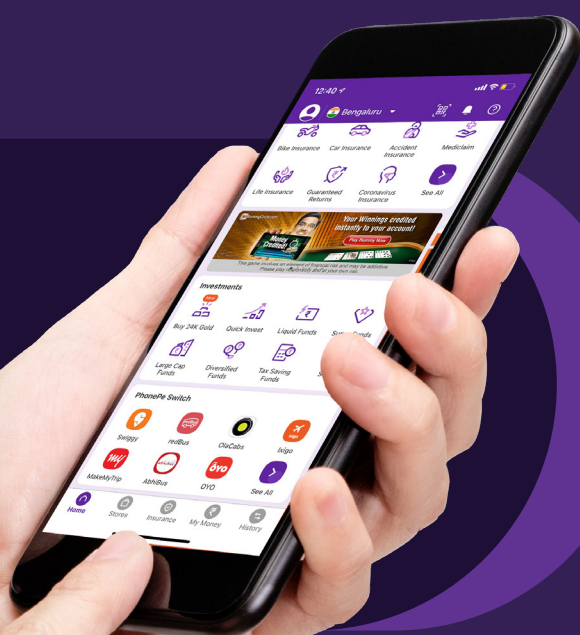
Chapter 2



# The PhonePe journey

PhonePe was started in 2015, to solve payments at scale and enable digital inclusion for over 1 billion Indians. Built on the path breaking interoperable payments stack that was UPI, PhonePe's vision was to build a highly scalable, extensible and open ecosystem, pushing the boundaries of what technology can do for the market. In just 5 years since the app was launched, per recent NPCI data, PhonePe has emerged as the largest UPI-based digital payments player enabling multiple use cases; from UPI payments and mobile recharges to money transfers, online bill payments, investments and insurance. Today, more than 1 in 5<sup>10</sup> Indians are on PhonePe.

## PhonePe's current metrics: Leading digital payments in India



Over  
**22.4 billion**  
transactions till date

**314 million**  
registered users till date

Coverage across  
**19,098**  
pin codes

**46%**  
UPI market share  
(As per NPCI data)

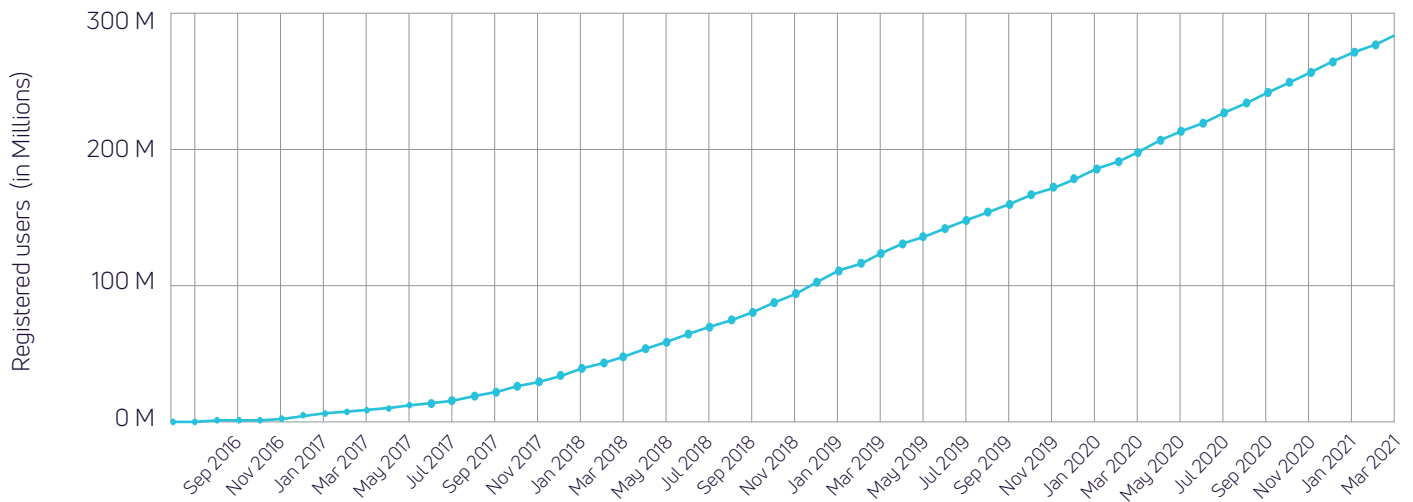
Annualized total  
payment volume of  
**\$473+ Bn**

<sup>10</sup> Taking PhonePe's registered user base as over 300 million, and the population of India as 1.38 billion, per World Bank data

A look at our customer adoption numbers shows how we have truly democratised the adoption of digital payments in the country.

PhonePe has seen digital transactions from over 19,098 pin codes, constituting more than 99% of the country. We have 133 million monthly active users as on July'21, and nearly 80% of our transactions come from tier 2, tier 3, tier 4 cities and beyond.

## PhonePe Registered Users Trend



# PhonePe Pulse:

## Connecting the dots with data, insights, trends and user stories

When PhonePe came into inception five years back, we were constantly looking for definitive data sources on digital payments in India. Some of the questions that we were seeking answers to were - How are consumers truly using digital payments? What are the top use cases? Are kiranas across Tier 2 and 3 cities getting a facelift with the penetration of QR codes?

This year, as we became India's largest digital payments platform with 46% UPI market share and the largest transacting user and merchant base in the country, we decided to demystify the what, why and how of digital payments.

Pulse is our way of giving back to the ecosystem by creating ONE central source for information on digital payments in the

country. We want Pulse to be the go to destination for every ecosystem participant; the regulators, the media, the analysts, as well as students keen on learning more about the digital payments space.

In the next few chapters, we discuss use cases for digital payments in the country. We also deep dive into geographic trends and the penetration of UPI and examine how Fintech players are combating fraud and building trust in the ecosystem. Finally, we look at the path ahead and share some recommendations to take digital payments to 500 million Indians.

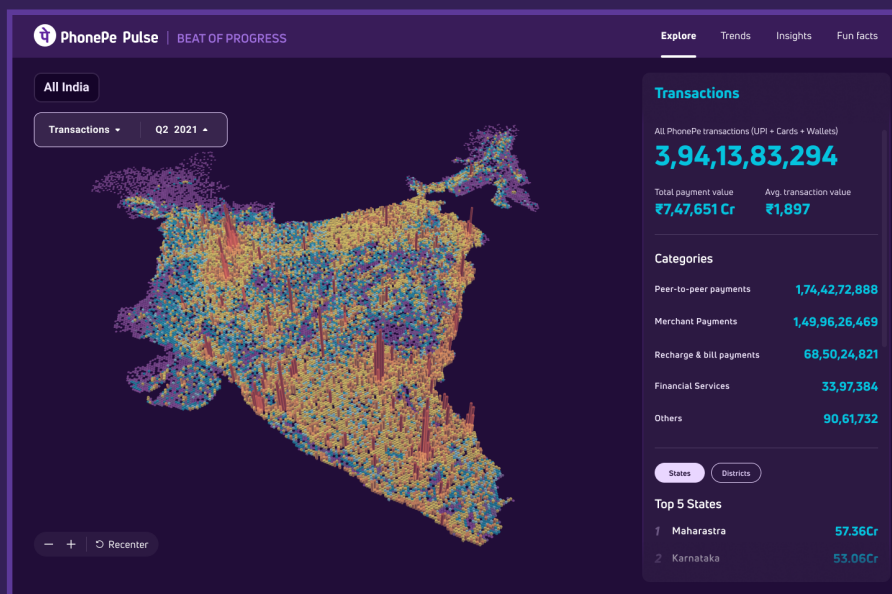
We hope you find this attempt at organizing all the data useful and easy to consume. For more information & insights, do visit the Pulse website.



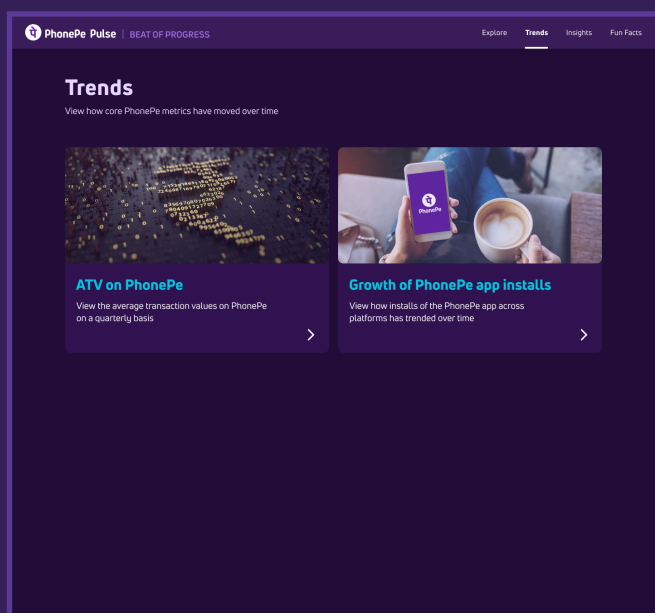
# Have you visited the Pulse website?

Visit [pulse.phonepe.com](https://pulse.phonepe.com)

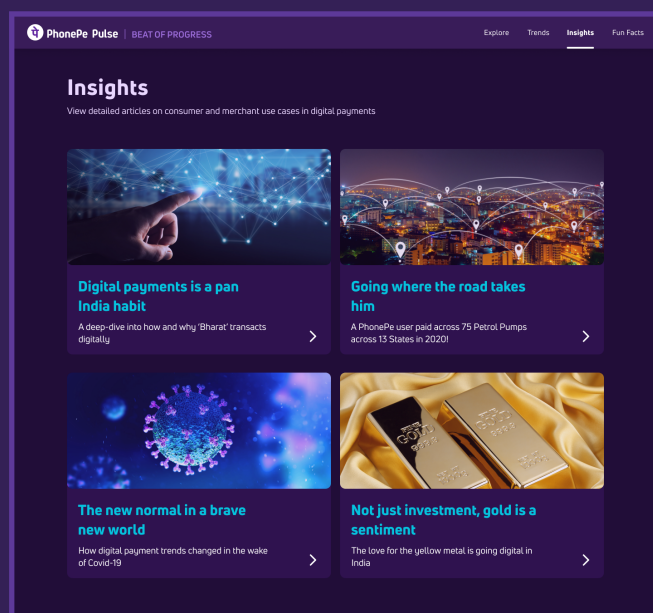
Find out how India is transacting at a district level



Get the latest PhonePe metrics



Read interesting merchant and consumer stories and insights



Chapter 3



# Use cases for digital payments

Amrith, a 28 year old from Mumbai routinely invests \$40 every month in mutual funds on PhonePe. She got into the habit of investing regularly, having read information on the benefits of setting up a monthly Systematic Investment Plan (SIP).



John from Tamil Nadu, buys 1 gram of 24 karat gold every quarter, from the comfort of his home. Three clicks and thirty seconds is all it takes him to complete the transaction, and he gets his gold home delivered.



In this section, we examine trends on how payment apps are increasingly being trusted to power diverse use cases. We look at this by analysing customer adoption and preferences across different categories on PhonePe. These include peer-to-peer payments (sending money to a contact/number), mobile recharges and bill payments, offline merchant payments through a QR code, online merchant payments and finally, financial services.



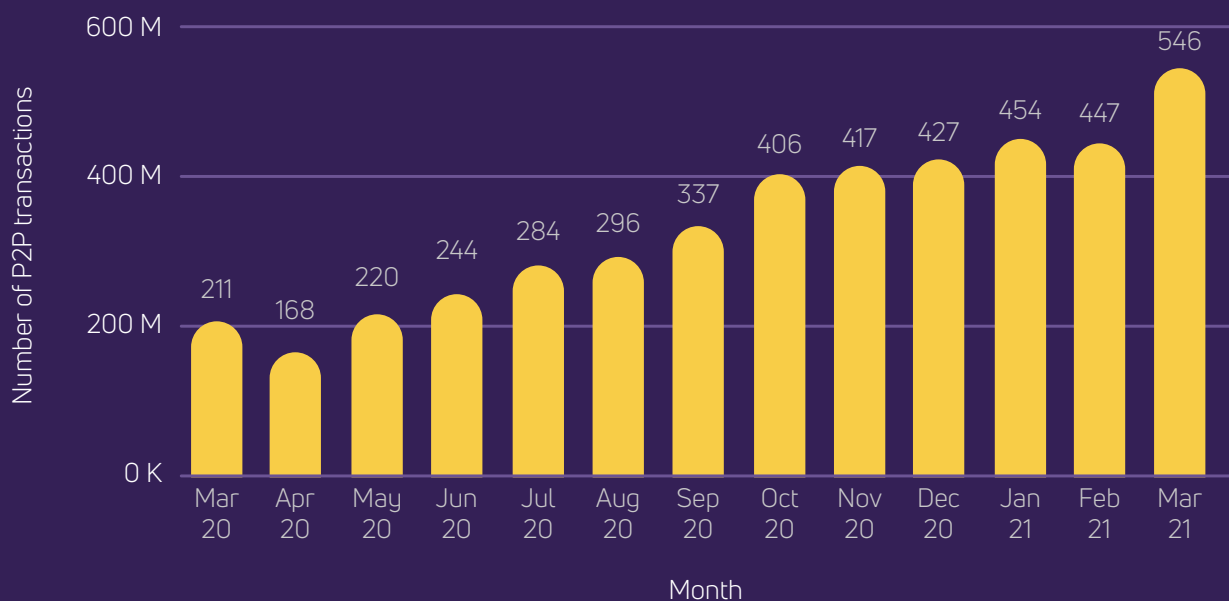
# Peer to Peer (P2P) payments - the initial reason to download UPI apps

The P2P category, or money transfers, has been fuelling the rapid adoption of UPI across the country. A P2P payment is one where the user sends money to another user, through UPI. Over 60% of first time transactions on the PhonePe app are P2P payments, confirming that the category acts as the initial reason for customers to download a UPI based app. To share a sense of the scale of growth, PhonePe registered 182% growth in P2P transactions and 72% growth in P2P customers from Q2 '20 (Apr-Jun '20) to Q2 '21.



The graph below shows the month-over-month growth in P2P transactions, for FY 21:

## PhonePe P2P Transaction Volumes



This category continues to grow rapidly, not just in the number of customers and transactions, but also in the value of money being transferred. PhonePe saw growth of 182% in P2P TPV (total payment value) year on year between Q2 '20 (Apr-Jun '20) to Q2 '21.

## Did you know?

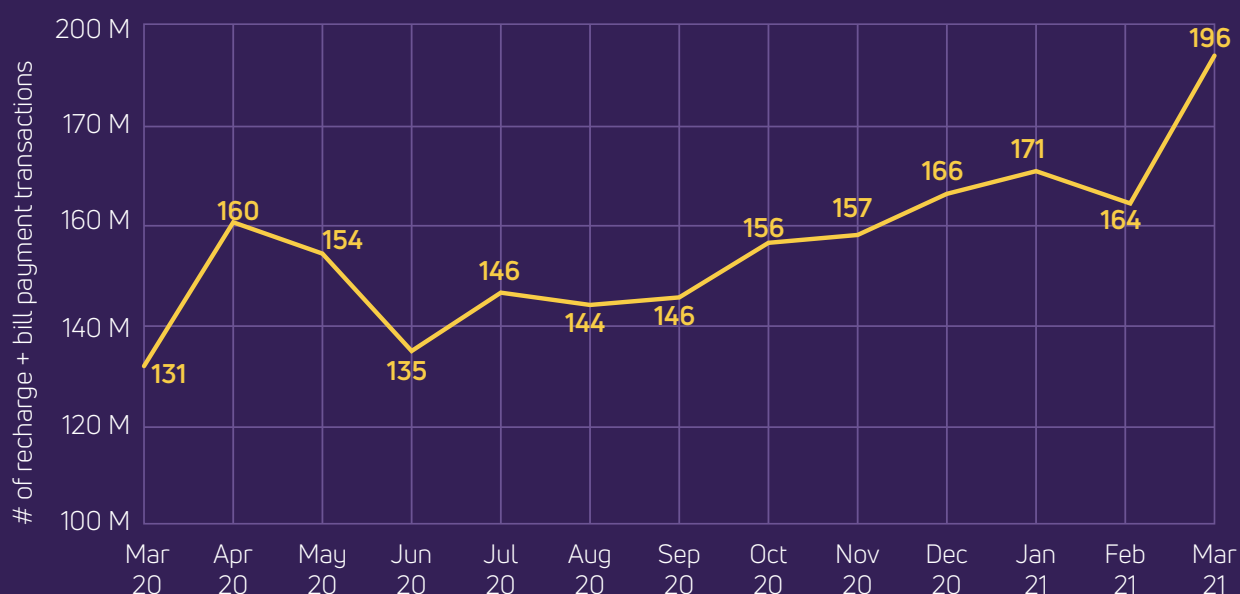
5 states - Andhra Pradesh, Karnataka, Maharashtra, Telangana, and Rajasthan contribute to nearly 58% of P2P transactions.



# Recharges & Bill Payments: Growth through the pandemic

The chart below shows how prepaid mobile recharges and bill payments, both popular use cases for digital payments, trended through 2020 and 2021.

## Recharge & Bill Payments Transactions on PhonePe



Prepaid mobile recharge transactions began showing a significant upward trend in Mar '21, and this trend continued into Q2 of 2021. Compared to transactions in Q2 '20, the number of recharge transactions in Q2 '21 grew by 51%. The growth was driven by a shift in customer behaviour. Since stores offering mobile top-ups were shut due to state level lockdowns, more users traditionally recharging offline moved to online recharges. Also, a large number of users were not only recharging for themselves, but also for their friends and family. This is indicated in the growth of unique phone numbers recharged per customer, which increased by 10-20% in these periods. The trends in Q2 '21 are similar to those we observed in Apr '20 and May '20, during the first wave of the pandemic and nationwide lockdowns.

Let's next look at **Bill payments** and examine how it has fared through 2020 and 2021. With safety being a primary concern, more and more users chose to pay their bills online, with timely reminder notifications also influencing customer behavior. As a result, bill payment transactions grew by 85% from Q2 '20 (Apr-Jun '20) to Q2 '21.

**Electricity bill payments** have emerged as the largest category within bill payments, showing strong growth across billers. A key factor contributing to this growth has been the

100% online coverage for all 73 electricity boards (both public and private sector) in the country.

Next, let's examine **DTH recharges**. Consumer behavior for this category is strongly influenced by events. For example, DTH recharges in Apr '21 and May '21 grew significantly compared to Q1 (Jan-Mar) in 2021, due to the Twenty20 cricket events held in Apr '21 as well as the state-wide lockdowns in May '21. TV became the primary source of entertainment for consumers, making DTH recharges a must.

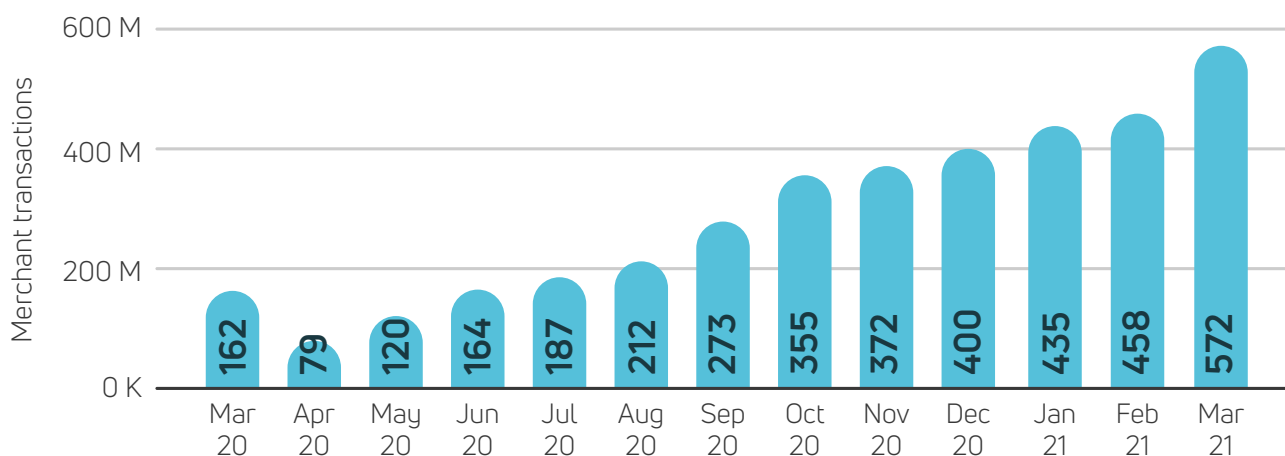
**FASTag** recharges are another important use case for digital payments. FASTag being made mandatory for cars travelling on national highways, concerted awareness campaigns by the government and private players, and consumer preference for a truly convenient and cashless solution, have led to an explosive growth for this category. The number of FASTag recharges on PhonePe in Q2 '21 (Apr-Jun '21) were over 15 times the number in Q2 '20.



# Merchant payments

Payments made to merchants have grown significantly month-on-month, post the first wave of the pandemic, as shown in the graph below. Merchant payments consist of two categories, payments made at offline stores and online payments.

## PhonePe Merchant Transaction Trends



## Payments at offline stores

Offline merchants are the brick and mortar outlets, where a customer can typically pay by scanning a QR code (eg. petrol bunks, restaurants, grocery stores etc.).

Post the first nationwide lockdown in April-May 2020, this category grew steadily month-on month, until March 2021. As the nation unlocked from May 2020, growth in this category was enabled by two main factors - consumers preferring contactless QR payments over cash for safety reasons, as well as sustained efforts by PhonePe in increasing the acceptance of digital payments at offline stores.

While this category saw a dip in transactions in Apr 2021 and May 2021, due to a series of statewide lockdowns, our analysis indicates that the number of customers transacting at

offline outlets did not show a significant change, and therefore, the dip is largely due to stores being shut. In fact, in June '21 offline payments have begun recovering, and are again on a strong growth path post the unlocking of the economy.



# Online payments - Trends to watch out for

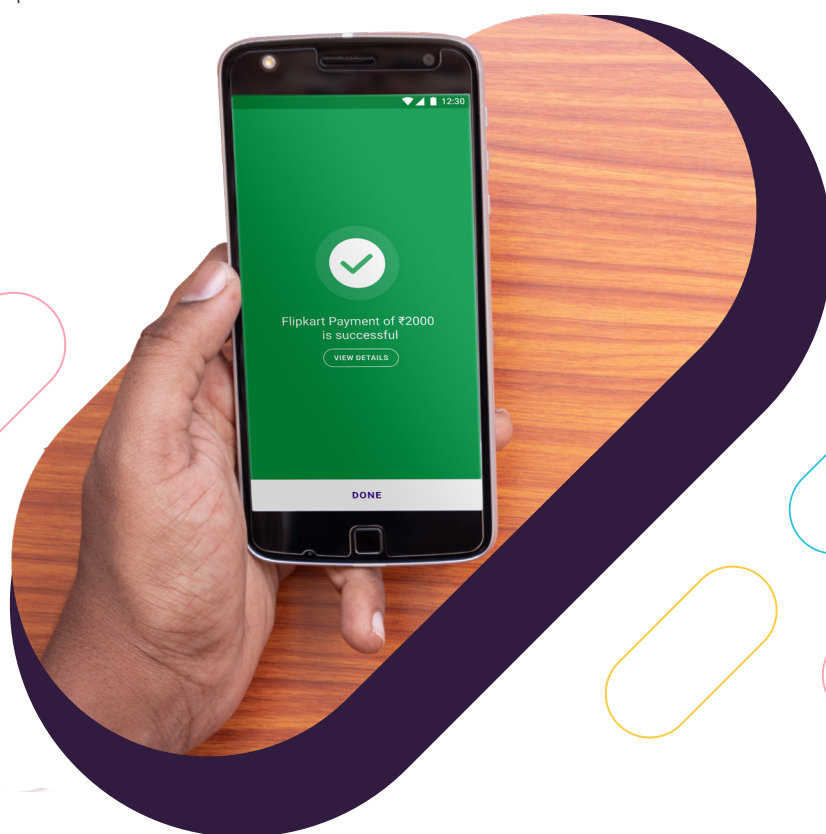
Turning our attention to online payments, some interesting trends emerge if we compare the data between 2020 and 2021. Online payments are defined as payments made to merchants with whom TPAPs (third party application providers, like PhonePe) and payment gateway companies are integrated as a payment method on their app/site (eg. online food delivery companies, e-commerce companies, etc.)

The past year has been a year of spectacular growth for online payments, with the transactions in Q2 '21 (Apr-Jun '21) showing almost 2.5x growth over Q2 '20. To understand this category better, let's go deeper into some of the use cases.

Online food delivery and online shopping are two of the biggest use cases for online payments and they both showed a similar usage pattern through the pandemic. When

the pandemic hit, initially transaction volumes dropped to less than one-third of the previous numbers, since safety and accessibility were big concerns for consumers. However, through the second half of 2020, most players in these segments invested heavily in safety measures, and expanded their services to include all consumer essentials. Cut to Q2 '21, through the second wave of the pandemic, transactions in these two categories grew month-on-month.

Another important use case which drives a high volume of online transactions is Gaming & Entertainment. Cricket events are big contributors to the surge in transactions for this segment. This trend was visible in Apr '21 during the last Twenty20 cricket season, when transactions increased by over 70%, compared to Mar '21.



# Financial services -

## Penetration across India, with huge room for growth

We next deep dive into financial services on the PhonePe platform, which includes gold, insurance and mutual funds. Financial Services have seen rapid traction across Tier 2, Tier 3 cities and beyond on PhonePe, with many first time investors and insurance buyers.

Interestingly, PhonePe's insurance offering is largely purchased (close to two-thirds) from customers in Tier 3 cities and beyond.

The PhonePe platform has also seen gold purchases from over 99% pin codes and mutual fund investments from over 95% pin codes in the country. These statistics are a clear indicator of how digital payment apps

are making insurance and investment products more accessible to users across the country.

Furthermore, the average transaction values since the launch of these categories (spanning insurance, investments and gold purchases) have almost doubled across the board. This indicates increasing customer awareness as well as confidence, in purchasing these traditionally 'push' only products over a digital medium. This confidence is also translating into customers purchasing more comprehensive plans for insurance, and at the same time, setting aside an amount to invest and grow their wealth.

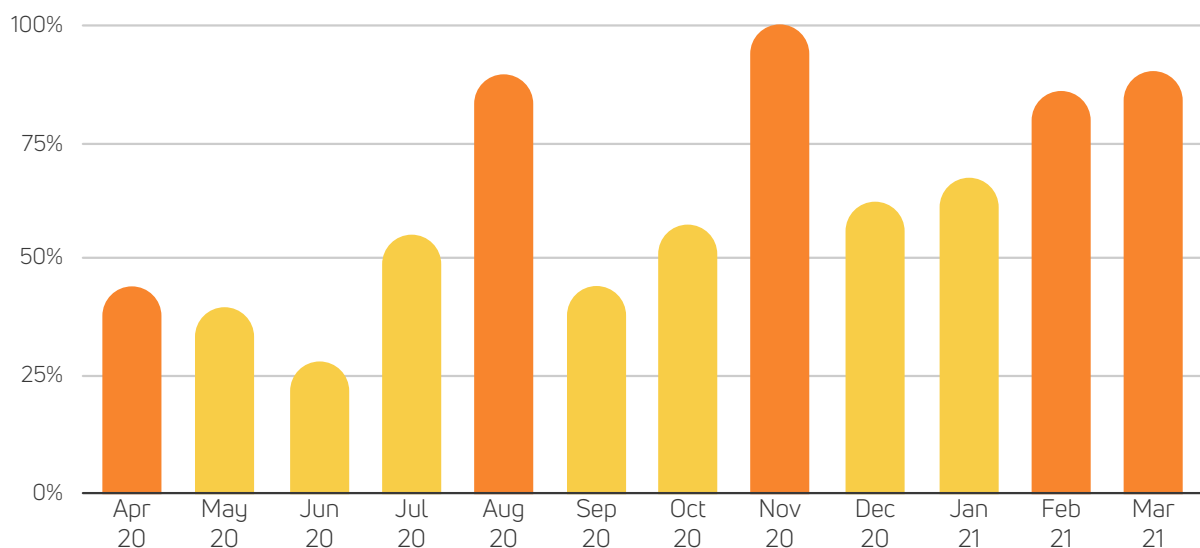


# Gold remains a popular investment across India

India's love for gold is well known. Indians not only invest in gold as a long term investment, but also consider it an auspicious totem to welcome new beginnings. Our data shows that a major driver of gold purchases are festivals. As indicated in the graph below, we can see spikes around Akshaya Tritiya (Apr'20) as well as around Diwali (Nov'20) in the value of gold purchased on the platform. Another strong driving factor for gold purchases are sharp changes in price, seen in Aug 2020, Feb 2021, and March 2021.



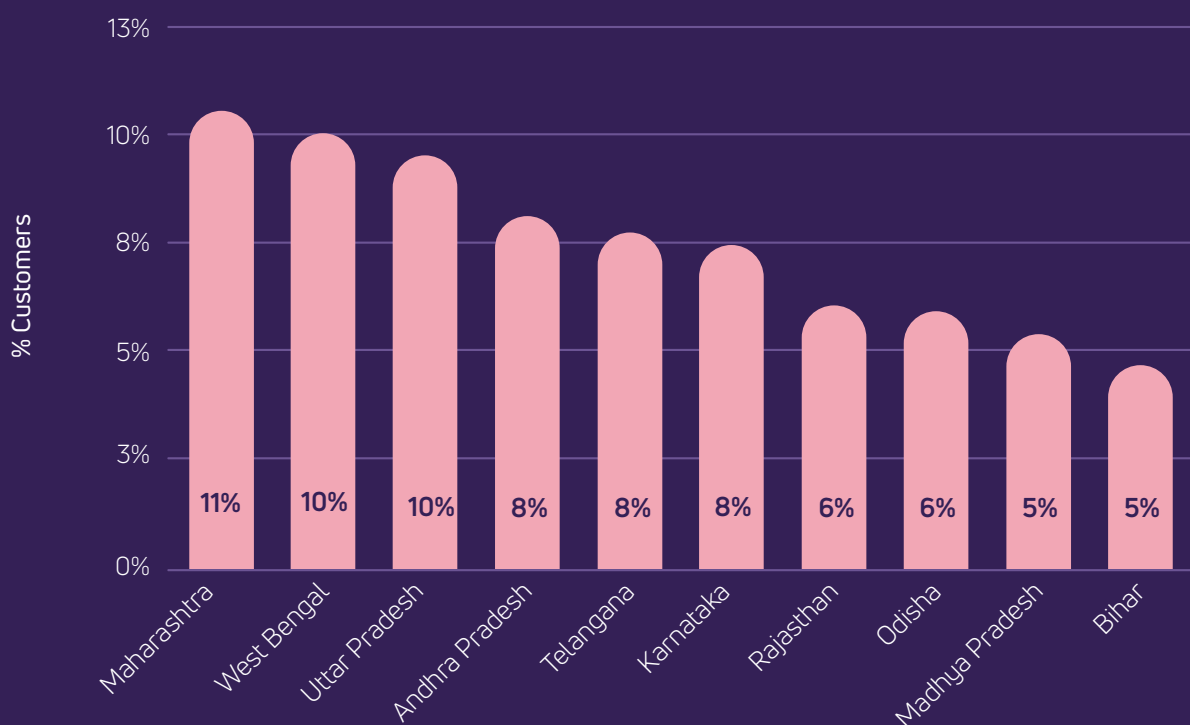
**Value of Gold Purchased on PhonePe month-on-month, relative to Nov 2020**



Interestingly, Kerala, while being the state that buys the largest overall volume of gold<sup>10</sup> in India has not taken to buying it online as yet. Maharashtra, West Bengal, Uttar Pradesh, Andhra Pradesh and Telangana are the top states when it comes to buying gold on PhonePe.



### Top 10 states that buy gold on PhonePe



With rapid awareness, digitization and a recovering economy, we believe the trend of customers investing in diversified assets will only continue to accelerate.

Let us next look at geographical trends and the penetration of digital payments across various states in India.

<sup>10</sup>As per an NSSO survey

Chapter 4



# Geographic trends: Opportunities for depth and growth



Anita, a mom and busy executive in Delhi, uses PhonePe to pay her bills safely in a contactless manner.



While Kupamma, a cook in Dharwad who works in multiple houses, receives her salary and pays her monthly rent using UPI.

Both find UPI easy and convenient to use - it serves their needs for a fast, convenient and safe mode to exchange money digitally.

That's the magic of what UPI has done for the country - it has democratized payments, cutting across socio economic divides, gender, geography, education levels, income levels and more.

**Before we dive in, let's take a step back to remember how diverse our country<sup>11&12</sup> really is:**

- 28 states and 8 union territories
- 122 major languages and 234 identifiable mother tongues
- More than 40 cities with a population of more than ten lakh, 396 cities with a population between one to ten lakhs
- 19,100 unique pin codes in India
- 8,529 cities in total

Let's now explore how digital payments have taken root in the country in the last few years.

<sup>12</sup><https://knowindia.gov.in/states-uts/>

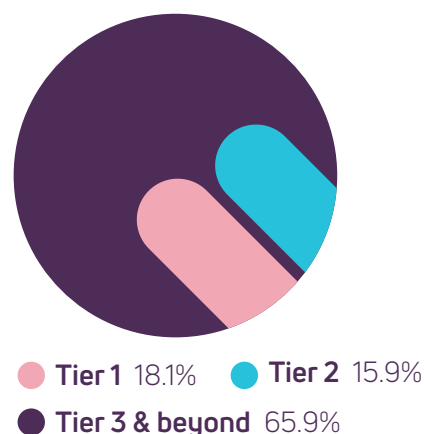
<sup>13</sup>[https://data.gov.in/catalog/all-india-pincode-directory?filters%5Bfield\\_catalog\\_reference%5D=85840&format=json&offset=0&limit=6&sort%5Bcreated%5D=desc](https://data.gov.in/catalog/all-india-pincode-directory?filters%5Bfield_catalog_reference%5D=85840&format=json&offset=0&limit=6&sort%5Bcreated%5D=desc)

# Digital payments have a wide geographical spread

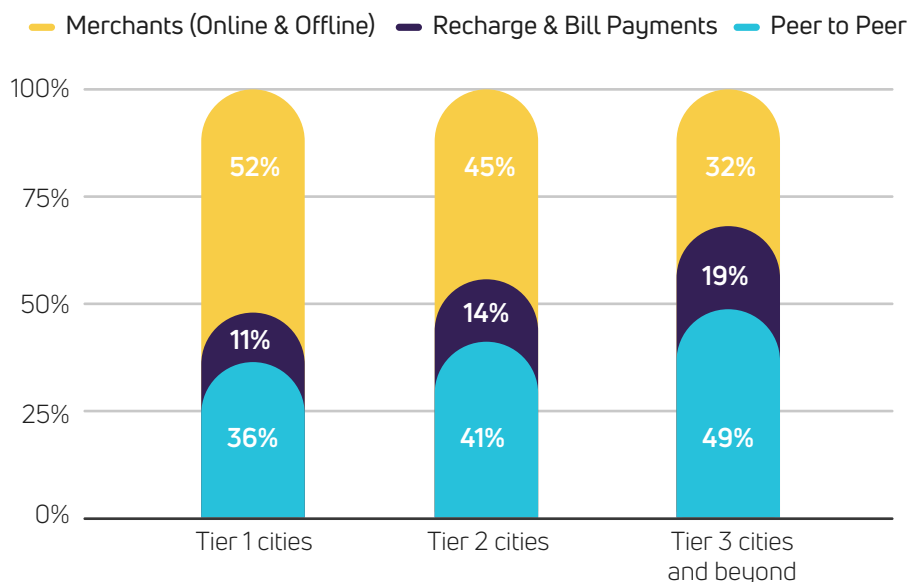
A whopping 80%+ of PhonePe's monthly active users (MAUs) are from Tier 2, Tier 3 cities and beyond. The same can be seen in the graph on the right side.

Examining transactions across categories such as peer-to-peer payments (P2P), recharge & bill payments, online & offline merchants, we see slight variations in trends across city tiers. While the recharge & bill pay and P2P categories are indexed slightly higher in Tier 2 cities and beyond, the opposite is true for the offline & online merchants category, which is more indexed in Tier 1 cities.

Monthly Active Users  
- Geographical Split



## Tier Wise Distribution Of Transactions Across Categories



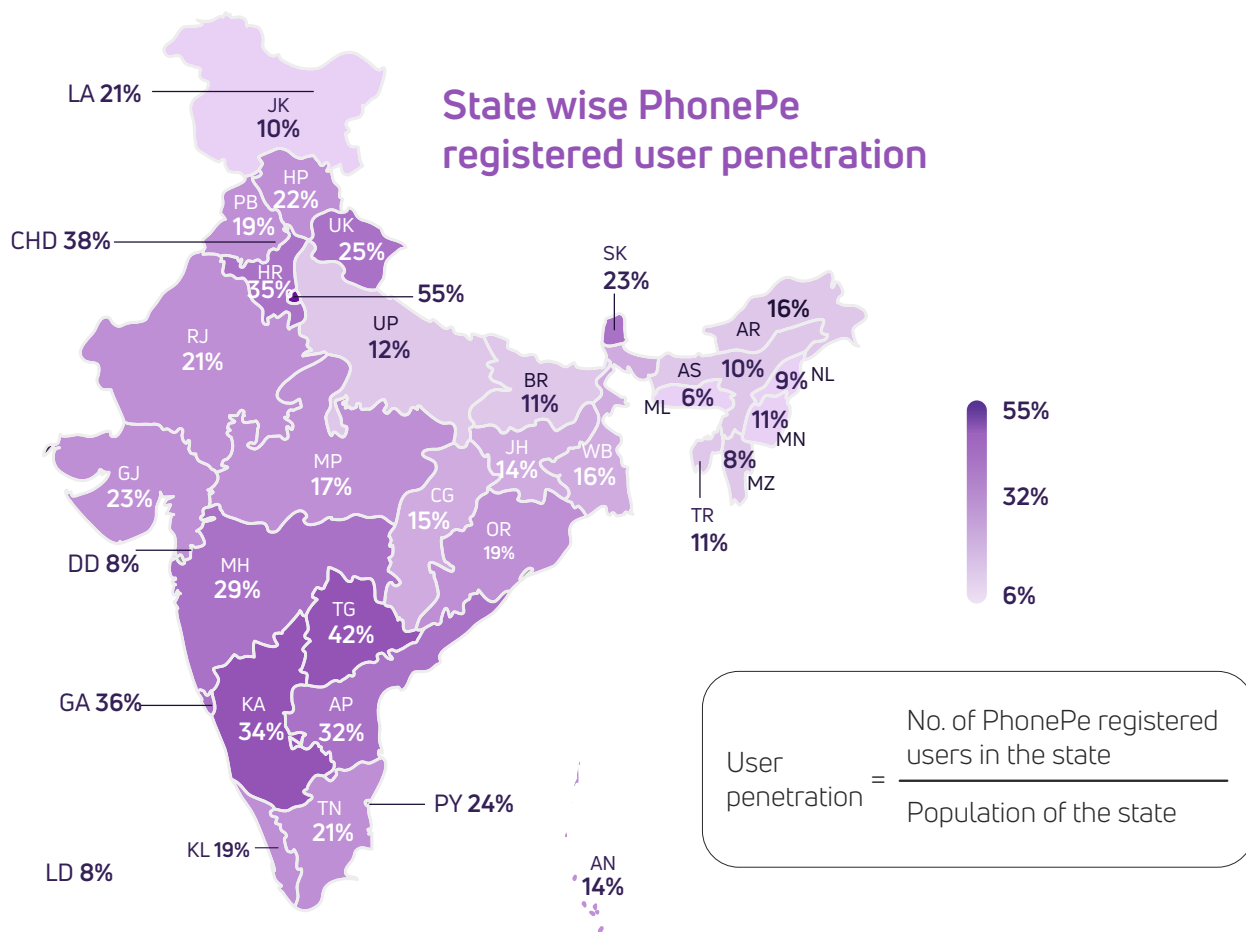
Across locations, P2P transactions constitute a significant percentage of the total transactions, with the share going up as one moves from Tier 1 to Tier 3 cities. Interestingly, P2P contributes to nearly 50% of transactions in Tier 3 cities and beyond.

While city tier wise trends are useful, looking at the pin code wise penetration lends an even clearer picture of the spread of digital payments in the country. In the year 2020 and 2021, we saw users and transactions from over 19,098 pin codes in the country, representing over 99% coverage of the overall pincodes in India.

# State wise penetration indicates huge variance and room for growth

As per the Credit Suisse India Fintech Report Feb '21, there are over 600 million smartphone users in India, and over 50% of these users are using a digital payments platform. PhonePe has over 300 million registered users. A registered user is defined as someone who has downloaded the PhonePe app and accepted the usage terms and conditions. PhonePe's registered user base is strongly indicative of the state wise penetration of digital payments in the country.

Looking at the number of registered users on PhonePe as a percentage of the population of the state they come from, gives a clear idea of the user penetration each state has achieved.

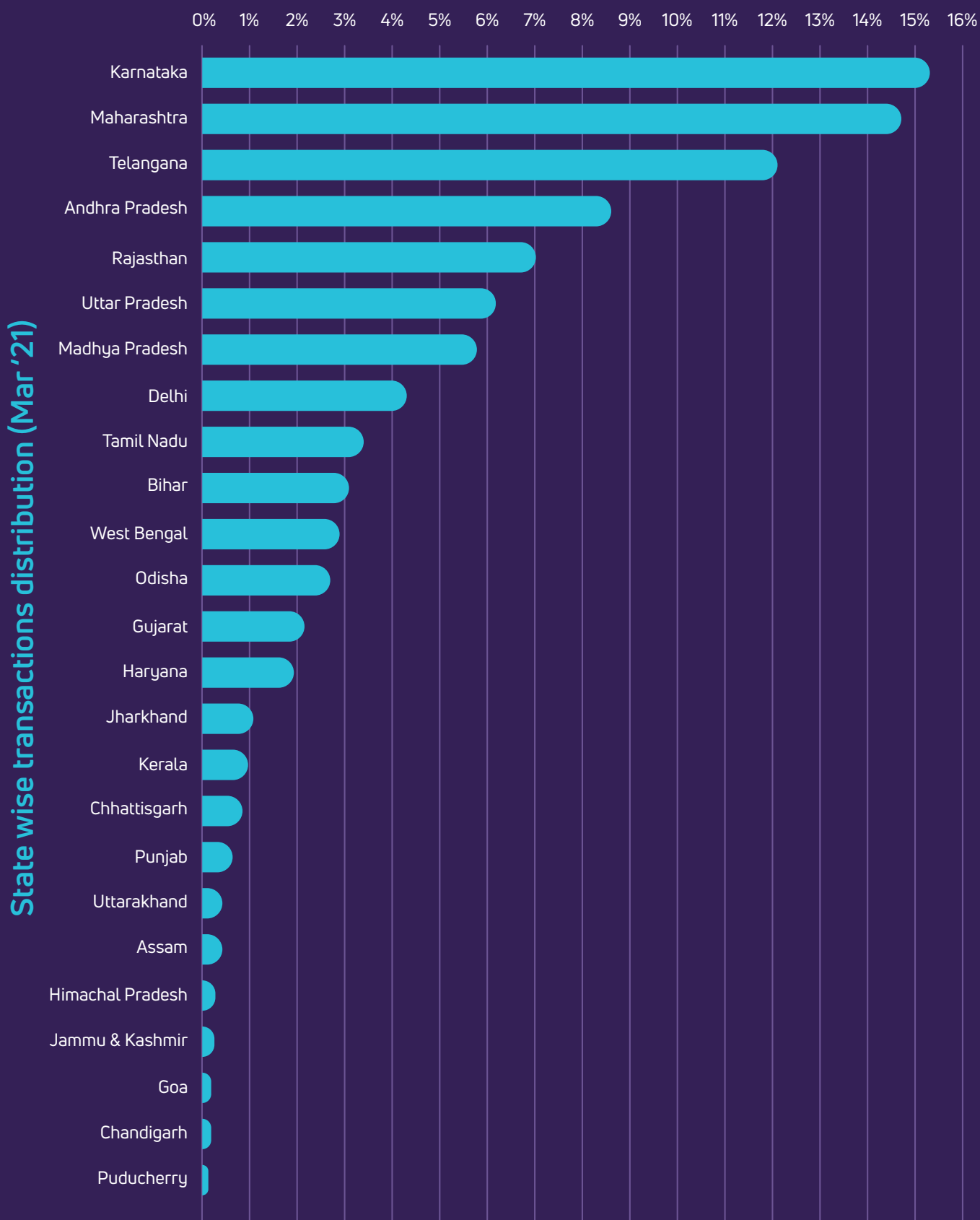


The illustration above indicates that only 8 states and UTs have more than 33% population registered on the PhonePe app, indicating significant head room for growth across the country.

For example, West Bengal, Uttar Pradesh and Bihar show up among the states where a majority of citizens haven't gravitated to paying digitally. While these three states make up 34% of India's population, they only constitute 22% of the total registered users on PhonePe across the country.

In contrast, the top 10 states & union territories have 40% registered users on PhonePe, while accounting for just 24% of the population.

If we look at state wise distribution of digital transactions, the graph below shows Maharashtra, Karnataka and Telangana contribute to more than 40% of the total number.



# What does the growth rate by state look like?

PhonePe customers across India grew by 50% between Mar'20 to Mar'21. Nagaland saw the highest customer growth rate of 106% while Delhi saw the lowest growth rate of 37%. These numbers are also skewed by the small population size of Nagaland.

For the same time period from Mar'20 and Mar'21, we saw a 159% growth in transactions across India, with 13 of the 36 states and union territories registering growth rates better than the all India average and 30 states and union territories registering more than 100% growth. This higher growth rate of transactions, relative to the customer growth rate of 56% shows that customers are now using digital payments more frequently

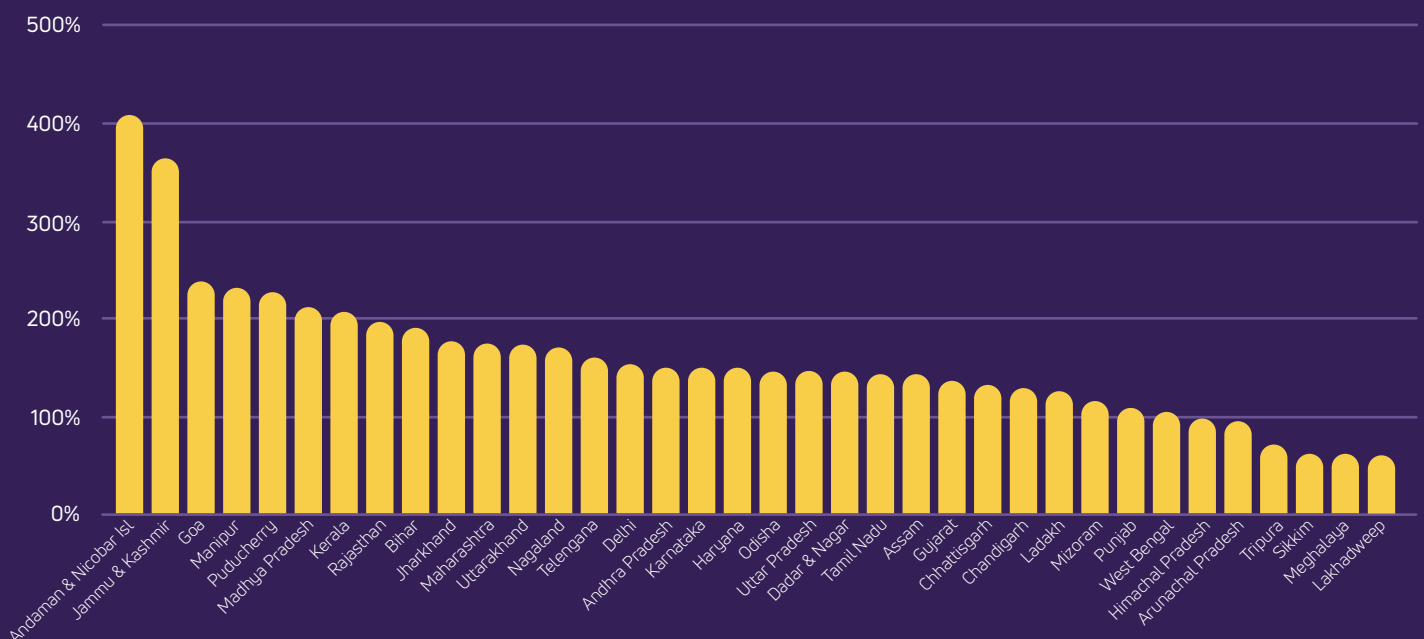
than before.

In an interesting trend, Mizoram, Assam and Manipur from the North Eastern states were the ones that saw over 100% growth in digital transactions. Among them, Manipur registered the highest transaction growth at 231%.

Andaman & Nicobar followed by Jammu & Kashmir were the two regions with the highest transaction growth rate at 408% and 365% respectively among all states & union territories, albeit on much smaller Mar'20 base numbers.

This is depicted in the graph below.

## Transaction Growth by State (Mar '20 - Mar '21)



In the next section, we take a more detailed look at improving trust within the digital payments ecosystem.

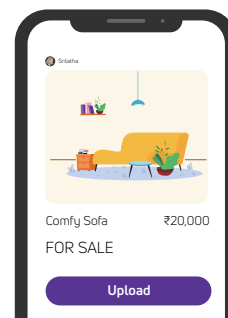
Chapter 5



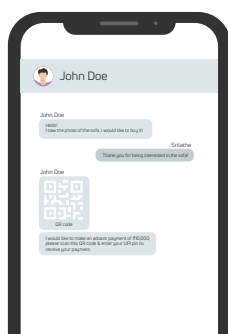
# Enabling trust and enhancing the safety of digital payments



Srilatha, a retired school teacher in Hyderabad, wanted to sell her sofa.



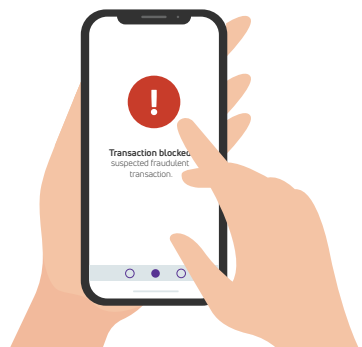
She posted photos on a re-selling app.



Within minutes, she was contacted by a buyer who sent her a QR code, requesting her to scan and enter her UPI pin to receive an advance \$150



Excited that the sofa was getting sold so quickly, Srilatha quickly scanned the QR code via her payment app.



To her surprise, she saw a message that this transaction was blocked due to a suspected fraudulent transaction.

**The payments platform had just saved her from being defrauded.**

Many of us are now familiar with such anecdotes. The rise in digital payments has also led to an increase in fraudsters, taking advantage of gullible customers unfamiliar with or new to digital payments.

For the Indian payments ecosystem, there needs to be a continuous effort around making payments easy, trustworthy and safe to bring the next wave of users into the digital payments fold.

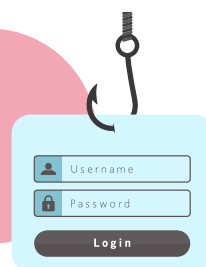
In this chapter, we examine the fraud modus operandi and how the ecosystem participants can protect customers. We also look at what else needs to be done to boost trust in the digital payments ecosystem.

# The Fraud Modus Operandi

Frauds in the digital payments ecosystem can be classified into 4 types - based on the victim's experience.

## 1. Victim shares information with the fraudster

**Phishing** - Fraudsters send fake emails/messages etc. hoping users will part with personal information.



## 2. Victim's critical information is stolen by the fraudster

**Social Engineering** - Fraudsters give incorrect details on websites/apps, intercept calls/emails and steal the customer's personal information.



**Card & OTP theft** - Fraudsters get hold of a user's OTP after first stealing the credit or debit card details. Using the OTP they are able to purchase items on the internet and get it delivered to their address.



**KYC fraud** - Fraudsters send users messages about their KYC expiring and try to get their personal details.



**SIM theft** - Fraudsters get users to share their 20 digit SIM card number, which gives them access to confidential OTP messages. They use this information to deactivate the victims' SIM card and defraud them.



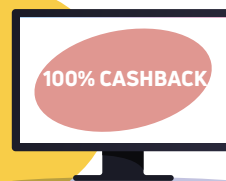
### 3. Victim's device is compromised by the fraudster

**Screen sharing** - Fraudsters get users to download a screen sharing app to access personal information.



### 4. Victim pays the fraudster

**Via fake cashback** - Fraudsters lure customers with fake banner adverts on websites.



**QR code to steal UPI PIN or UPI PIN request to receive money** - Fraudsters get users to share their UPI PIN in the context of sending users money or get users to scan a QR code in the context of depositing money in a user's bank account.



**Fake shopping offers** - Fraudsters lure customers with offers that look too good to be true and get them to click on an offer and place an order.



# Education, technology & reporting: The three pillars to protect customers

In order to protect customers from falling a victim to fraudsters, there needs to be a concerted effort on three main fronts:

- Consumer education around the common modus operandi adopted by fraudsters
- Using technology to protect consumers seamlessly and continuously in the background
- Instituting an easy mechanism to report frauds and get swift redressals so that consumer confidence in the ecosystem remains high

**Let's examine each of these in detail:**

## Education - the first line of defence

Digital payment companies realise how important it is to educate customers on safe transactions. From running consumer education blogs and communication through emails and notifications, there is a constant effort to nudge users to transact safely.

Additionally, the RBI, NPCI and payment apps have engaged in multiple marketing/awareness campaigns to educate customers about the methods adopted by fraudsters to defraud them and steps they need to take to safeguard themselves.



## Technology - the second line of defence

With fraudsters continuously evolving and creating more sophisticated methods to defraud victims, payment companies need to strengthen their defences, while continuing to keep the end user experience seamless. There is a constant trade off between tightening fraud rules to weed out fraudsters while keeping the user experience for the vast majority of users simple and intuitive.

For example, payment apps have evolved a sophisticated set of fraud prevention mechanisms which can be classified as follows:

- Fraud and business rules that flag/block transactions matching certain criteria
- Multiple real time anomaly detection machine learning based models using historical user information, user and device relationships, and real time signals to flag and block suspicious transactions.
- Continuous studies around reported frauds, to upgrade detection methods and detect new, evolving methods of fraudster modus operandi.

While enabling checks and balances along with robust fraud prevention measures it is important to keep in mind that customers should not face any inconvenience or delays.

The government too has consistently taken steps to protect customers by leveraging technology.

The Ministry of Home Affairs's (MHA) Financing Coordination Centre (FCORD) developed CyberSafe, operational from August 2019. It connects over 3,000 law enforcement agencies (LEAs), including police stations, in 19 states/UTs with 18 fintech organisations online and in real time. The mobile phone numbers of fraudsters are the key to CyberSafe. When a victim contacts the authorities, the information is entered into CyberSafe in real-time. The movement of funds is detected and communicated.

Until now, this software has recorded 65,000 phone frauds, with 55,000 phone numbers and several thousand bank accounts of fraudsters identified. Soon, NPCI will integrate with CyberSafe, broadening the scope of real-time cybercrime protection to the UPI domain, thereby amplifying its success in crime prevention. CyberSafe runs a website <https://cybersafe.gov.in>, which provides access only to law enforcement authorities and fintech entities.

The MHA also launched the India Cyber Crime Coordination Centre (I4C) that acts as a nodal point in the fight against cybercrime. The objective of this body is to identify the research problems/needs of LEAs and take up R&D activities in developing new technologies and forensic tools in collaboration with academia / research institutes within India & abroad. The body also suggests amendments, if required, in cyber laws to keep pace with fast changing technology.



## Fraud reporting & redressal - the last line of defence

By simplifying the process of reporting frauds and sharing data that bring fraudsters to justice, we can create an environment of deterrence and reduce the number of fraudsters working to find loopholes in the system. The other significant benefit is that it allows continuous feedback via high instances of 'reported transactions' which can then be fed into the digital payment companies' fraud fighting arsenal and block out new evolving modus operandi.

A "Complaint Management System (CMS)" was launched by RBI in June 2019, designed to facilitate the RBI's grievance redressal processes. Members of the public can access the CMS portal at RBI's website to lodge their complaints against any of the entities regulated by RBI.

Keeping the convenience of the customers in mind, CMS has been designed to enable

on-line filing of complaints. It provides features such as acknowledgement through SMS/Email notification(s), status tracking through unique registration number, receipt of closure advises and filing of Appeals, where applicable. It also solicits voluntary feedback on the customer's experience.

CMS has self-help material (in video format) to guide the users of the portal; videos on safe banking practices; and on the regulatory initiatives of RBI.

In summary, the above initiatives are critical to keep the trust in the ecosystem intact, and continually enhance its reputation, enabling a favourable comparison with all other methods of exchanging money, especially cash.

This is also imperative as the ecosystem players attempt to reach more users and convince them to adopt digital payments.



Chapter 6



# The path ahead for digital payments

The last few years have seen the accelerated adoption of digital payments across the country. As per Credit Suisse India Fintech Report Feb '21, there are over 600 million smartphone users in India, and this number is set to grow rapidly. While less than 30% (based on PhonePe internal estimates) of these users use a digital payments platform in a month, the scope for expansion is still immense. With payment players also entering new categories such as financial services, and enabling a whole host of new digital use cases for users, we believe digital transactions will soon be the norm for every Indian to interact with money.

## Enabling digital payments for 500 million Indians

The next phase of growth and innovation in digital payments will need the participation of all stakeholders within the ecosystem. We also believe that the current growth in the payments industry can only be sustained and accelerated, by a mix of infrastructural investments, merchant acceptance, regulatory changes and building trust in the ecosystem.



### Let's examine these in detail:

**1. Sustained investment in infrastructure:** Reliability, convenience and speed are key drivers to enable the adoption of digital payments in the country. The next phase of growth will need banks, TPAPs, and other ecosystem players to continue investing heavily in technical infrastructure. Lack of infrastructural investments would lead to more failed transactions and a loss in consumer and merchant confidence, thereby stalling digital payments adoption.

**2. Improving merchant acceptance:** Merchant acceptance is as critical as consumer adoption to ensure the success of digital payments. TPAPs and payment aggregators will need to work closely with the merchant ecosystem, and enable ubiquitous acceptance of digital payments across multiple use cases. This would mean designing and developing more merchant-focused products, along the broader themes of digitization (for offline merchants) and growth.

**3. Solving for Bharat:** The next phase of growth for digital payments is being fuelled by users from tier 2, tier 3 and beyond. TPAPs will need to build specific payment products that meet the needs of the next wave of Indians, being introduced to digital payments for the first time. Solving for language localization, consumer education, simplified onboarding etc., will be key in driving user adoption.

**4. Improving trust in the ecosystem:** A significant focus area of the ecosystem needs to be around improving consumer trust. This includes reducing fraudulent transactions and security breaches, as even a single bad experience can make a user hesitant to use digital payments again. As detailed in Chapter 5, this will need efforts on three fronts: focussed consumer education on avoiding/reporting fraudulent exchanges, building robust technical systems to prevent fraudulent transactions, and providing adequate redressal mechanisms to affected consumers.

**5. Regulation:** Regulation plays a pivotal role in ensuring that the benefits of digital payments reach all the stakeholders. In addition to the several positive steps taken by the regulators, the following regulatory changes will allow TPAPs, payment aggregators and other ecosystem players to innovate more, provide for a better consumer and merchant experience, and increase the reach of the digital payments:

- **Bringing back MDR on UPI transactions:** The Merchant Discount Rate (MDR), is a fee paid to banks, payment aggregators and TPAPs for rolling out the UPI infrastructure across merchants. Currently, MDR, by regulation, is zero, and therefore no revenue can be earned by processing UPI transactions. This implies reduced investments from banks, TPAPs and other ecosystem players on multiple fronts - the technical infrastructure needed to process transactions, improving the acceptance of UPI within the merchant network, as well as new features/innovations to solve for customers.

Bringing back MDR will enable more infrastructural investments leading to better transaction success rates and offering users a superior digital payment experience. This will also serve as an incentive for TPAPs and payment aggregators to actively continue the digitization effort across offline stores, kiranas and to go deeper into rural areas.

- **Simplifying KYC for digital wallets:** Today, KYC norms are one of the core friction points for the adoption of digital wallets. Per current regulation, permanent KYC for digital wallets can only be done through the submission of physical documents or through an in-person live Video KYC process. Permitting fully digital methods for permanent KYC (eg. eKYC using an Aadhaar OTP) will allow Wallet Issuers to roll out the benefits of digital wallets to a much larger audience, across multiple use cases.



Digital payments in India are at an inflection point and there is tremendous room for growth. At PhonePe we have always believed in harnessing the power of technology to transform lives, while building simple, scalable and innovative products for every Indian. From deep investments in tech infrastructure offering the best in terms of reliability and scalability, to building India's most comprehensive financial services platform, and expanding the merchant acceptance network across tier 2, tier 3 and beyond, PhonePe is committed to making digital payments for all Indians a reality. The path ahead for digital payments is certainly exciting, and we are looking forward to the journey.



# Methodology

# Report Methodology

The foundation of Pulse was laid at the beginning of our journey, when we were struggling to find credible data sources representative of payments in India. We promised ourselves that once we had enough data on our platform, we would open it for anyone who wanted to get deeper insights on the payments industry and its evolution. As we turned five this year and also emerged as India's largest payments platform with 46% UPI market share, we decided to fulfil our

promise of making data on digital payments accessible to all. We started working on Pulse towards the end of 2020, when transactions on our platform were seeing massive growth, with customers and merchants across the country preferring to go cashless. Pulse was the culmination of months of research and analysis by Business Analysts, Marketers, Designers, Writers, Engineering and Business teams across PhonePe.

## The insights and analysis in Pulse have been drawn from three main sources:

**PhonePe transactions data:** Data mined from over 22.4 billion PhonePe transactions over 5 years, cut by region, customer demographics, categories and cohorts.



**Merchant and customer interviews:** Stories from the heart of India! Qualitative aspects through extensive customer and merchant conversations on how they use digital payments, and how it impacts their lives.



**External data sources:** In-depth study of other research reports, newspaper articles, databases and publicly available sources to get the broader context of payments in India which laid the ground-work for understanding the overall payments ecosystem.



Do visit the Pulse website at <http://pulse.phonepe.com> for more.



# Glossary and Metric Definitions

# Glossary and Definitions :

## Key terms used in the report

### A

- **API:** An Application Programming Interface defines interactions between multiple software applications or mixed hardware-software intermediaries, abstracting away the need to know the specifics and internal information of the applications in question
- **Auto pay:** A feature allowing customers to enable a mandate based payment - that is, enable recurring payments with a one time authentication (eg. for EMI's etc.)

### B

- **Billpay:** An action of paying a bill online, through the PhonePe app. In the PhonePe context, the number of bill payment transactions would be the total number of successful utility bill payments (eg. Electricity, internet, telephone bill payments etc.), net of reversals, made on the PhonePe app.

### C

- **CAGR:** Compounded Annual Growth Rate, that is, the total growth % over a period, annualized to a year
- **Category:** The broad need under which a transaction occurs. For example, utility bill payments, mobile recharges etc.
- **Customers:** In the context of PhonePe data, this means users that performed at least one transaction on the PhonePe app, within a specific period

### D

- **Digital payments:** Any monetary exchange between a sender and a receiver where the money leaves the sender's bank and arrives directly to the receiver's bank account, executed via a digital instruction given to the

sender's bank account

### E

- **EFT:** Electronic Funds Transfer allows customers to send/receive money from one account to another electronically over a computerized network

### G

- **Gold customers:** The total number of registered users who made a successful payment to buy gold on PhonePe

### I

- **IMPS:** Immediate Payment Service (IMPS) is an instant interbank electronic fund transfer system that allows fund transfers from one account to another, in real time

### K

- **KYC/e-KYC:** Know Your Customer especially in the financial services industry to ensure that the financial institution confirms that the customer is really who they claim to be. Specifically 2 things need to be confirmed to complete the requisite "KYC" norms - Proof of Address (do you live where you say you do) and Proof of Identity (are you who you say you are?)

### M

- **MAU:** Monthly active users, that is, the count of unique users who have opened the PhonePe app or initiated a PhonePe payment outside of the PhonePe app, at least once in a month
- **Merchant transactions:** The total number of successful payments made to merchants, net of reversals, made on the PhonePe app. The merchant can be one that has a purely digital presence (eg. an e-commerce website), or one

that has a physical presence as well (eg. a supermarket).

## N

- **NACH:** National Automated Clearing House is a centralised web-based payment solution that helps customers make bulk payments in one go
- **NEFT:** National Electronic Funds Transfer is an electronic fund transfer system that facilitates direct one-to-one payments across the country, as long as the sender and receiver are with banks that are participants of the NEFT scheme. Payments are processed in batches, and not in real time
- **NPCI:** An umbrella organisation for operating retail payments and settlement systems in India, is an initiative of Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007, for creating a robust Payment & Settlement Infrastructure in India.

## O

- **Offline merchants:** Brick and mortar outlets that PhonePe has on boarded as merchants, either using QR codes or a collect call as the payment method (eg, petrol bunks, restaurants, grocery stores etc.)
- **Offline transaction:** A transaction that occurs digitally (without cash being exchanged), but occurs where the sender and the receiver are typically face to face. Example: A payment made at a kirana by customers using a UPI app such as PhonePe.
- **Online merchants:** Merchants with whom PhonePe is integrated as a payment method on their app/website (eg, Flipkart, Swiggy, etc.)

- **Online transaction:** A transaction occurring digitally and over the internet, such as paying on an app or a website.

## P

- **P2P transactions:** Peer to peer payments, or the total number of successful money transfer transactions, on the UPI framework, wherein the sender transfers money to an existing phone contact, a phone number not stored as a contact, or directly to a bank account number.

## Q

- **QR Code:** A machine-readable code (called Quick Response Code) consisting of an array of black and white squares, typically used for storing URLs or other information, read by the camera on a smartphone. In the UPI context, this contains the merchant's information, allowing an easy transfer of money to the merchant's bank account

## R

- **Recharges:** In the context of this report, top up of talk time/buying data packs, by pre-paid mobile users
- **Registered Users:** The number of unique users who downloaded the PhonePe app, and accepted the Terms and Conditions displayed during the onboarding process, within a specific period. The user is identified by his/her mobile phone number - each mobile phone number is treated as a separate/unique user.
- **RTGS:** Real Time Gross Settlement refers to an electronic funds transfer system that allows for the instantaneous transfer of money from one account to another on a real-time basis, without delays

## S

- **SIP:** Systematic Investment Plans that allow consumers to invest in a preset and periodic format, typically into mutual funds, allowing for rupee cost averaging.

## T

- **Ticket Size or ATV (Average transaction value):** The average value in rupees of a transaction, that is, the total value of transactions divided by the total number of transactions
- **TPV:** Total Payment Value is the total amount/value (in rupees) of transactions processed in a given time period. In the PhonePe context, total payment value is the total value of successful payments processed by PhonePe, net of payment reversals.
- **Transaction:** A payment, wherein a sender sends money to a receiver (can be a contact, a phone number, a merchant etc). In the PhonePe context, overall transactions are The total number of successful payments processed by PhonePe, net of payment reversals.
- **TPAPs:** TPAPs are Third Party Application Providers, who are service providers participating in the UPI via PSP banks. Eg. PhonePe is a TPAP.

## V

- **Value of gold purchased:** The total value of successful payments made to purchase gold on the PhonePe app, net of reversals.



# BEAT OF PROGRESS

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