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Evolution of Digital Payment System in India: Past, Present and Future

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Abstract:

Money is a medium of exchange. As civilization advanced, money took on diverse forms. Payment instruments and mechanisms in India also have a long history. During the old days, the payment instruments consisted of coins. The Reserve Bank of India was established in 1935 and given the authority to print the currency notes called "Rupaya". Different types of payment instruments and advancements in the instruments' design and payment systems have emerged as a result of the growth of information and communication technology (ICT). Online banking started in the 1990s due to the availability of the Internet which has changed the entire scenario of financial services and an era of digital payments started. Today we do not need to be physically present at bank premises to carry out various transactions because everything is present virtually and happening at our fingertips. The present article was written with four objectives in mind. First, to study the evolution of digital payments in India. Second, to study different types of digital payment systems prevailing in India. Third to study the growth and current status of different modes of digital payments in India, and fourth challenges faced in digital payment adoption by the Indian population. Analysis revealed that although the adoption of digital payments is increasing day-by-day cash is still the king in India. There are various reasons due to which digital payment adoption is slow.

Keywords: Digital, Payments, India, Growth, transactions, UPI, mobile, money, bank.

Introduction:

India's payment ecosystem has undergone a tremendous change over the past two decades, with digital payments becoming the preferred payment option for both consumers and businesses. The advent of technology, the wide spread of smartphones, and the internet played a significant role in this evolution. The transition from conventional paper-based transactions to electronic fund transfers and, finally, to digital payments has been remarkable. With the introduction of various payment modes such as mobile wallets, UPI, and internet banking, digital payments have become

more accessible, convenient, and secure.

Government is also encouraging cashless economy by introducing different methods of digital payments like UPI, mobile wallets, mobile banking, net banking, NEFT, IMPS, RTGS etc., Despite significant growth in digital payments over past decade cash is still king in India and it still preferred mode of payment. There are various reasons for slow digital payment adoption like digital illiteracy, lack of trust in new system of payment, digital illiteracy, lack of infrastructure to name a few.

This research article is aimed to study history and evolution of digital payments in India. The factors acting as growth catalysts. It was also intended to study the challenges and opportunities that lie ahead in the digital payments.

Objectives:

The objectives of this research article were (1) to study the evolution of digital payments in India. (2) to study different types of digital payments prevailing in India. (3) to study the growth and current status of digital payments in India, and (4) To find out challenges faced in digital payment adoption.

Methodology:

This review article was written based on published data by different government and non-government institutions, published research papers, published reports in newspapers and published articles and studies done by independent researchers and organizations.

History of Money and Payments:

Money is a medium of exchange - “A medium of exchange is something that buyers will exchange with a seller when they want to purchase goods or services from the seller”, Chen, J. (2020) defines a medium of exchange as “an intermediary instrument or system used to facilitate the sale, purchase, or trade of goods between parties”. In the economy, money serves as a unit of account, a medium of exchange, and a store of value, among other important roles.

Ancient civilizations used beads, and shells as a coin. Ultimately, they started using coins made up of precious metals as a medium of exchange. People in the ancient civilization of Lydia used coins made of gold and silver (History of Money and Payment, Square).

As civilization advanced, money took on diverse forms. Following Europe's adoption of the gold standard, England declared gold as its standard of value in 1816. This meant that the value of the currency was determined by setting its value in gold. The Federal Reserve System was founded by the United States in 1913. In this system, Federal Reserve notes were backed by gold. The role of the Federal Reserve was to serve the financial interests of the nation.

Evolution of Payment System in India:

In India, payment methods and techniques have also been around for a while. Coins with

punch markings were used as payment devices in the past. These coins were made of copper and silver, and interregional money transfers were made possible by the credit system, which included bills of exchange.

In ancient world coins were issued by Chinese, Indians, and Middle Eastern Lydians. Ancient India's Mahajanpads or Republic Kingdom produced the first coins in the sixth century BC. (Goyal, 2017).

The Bank of Hindostan, General Bank in Bengal and the Bengal Bank were the first banks in India to issue paper money in the 18th century, marking the beginning of the issuance of paper money in British India.

The Reserve Bank of India was established in 1935 with the authority to print "Rupya," or government of India notes. The Sanskrit term Rupee, which meaning "shaped, stamped, impressed, or coin," is where the word "Rupaya" first appeared. Additionally, 10,000 rupee notes were produced by the RBI and eventually demonetized following independence. A five rupee note with the image of King George VI was the first piece of paper money the RBI ever printed in January 1938.

Payment and settlement act 2007 which governs and control India's payment system gives authority to Reserve Bank of India for all its matters related to it and designate it as authority for its implementation. RBI. RBI is authorized for all pre-paid instruments, card schemes, cross-border inbound money transfers, Automated Teller Machines (ATM) networks, and centralized clearing arrangements. Different types of payment instruments and advancements in the instruments' design and payment systems have emerged as a result of the growth of information and communication technology (ICT). Cheques and cheque clearing systems were the primary payment methods for a long time before they were replaced by MICR clearing systems in the middle of the 1980s.

Use of Credit Cards:

The first cashless payments were made in the 1950s. The introduction of credit cards brought about a revolution in payment history by enabling cashless transactions. It was in the 20th century that credit cards were invented. The primary goal was to facilitate people's money spending ((History of Money and Payments, Square). When Bank of America created a general-purpose credit card in 1958, the first credit card payment ever made was made with it. Originally constructed of paper, it was later altered to be made of plastic. Later, in 1969 and 1972, bank cards were also issued by Barclay, London, and Lloyd Bank, among other businesses (Gadhi, 2020).

Evolution of Digital Payment Systems:

The technology that Michal Aldrich created in 1979 made it possible for clients to make direct phone and electronic purchases, paving the way for traders and customers to transfer money electronically. Following the creation of the Internet, digital payment methods emerged.

Online shopping began in the 1990s as a result of the internet's development. Online

shopping became popular. As per the history of online payments, it appears that Pizza Hut was the first retailer to use e-commerce. The business let its clients place online pizza orders. Customers of Stanford Federal Credit Union were able to access internet banking services in 1994.

The advent of the Internet in the 1990s allowed for the emergence of online banking and completely changed the landscape of financial services. Today we do not need to be physically present at bank premises to carry out various transactions because everything is present virtually and happening at our fingertips. Activities such as sending money, withdrawing of cash, checking account balances, etc., could be done online and one need not go to the bank to carry out these activities.

Non-Cash Payment System in India:

Before the development of the digital payment industry, the majority of payments were made with cash and checks, which is why they were recognized as payment instruments. However, the entire payment system has changed.

Cash is the de-facto mode of payment across the globe and hence in India too. The world started accepting cashless modes of payment much before India saw the onset of cashless transactions.

Despite people's preference for cash over non-cash transactions digital payment methods are on the rise although the rate is slow. Today larger part of our daily activities are majorly dependent on cashless transactions. It took a lot of years and strenuous efforts and changes in the system to come up with something easy, flawless, secure, and reliable which was a great challenge in the past. Digital modes of payment is growing steadily for the past many years.

Demonetization accelerated the widespread adoption of digital payments; since then, cash has returned, but mobile payments are now used twice as frequently. The government is actively promoting mobile-based payment methods like USSD as well as "Aadhar"-based payment methods like AEPS and mobile ATMs at the moment.

By the fiscal year 2023, digital payments are expected to total \$1 trillion USD, according to Credit Suisse. It was 200 billion USD in 2018 (of which only 10 billion USD came from mobile). The mobile payment sector will drive this expansion. In terms of all real-time digital payments made worldwide in 2021, India accounted for 40% of the total (Business Today, 2022).

Different Digital Modes of Payments in India:

In India currently, 10 or more different cashless digital modes of payments are in force. These cashless modes of payment are - Banking cards, banking pre-paid cards, USSD, Point of Sale, AEPS, Internet Banking, UPI, Mobile Banking, Mobile Wallets and Micro ATMS (cashlessindia.gov.in, 2023). A brief description of each of these digital modes of transactions is given below.

Banking Cards:

Banking cards are a secure, convenient cashless mode of payment, which gives more control to users than any other payment method. These cards offer two levels of security secure PIN and OTP. Variety of cards are available viz. credit, debit, and pre-paid cards. Some of examples of these cards are RuPay, Visa, Master Card. This pre-aid card is not linked to a bank checking account, instead consumer is spending money placed in advance in a prepaid card account which is called “loading money onto the card”.

Unstructured Supplementary Service Data (USSD):

A distinctive interoperable direct-to-consumer service known as USSD or *99# connects a variety of ecosystem stakeholders, including banks and telecom service providers (TSPs). With this service, mobile banking transactions are permitted utilizing a phone's basic features; a mobile internet data facility based on mobile banking and smartphones is not required.

This service was developed to help underbanked people who live in areas without access to traditional banking services so that they can be financially included. Bringing banking services to every common man in the nation was the goal of the *99# service. Customers can use this service by dialing *99# on their mobile phones, which is a standard number for all telecom service providers. Customers can then make purchases from an interactive menu that appears on their phone's screen.

Point of Sale (PoS):

Point of Sale or PoS in short, is a place where sales are made. At the macro level a PoS may be a city or market or a mall and on micro level it is an area where a customer completes a transaction at a retailer's place e.g., checkout counter. The necessary conditions or devices to provide PoS service are a handheld device or biometric reader, merchant bank account, and internet connectivity. One can avail of this service with any bank's debit or credit card.

Mobile PoS:

A smartphone or tablet has the necessary technologies to function as a typical POS system is referred to as a mobile POS system. In a transaction, a mobile POS system can operate as both a card reader and a cash register. The gadget is typically wireless and small, like a smartphone or tablet. Smartphone, bank apps, integrated or external card readers, biometric reader, internet connectivity, QR reader, bar code reader, and/or Bluetooth device are needed for mobile point-of-sale systems.

Aadhaar Enable Payment Service (AePS):

The AePS model, which is powered by banks, enables online interoperable financial inclusion transactions at PoS (MicroATM) employing the Business Correspondent of any bank. Six different types of transactions are possible with AePS. For using AePS, a customer's IIN (identifying the bank with which they are linked), Aadhaar number, and fingerprint taken upon enrolment are the only inputs needed to complete a transaction.

BHIM Aadhaar Pay:

With BHIM Aadhaar pay, retailers can accept digital payments from customers in-person using Aadhaar identification, from customers of any bank using biometric authentication, and to instantly deposit sale revenues into the retailer's own bank account.

NET Banking:

Online banking, e-banking, virtual banking, etc. are some other names for Internet banking. It is an electronic payment system that allows customers of banks or any other financial institution to carry out several kinds of transactions via the website of a bank or financial institution, eliminating the need to physically visit the bank to carry out transactions and get bank services. Net banking offers many online transaction types, including NEFT, RTGS, ECS, and IMPS.

National Electronic Fund Transfer (NEFT):

One-to-one fund transfers are made possible via the national payment system known as NEFT. Through the use of this technology, money can be electronically transferred by businesses, firms, or people to any other bank branch. Cash deposits can be made at NEFT-enabled branches by anyone without a bank account as long as they have instructions to send money via NEFT. Remittances are subject to a limit of Rs. 50,000 per transaction.

Real Time Gross Settlement (RTGS):

RTGS is a continuous (real-time) fund transfer settlement system. When inputs are processed instantly rather than later, it is referred to as real-time. The term "gross settlement" describes how each fund transfer directive is settled separately. The majority of transactions using RTGS were high-value ones. The least amount that can be transmitted using RTGS is two lakh rupees, and there is no upper limit on amount that can be sent.

Electronic Clearing System (ECS):

ECS is an alternative method of utility bill payments like telephone bills, electricity bills, insurance premiums, card payments, loan payments, etc., which obviates the need for issuing and handling paper instruments.

Immediate Payment Service (IMPS):

IMPS is a mobile-based, round-the-clock interbank electronic fund transfer service. With IMPS, you may send money instantly between banks in India via ATMs, smartphones, and the internet. IMPS is a reasonably priced and totally safe service. The goals of IMPS are to: (a) make it easier for bank clients to access and send money from their bank accounts using mobile devices; (b) streamline payment processes by requiring only a mobile number; and (c) provide the groundwork for an extensive range of mobile-based banking services.

Unified Payment Interface (UPI):

The service's pilot program was started in April 2016 by Dr. Raghuram Rajan, the RBI

Governor at the time. From 25th August banks started uploading their UPI-enabled apps on the Google Play store platform. UPI has taken a share of more traditional methods of digital payments like card transactions and net banking. Unified Payment Interface which is abbreviated as UPI is an RBI-regulated interface that allows users to transfer funds immediately using a mobile device. Using a mobile device, users can instantly transfer money between bank accounts through this real-time payment system.

Every bank offers a unique UPI application for the different Windows, iOS, and Android operating systems. It is good for paying utility bills, using an app, making barcode-based payments, etc. The main characteristics of UPI are (a) instant transfer of funds through IMPS which is faster than NEFT (b) due to its complete digital format it can be used 24 hours and on all public holidays. (c) Various bank accounts can be accessed through a single mobile application (d) MPIN or Mobile Banking Personal Identification is required (e) It is also available on USSD service in which users can avail this service by dialing *99# using feature phone only and can choose services like fund transfer, send money, request money, non-financial services, etc.

The features of UPI are as follows – Instant transfer of money can be done round the clock 24x7 and 365 days. A single mobile application is used to access different bank accounts. Two-factor authentication. Provides the virtual address of the customer which does not require the customer to enter card details, account details, IFSC code, etc. Now QR code is also available to make payments. It can be used for merchant payments, utility bill payments, over-the-counter payments, etc.

Mobile Banking:

Banks and other financial institutions that offer mobile banking services enable their clients to carry out many types of financial transactions remotely using a mobile phone or tablet and specialized software called an app.

Mobile Wallets:

A mobile wallet can be used to carry around digital cash, or money in a digital format. You can link your credit or debit card information on a mobile device to transfer money to a mobile wallet online. Rather than making purchases using a conventional credit card, you can use your smartphone, tablet, or smartwatch to make payments. An individual's account needs to be linked to a digital wallet in order to add money to it. E-wallets are proprietary to most banks and a few private enterprises. Paytm, Freecharge, Mobikwik, Oxigen, mRuppee, Airtel Money, Jio Money, SBI Buddy, itz Cash, Citrus Pay, Vodafone M-Pesa, Axis Bank Lime, ICICI Pockets, SpeedPay, and others are a few examples of mobile wallets.

Micro ATMs:

Micro ATM, as clear from its name are mini version of an ATM, but it has features like point of sales. They are connected with the bank through the GPRS network for carrying out bank-related

transactions. They can be operated using a card swipe and also with fingerprint scanners. Micro ATMS are useful for remote locations. It is a doorstep mobile banking arrangement cum-mobile ATM device. The cost of deployment of a micro-ATM is less than that of an ordinary ATM. It is portable; hence it can travel from village to village.

NCMC (National Common Mobility Card):

The National Common Mobility Card (NCMC) is a transport card that may be used to pay for travel, tolls, retail purchases, and cash withdrawals. It is an invention of the Ministry of Housing and Urban Affairs of the Government of India and was launched on March 4, 2019. It is operated through the RuPay card system.

The cashless digital payment applications/tools described above are playing a significant role in pushing India towards a cashless economy. The introduction of these applications by the government is a major step in providing ease to customers and moving the Indian economy forward towards digital payments to make the Indian economy cashless.

Current Status of Digital Payment in India:

Cash has been in existence for more than 3000 years and soon this will not be going to disappear but cash usage will go down due to certain advantages of using digital forms of payment systems. India witnessed exponential growth in digital payments over the past few years and has seen the adoption of UPI and other fintech innovations by consumers as well as businesses in banking and in making payments. According to RBI, NPCI, and Banks data, digital payment transactions have significantly increased from 2071 crore transactions in the financial year 2017-18 to 8840 crore transactions in the financial year 2021-22 with a compound annual growth rate of 43.74% . During the same period, the value of digital transactions increased from 1962 lakh crore (2017-18) to 3021 lakh crore (2021-22) registering a compound annual growth rate of 11.39% . This growth was made possible through digital payment modes like BHIM-UPI, IMPS, NACH, AePS, NETC, debit cards, credit cards, NEFT, RTGS, PPI, etc.

The availability of contactless digital payment options, such as BHIM-UPI, during the Pandemic, facilitated social distancing and facilitated continuity of business for all types of retailers big or small (Press Information Bureau, 2023).

Although the aim of demonetization in November 2016 was not to make India a cashless society it indirectly helped in pushing India towards becoming a cashless society. The lack of cash currency during the time of demonetization gave rise to mobile wallets and other fintech innovations. Many banks collaborated to offer UPI as a payment option to customers and merchants after the National Payments Corporation of India (NPCI) released their innovation. This was a revolution that played a significant role in the Era of rising fintech in India. According to a report titled “Empowering Payments: Digital India on the Path of Revolution”, by the year 2025, the digital

payment market of India will touch 12.4 trillion dollars from 3.7 trillion dollars in 2019 in terms of its transaction value.

Many factors are responsible for the growth of digital payments in India. Earlier branch banking was the preferred mode of monetary transactions but after demonetization and digitalisation the rate of growth of digital payments increased tremendously. The advancement of technology and the introduction of budget-friendly smartphones and low internet cost triggered financial institutions to experiment with digital payments. The occurrence of the pandemic further accelerated the growth of digital payments.

Given below are a few statistics related to cashless transactions, which indicate the growth of using cashless digital modes of payment instruments.

As per statista.com data, digital payments in India increased significantly after 2015, both in terms of number as well as in terms of value. The total number of digital payments in the financial year 2022 were 72 billion, in India. This was a significant increase as compared to the previous three years. The total number of digital payments as well as the total value of digital payments which includes large interbank payments like RTGS, NEFT, individual payments using credit and debit cards, and mobile payment systems like UPI, etc. recorded strong growth since 2015. After the COVID pandemic in 2019 also digital payments increased significantly (Rathore, 2023). UPI and IMPS are both interbank instant payment systems and have seen a sharp increase in their adoption.

As per the latest RBI report published in February 2023, the growth rate in major digital payment platforms slowed down in January 2023. Growth in transactions of UPI, IMPS, and BBPS (Bharat Bill Payment System) is decreased. The growth rate in UPI payment transactions (volume) was 74.1% in January 2023 (YoY basis) whereas it was 100.5% in January 2022. In value terms, the growth of UPI transactions was 56.1% in January 2023 (YoY) whereas it was 93% in January 2022. The growth rate of IMPS (in volume) was 7.8% in January 2023 as compared to 27% in January 2022. In value terms, the growth rate of IMPS was 23.4% in January 2023 as compared to 34.1% in January 2023.

As compared to other methods of digital payments discussed above, NEFT transactions observed significant growth in both value as well as volume terms. As far as the volume of transactions is concerned, the growth rate in NEFT transactions was 32.2% in January 2023 whereas it was 26.2% in January 2022. If we talk about the value of NEFT transactions, the growth rate was 15% in January 2023 whereas it was 12.8% in January 2022. In the case of RTGS transactions, the growth rate in volume terms was 12.6% in January 2023 against the growth rate of 15.7% in January 2022. But in value terms the growth rate was high (20.1%) in January 2023 as compared to 13.9% in January 2022 (Jaiswar, 2023).

UPI Transactions:

UPI is India's indigenously developed digital payment option while cash transactions are still the most preferred payment option but popularity of UPI is also increasing. The value of digital transactions has seen exponential growth from 0.02 billion in financial year 2017 to 60 billion in December 2022. The value of transaction which was ₹ 0.1 trillion in the same period, reached to 100 trillion during this period (Mishra, 2023).

As per the times of India report, transactions under UPI crossed a new record of ₹ 14 lakh crore in March 2023. It was ₹ 12.35 crore in February 2023, thus registered a growth rate of 13.95%. The volume of transaction was reached a new height of 850 crore transactions. The volume of transaction was 728 crores in February 2023. Hence the growth in volume of transactions was 18.81% during this period. As compared to March 2022, the number of transactions were 60% higher in March 2023 whereas in terms of value the growth was 45% for March 2022 to March 2023. The reason for such a magnificent growth is that UPI transactions are now used for all types of payments for like small ticket purchase, small payment at tea stall, restaurants etc. to big investments.

The NPCI proposed a 30% volume cap for third-party app providers in order to prevent the concentration risk and offer a level playing field. Presently two digital payment apps "Phone Pe" owned by Walmart and "Google Pay" owned by Google are dominating among the third-party UPI apps. The share of "Google Pay" among UPI apps is 35% whereas it is 47% for "Phone Pe". Together their share is 82%. (Mishra, 2023).

IMPS:

There were 49.7 crore IMPS transactions in March 2023 with a value of ₹ 5.5 lakh crore. In March 2022 there were four crore IMPS transactions with a value of ₹ 4.6 lakh crore. The growth rate of IMPS (in volume) was 7.8% in January 2023 as compared to 27% in January 2022. In value terms the growth rate of IMPS was 23.4% in January 2023 as compared to 34.1% in January 2023 (NPCI data).

NEFT and RTGS:

India is ahead of many other countries in terms of the volume, value, and real-time nature of payments, having made significant advancements in the field of digital payments. Real Time Gross Settlement (RTGS) and National Electronic Fund Transfer (NEFT) are the cornerstones of India's digital payment system.

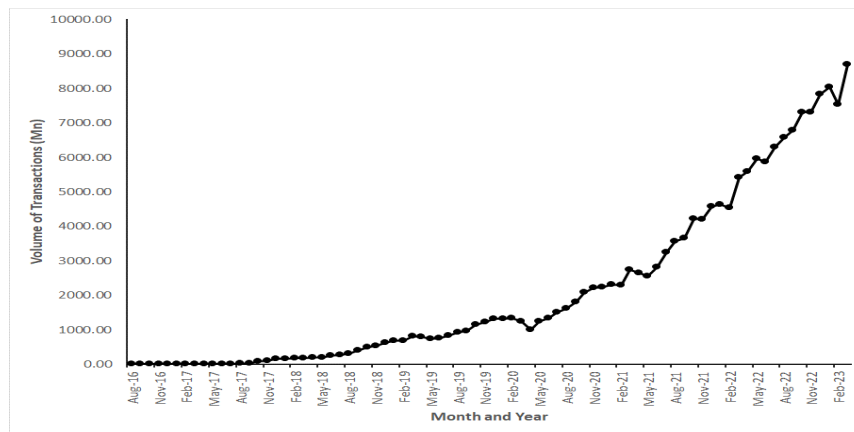


Fig. 1: Growth of UPI in India (in Volume) [Data Source: NPCI.org]

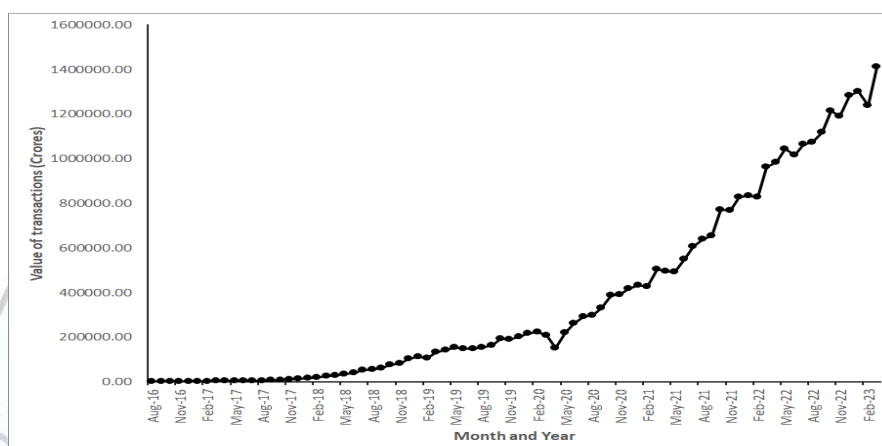


Fig. 2: Growth of UPI in India (in Value) [Data Source: NPCI.org]

The total NEFT transaction in October 2013 were 113.8 million whereas in July 2022 the volume reached to 803.7 million transactions with a compound annual growth rate of 25.03% . The RTGS transaction volume was 13.9 million transactions in October 2013 which rose to 38 million in July 2022 with a compound annual growth rate of 12.2% (RBI Reports).

Many factors are responsible for the growth of digitalpayments in India. Earlier branch banking was the preferred mode of monetary transactions but after demonetization and digitalisation, the rate of growth of digital payments increased tremendously. The advancement of technology and the introduction of budget-friendly smartphones and low internet cost triggered financial institutions to experiment with digital payments. The occurrence of the pandemic further accelerated the growth of digital payments (Montran India, 2022).

Cards Transactions:

Card issuance is also increasing. Banks and FinTech companies give attractive cash-back offers to their customers. Several new types of cards are introduced like NCMC (National Common Mobility Card). These cards are contactless interoperable cards that were launched for use in transit payments but can also be used for toll tax, retail payments, etc. In India, there are currently about 837

million debit cards and 49 million credit cards in use. Due to the rise in digital payments, an additional 10 million credit cards have been added.

As per a Worldline research, there was a 25% increase in the number of credit cards from 62.81 million in June 2021 to 78.7 million in June 2022. Debit card usage grew at a rate of 2%, from 906 million in June 2021 to 921.75 million in June 2022.

By the end of 2022, there were 1.02 billion credit and debit cards in circulation in India. A Worldline research states that there were 81.1 million credit cards in December 2022 compared to 69 million in December 2021, representing a growth of 17.54%. Debit card usage grew by 0.15%, from 928 million in December 2021 to 939.4 million in December 2022.

In the year 2022, the volume of credit cards was 2.76 billion with a transaction value of ₹ 13.12 trillion. The number of credit card transactions at the PoS terminal were 1.47 billion in number and ₹ 5.1 trillion in terms of value. For eCommerce the number of transactions were 1.29 billion and in terms of value it was ₹ 8.1 trillion.

As far as debit cards are concerned the volume of transactions in total was 3.64 billion with a transaction value of ₹ 7.4 trillion. Of these total volume and value, the number of transactions in terms of volume at PoS terminals were 2.38 billion with a transaction value of ₹ 4.85 trillion. The number of transactions at eCommerce was 1.26 billion with a value of transaction worth ₹ 2.56 trillion (WorldLine, 2023).

Mobile Wallets:

A mobile wallet is a way to carry cash digitally. To load money into the mobile wallet, a mobile device must be connected to a bank account, credit card, or debit card. Most banks and private companies have their mobile wallets some examples are Paytm, Google Pay, Amazon Pay, JIO Money, Freecharge, Yono SBI, Airtel Money, Payzapp, MobiKwik, Oxigen, Ola money, PhonePe, Airtel Money, itz Cash, m-Pesa, ICICI Pockets, PayUmoney etc.

A recent study conducted by the strategic consulting and market research firm "BlueWeave Consulting" indicates that the Indian mobile wallet market, which was valued at US\$ 30.1 billion in 2020, is projected to grow at a compound annual growth rate of 46.3% and generate US\$ 429.2 billion in revenue by the end of 2027.

As a result of the rising smartphone adoption rate and consumer awareness of the convenience of mobile wallets as a payment method, the mobile wallet market in India is growing rapidly. Mobile wallets are also being adopted by businesses quickly since they have less expensive setup costs and transaction costs than conventional card-based payment systems.

Some more highlights of the growth of digital payments:

According to a report by Razorpay (2022), 'The (Covid) Era of Rising Fintech 2021', which compared the growth of digital payments of the years 2020 and 2021 stated that there was

remarkable growth in digital payments in the year 2021 as compared to the year 2020. There was a spectacular growth of 104% in digital payments in 2021 as compared to digital payments in 2020. Growth in card payments was 25.92% , net banking (5.98%), and use of mobile wallets increased by 2.47% . e-Mandates increased by 1.58% . Transaction in UPI increased by whopping 174% from 2020 to 2021.

During this period BNPL (Buy Now Pay Later) is also increased. It has witnessed a 637% rise in transaction volume from 2020 to 2021, indicating India to be a big market for buy now pay later. If the share of different sectors in digital payment is compared from 2020 to 2021, Food and Beverages was on the top with an 18.08% share in the total market followed by the financial services sector whose share as 17.99%. Games was the third sector with a share of 13.99%, utilities on fourth position with 13.70% share and e-Commerce on fifth position with 11.85% share.

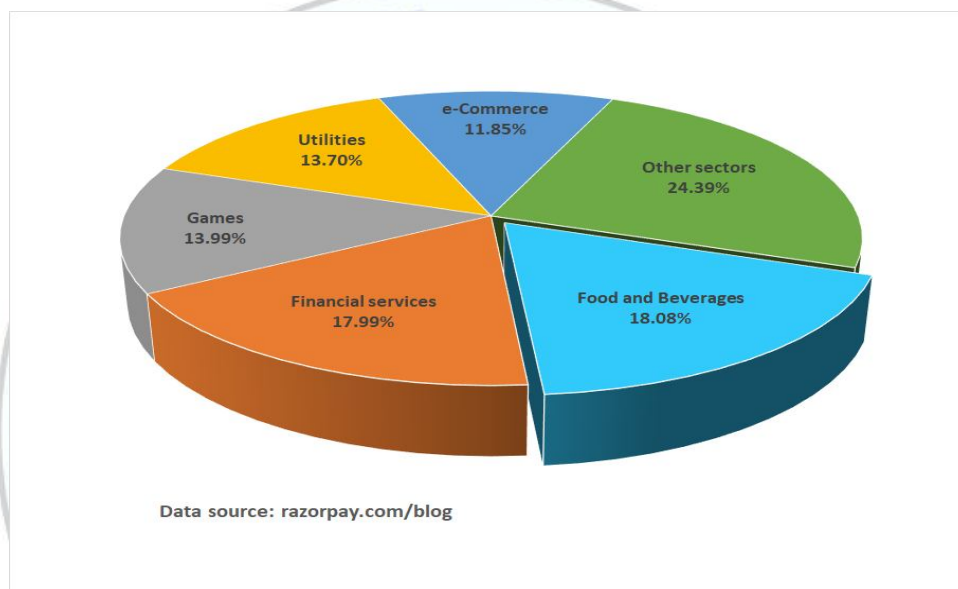


Fig. 3: Share of different sectors in digital payments in India (2020-21)

On comparing different states of India, Delhi, Goa, Jammu & Kashmir, West Bengal, and Sikkim were on first, second, third, fourth, and fifth ranks respectively as far as growth in digital payments is concerned. Growth in digital payments was 208.82% in Delhi, 162.54% in Goa, 161.44% in Jammu and Kashmir, 156.54% in West Bengal, and 122.46% in Sikkim.

There was consistent growth in the transaction volume of digital payments in different cities. The highest growth was observed in New Delhi. The growth was 493.23% , growth in Jammu was 166.21% , 162.61% in Kolkata, and Ahmedabad 112% . These were the top four cities as far as growth transaction volume in digital payments is concerned. The rise in tier-2 cities was 45.56% and in tier-3 cities it was 54.33% in transaction volume.

The Edtech industry is also growing significantly and the education sector is adopting digitalization quickly. During 2020-21, online transactions for professional courses grew by 217.93% . Fitness-related transactions grew by 611.2%. The growth volume of online transactions for doctors

was 226.4%. Lab transactions grew by 308% during 2020-21. The highest growth in digital transactions was observed in the service sector (769.86%) then comes housing and real estate (315.65%), government bodies (220.98%), food and beverages (179.75%) and logistics (132.29%).

Challenges in Digital Payment Adoption:

Although much has been done since digital payments were first introduced in India, adoption is still gradual. The use of digital payments is growing daily along with technology developments, however adoption is hindered by a number of problems such as cybercrime, poor infrastructure, ignorance, adoption in tier three and tier four cities, transaction costs, connectivity problems, etc.

According to apnapay.in (ApnaPay, 2019) a mobile PoS cloud company 85% of the Indian population doesn't have access to the infrastructure required to adopt a digital payment framework that is heavily dependent on smartphones. Therefore, there is an urgent need of interoperable and all-inclusive techniques of digital payments in the country. Although many e-commerce platforms are adopting digital payment methods consumers still prefer paying by cash. The reason behind this is cybersecurity in digital transactions. Lack of technological awareness and high risk associated with cybersecurity keep away consumers from adopting digital payments. The future of digital payments lies in providing a more simplified and secure user experience. Efforts should be made at the grassroots level to make it more adaptable. In his study, Shashank Kumar (2019) says that although India has made remarkable progress in the field of digital payments but there are certain roadblocks in the way to digitalization which are – (a) There is a lack of collaboration between banks and fintech bodies. (b) Smaller merchants need POS terminals along with cheaper payment options, and (c) There aren't enough incentives to promote digital payments.

Some of the other major challenges in the growth of digital payments are –the relatively higher cost of infrastructure, lack of financial literacy among small merchants, high propensity of households to save in cash, and unorganized cash incentives.

Lack of Infrastructure:

In some areas, digital payment infrastructure is still lacking. This means that people in those areas may not have access to digital payment options, or the options available may be limited or unreliable.

Poor internet connectivity:

India is a large country with a diverse population, and access to the internet is not uniform across the country. Many rural areas still lack internet connectivity, which makes it difficult for people in those areas to use digital payment services. Digital payments are majorly dependent on internet connectivity but due to a lack of uninterrupted connectivity issues people are unable to use in remotest areas of India.

Cash dependency:

Despite the government's efforts to promote digital payments, cash is still king in India. Cash is still the preferred mode of payment, and digital payments may be seen as less trustworthy or less secure. Many small transactions are still made in cash, and people often prefer the convenience and familiarity of using cash.

Rural Adoption:

As per the report of Nielsen rural India has 352 million internet users which is 20% higher than that of number of internet users in urban India, but the report stated that nearly 60% of the rural India is not actively using internet due to low digital literacy. The reasons for this low adoption as stated by the report are connectivity barriers, many of the rural parts of India do not have required bandwidth for internet. Lack of solid infrastructure and regular supply of electricity are major bottleneck. Language barriers are also there because in rural parts of India people use and understand local language and most of the communication in digital methods are done in English. Also, most people in rural areas do not understand terms used on digital platforms and for devices (Srivastava, 2023).

Lack of Willingness to adopt digital payments:

While digital payments have become popular among consumers, many merchants still prefer cash payments. This is partly due to the cost of accepting digital payments and the difficulty in reconciling transactions. In a research paper written by Ligon E. et al. (2019), the authors said that Despite tremendous attempts to promote adoption, India's adoption rate in particular continues to be low. Using survey data from 1,003 merchants of Jaipur, they find that the low level of adoption is not a supply-side problem i.e., the required infrastructure is available, digital platform fees are reasonable, they have access to bank accounts and they are having smartphones and above all they have sufficient literacy to use digital payments. Therefore, the authors concluded that non-adoption is due to demand-side problem and for it they found sufficient evidence. They found that merchants do not want to pay or being paid digitally because of tax liabilities due to mobile payment records.

Trust:

Trust is another factor which play a very significant role in adoption of digital payments is trust. Many people are still wary of digital payments due to security concerns. They fear that their personal and financial information may be compromised, leading to fraud or identity theft. There have been incidents of digital payment fraud in India, which has led to some users being cautious about using digital payment services. The government and digital payment providers need to address these security concerns to build trust among users. According to Vizzarri, Vatalaro, and Vari (2013), the success of e-payment and m-payment methods is largely dependent on their secure use and the end user's awareness of security issues across the m-payment industry. According to Hossain (2019)

perceived risk had a significant adverse effect on perceived trust and customer satisfaction. The most crucial factor in constructing consumer satisfaction is perceived trust, and customer satisfaction is a reliable predictor of customer loyalty.

Security reasons:

Users worry that while making purchases online, their gadgets can be compromised or infected by a virus, costing them money. Customers of Mobile Payment Service Providers (MPSPs) may choose to ignore their payment method if MPSPs do not meet security standards, as noted by Linck K., Key P., and Wiedemann D. G. (2006). However, it's critical to realize that security is a must, not only an optional feature.

Digital Illiteracy:

There is a need for more education and awareness about digital payments. Some people may not know how to use digital payment platforms or may be unfamiliar with the benefits of using them. According to a NSO 2020 survey only 14.7% of the population of India have the ability to use computers, and 20% have the ability to use the Internet. In India, around 90% of the population lacks basic digital literacy, according to a 2018 assessment by the Digital Empowerment Foundation. India is undergoing a digital revolution that may help us advance in terms of economic development and prosperity, but we also run the risk of producing a new class of citizens who are “digitally-poor”. Digital poverty is a new concept that is defined as the inability to use and benefit from information and communications technology services because one lacks the access or the necessary skills (Shrivastava, 2020).

Overall, India has made significant progress in digital payments adoption, but there are still challenges to be overcome. Addressing these challenges will require a coordinated effort from the government, digital payment providers, and other stakeholders to promote financial literacy, improve internet connectivity, and build trust among users.

Future of Digital Payments in India:

As predicted by the experts - Current dominant forms of payment will not disappear. Physical cards will not be going to disappear. One card physical or non-physical will be used for everything. This card will be capable of debit and credit payments etc. These cards will be upgraded version of NCMC cards.

Digital lending sector is projected to grow by 100 billion dollars by 2023. UPI has great potential to offer much more which will help in increasing financial inclusion in India, with governments Merchant Discount Rate (MDR) it is expected that more merchants will adopt digital mode of payments.

Although mobile wallets are useful, using them still requires users to pull out their smartphones and perform certain tasks. This is no different from using a credit card to make a

purchase. The next area of simplification is safe identification and payments using voice, iris, or face recognition. These technologies will increase the security of digital transactions and spur further adoption of these systems.

The "faceless, paperless, and cashless" status for financial transactions at the local level was one of the goals of the Digital India programme, which was introduced in 2015. To achieve this goal, the adoption of digital payment methods has been consistently encouraged so that every person has access to secure, convenient, and affordable digital payment options. Technology developments and the implementation of novel reforms are further driving growth at a never-before-seen rate.

Conclusion:

India has come a far way as digital payments are concerned. India's fintech industry is among the fastest expanding in the world, largely due to the development of the digital payment sector. India's digital payment market would more than triple from three trillion to 10 trillion dollars by 2026, according to a new analysis by PhonePe and Boston Consulting Group (Economic Times, March 9, 2023). Although the vast majority of these payment options operate online, geographical restrictions and a lack of internet connectivity may limit their development.

The RBI Payment Vision 2025's central theme, "E-Payments for Everyone, Everywhere, Every time" serves as the foundation for the following stage of development. With RBI winning the Central Banking Awards 2022 for RTGS 24x7x365, the nation is moving towards financial inclusion, payments interoperability, and resilience building in the direction of the 2025 goal (Montran India, 2022).

India has made great technological strides in the area of digital payments, but these transactions' future rests on enhancing the user experience to make it even safer and more secure. Moving forward, prioritizing user requirements over money will be crucial. Still, a lot has to be done in the digital payment area. World's top giant IT companies are making innovations in the field of digital payments to amaze and attract customers and capture new ones with improved payment process.

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