A

REPORT ON

DIGITAL PAYMENTS

(AND ITS EVOLUTION IN INDIA)

PROJECT SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF DEGREE OF

BACHELOR OF COMMERCE (COMPUTER APPLICATIONS)

BY

P NANDINI	**ROLL NO: 111021405133**
POLAPALLY AKSHITHA	**ROLL NO: 111021405135**
RASURI CHANDANA	**ROLL NO: 111021405147**
SRAVANI PUROHIT	**ROLL NO: 111021405160**

UNDER THE GUIDANCE OF

MRS. M. SWATHI , Assistant professor

DEPARTMENT OF COMMERCE

OSMANIA UIVERSITY

KESHAV MEMORIAL INSTITUTE OF COMMERECE AND SCIENCES
Narayanaguda, Hyderabad, Telangana 500029

2021-2024

DECLARATION

We students of Keshav Memorial Institute Of Commerce And Sciences , Narayanaguda Batch in **B.COM(Computer Applications)** , hereby declare that the discussion of the Project Report entitle **"DIGITAL PAYMENTS"** is record of group work done and being submitted by us towards the partial fulfilment of the degree of Bachelor Of Commerce , In the department of commerce is a project work carried by me under the supervision of Mrs.M.SWATHI , Assistant professor ,have not been submitted anywhere else. We will be solely responsible if any kind of plagiarism is found.

Date:
Place: Hyderabad

NAME:	ROLL NO:
P NANDINI	111021405133
POLAPALLY AKSHITHA	111021405135
RASURI CHANDANA	111021405147
SRAVANI PUROHIT	111021405160

ACKNOWLEDGEMENT:

We would like to convey our heartfelt gratitude to the management of **KESHAV MEMORIAL INSTITUTE OF COMERCE AND SCIENCES**, particularly our honourable principal Mrs.V. Shanthi , for providing us with the chance to work on this project and thereby broaden your horizons.

We would also want to Thank Mrs.M. SWATHI (ASSISTANT PROFESSOR), for her invaluable advice and suggestions that contributed to the success of our project.

We would also like to express our gratitude to our faculty members, without whom the project would not have been finished successfully.

ABSTRACT

In recent decades, the country has seen a significant increase in the use of digital payments. A digital payment, also known as an electronic payment, is the transfer of value from one payment account to another using a digital device such as a mobile phone, POS, or computer, as well as a digital communication channel such as mobile wireless data or SWIFT. Mode of digital payment commonly used by the citizens of the country are bank transfers, mobile money, and payment cards i.e., credit, debit, and prepaid cards. Since the launch of IMPS by NPCI in 2010 until the release of UPI in 2016, the digital payment system has evolved several times. The study is an attempt to analyze how various forms of digital payment evolved in the past and how COVID-19 impacted the digital payment systems in India. The study concludes that digital payments in India recorded a robust growth of 26.2 per cent in terms of volume during 2020-21 on top of the expansion of 44.2 per cent in the previous year. Lastly, it has been observed that after COVID-19 pandemic, people were concerned about health regulations and were afraid of cash transactions which made them switch to this mode, resulting in a rise in the usage of different modes of digital payment systems.
Keywords: Digital
Payment System, Pandemic, Cash Transactions

CHAPTER – 1
INTRODUCTION

ABOUT

The consensus around the origin and the forms of ancient money has kept changing over the course of recorded history. But, what has not changed over the years is what money does; broadly, it facilitates trade in goods and services as medium of exchange and acts as a credible store of value. Modern day trade demands massive payments to be settled fast over long distances with minimum transaction cost. Evidently, to suit these needs the payment systems are being digitized globally. Cash, however, remains a crucial part of the trade. Therefore, the discourse on the current age payment system revolves around cash vs digital transactions. A digital payment, often known as an e-payment, is a method of making electronic payments between a payer and a payee. Both the payer and the payee use digital modes to complete the transaction. Right from barter system to paper money, there has been a huge evolution in the modes of payment in India. And now in the second decade of the millennium with the youth and coming generation, cashless i.e., digital payment mode is the new phase of payments. Before the evolution.

The basic concept of traditional banking was that the users have to go the bank for the primary banking requirement such as withdrawal or deposit of cash, funds transfer, verifying statement of accounts etc. It has been called as the original banks which was the method of past in the economy. They were the original commercial mediators to provide bank accounts. From the exterior they had the big buildings with pillars made by marbles but in the interior, it had an abundance of money in the box. This has been called “Bank”. They were big athletes in the commercial markets. They converted the savings of the house into loans for business as an investment.
Traditional Banking designed on IT acceptance. The Indian Banking
Sector arose in the world of technology in the beginning of 1990s.

In today's fast-paced and interconnected world, the demand for efficient, secure, and convenient payment solutions has never been higher. As businesses strive to meet the evolving needs of consumers and adapt to the digital age, the importance of embracing innovative payment technologies cannot be overstated. It is within this context that we introduce our ground-breaking project: a comprehensive digital payment system designed to revolutionize the way transactions are conducted.

At its core, our digital payment system aims to address the shortcomings of traditional payment methods while leveraging the latest advancements in technology to deliver a seamless and user-friendly experience. Whether it's paying for goods and services online, transferring funds to family and friends, or managing finances on-the go, our platform is designed to cater to the diverse needs of modern consumers and businesses alike.

Security is paramount in today's digital landscape, and our digital payment system is built with this in mind. Utilizing state-of-the-art encryption techniques, biometric authentication, and real-time fraud monitoring, we ensure that every transaction is conducted in a secure and trustworthy manner. By prioritizing the protection of sensitive financial information and personal data, we aim to instil confidence and peace of mind among our users.

Furthermore, our digital payment system is designed to promote financial inclusion and empower underserved communities. By providing access to affordable and accessible financial services, we seek to bridge the gap between the banked and unbanked populations, thereby fostering economic growth and empowerment. Whether it's facilitating microtransactions in rural areas or enabling cross-border remittances for migrant workers, our platform is committed to making financial services more inclusive and accessible to all.

As we embark on this ambitious project, we recognize the challenges and opportunities that lie ahead. From regulatory compliance and interoperability issues to cybersecurity threats and consumer adoption, there are many factors to consider. However, we are confident that with our team of experts, strategic partnerships, and unwavering commitment to innovation, we can overcome these challenges and deliver a digital payment system that sets new standards for excellence.

In conclusion, our digital payment system represents a paradigm shift in the way transactions are conducted and financial services are delivered. By harnessing the power of technology and embracing the principles of security, convenience, and inclusivity, we are poised to revolutionize the way the world pays. Join us on this journey as we pave the way for a future where payments are seamless, secure, and accessible to all.

OBJECTIVE

1)Enhance Convenience:

Objective: Digital payment systems aim to provide users with convenient and seamless ways to conduct transactions, eliminating the need for cash or physical visits to banks.

1. Improve Security:

Objective: Digital payment systems prioritize security by implementing robust encryption, authentication measures, and fraud detection mechanisms to protect users' financial information.

2. Foster Financial Inclusion:

Objective: Digital payment systems aim to expand access to financial services for underserved populations, including those without access to traditional banking infrastructure.

3.Drive Efficiency:

Objective: Digital payment systems seek to streamline financial transactions, reducing processing times, paperwork, and
transaction costs for businesses and individuals.

4.Enable Innovation:

Objective: Digital payment systems foster innovation in financial services by providing a platform for the development and adoption of new payment technologies and solutions.

Benefits:

Convenience: The rise of contactless payments during the COVID19 pandemic exemplifies the convenience of digital payment systems. As consumers sought safer ways to conduct transactions, contactless payments gained popularity for their quick and hygienic nature. For instance, in the UK, contactless card transactions surged by 31% in 2020, with many consumers preferring the convenience of tapping their cards or smartphones over handling cash or entering PINs.

Security: The Equifax data breach of 2017 serves as a stark reminder of the importance of security in digital payment systems. In this incident, cybercriminals exploited vulnerabilities in Equifax's systems to access sensitive personal information, including names, Social Security numbers, and credit card details, of over 147 million consumers. The breach underscored the need for robust cybersecurity measures, such as encryption and multi-factor authentication, to protect users' financial data from unauthorized access and fraud.

Efficiency: Electronic invoicing (e-invoicing) platforms have revolutionized invoicing processes for businesses, improving efficiency and reducing administrative overhead. For example, in Sweden, the adoption of e-invoicing has led to significant cost savings for businesses and government agencies. According to a report by the European E-Invoicing Service Providers Association (EESPA), the use of e-invoicing in Sweden resulted in savings of €9 billion in 2019 alone, demonstrating the efficiency gains associated with digital invoicing.

Financial Inclusion: The success of mobile money platforms like MPesa in Kenya illustrates the impact of digital payment systems on financial inclusion. M-Pesa has transformed the lives of millions of Kenyans, enabling them to access financial services using their mobile phones, even in remote areas with limited banking infrastructure. According to data from the Central Bank of Kenya, M-Pesa accounts for over 99% of mobile money transactions in the country, providing a lifeline for underserved populations and empowering them to participate in the formal economy.

Challenges:

Cybersecurity Threats: The 2014 data breach at Target Corporation highlights the cybersecurity threats facing digital payment systems. In this incident, cybercriminals gained access to Target's systems and stole credit and debit card information from over 40 million customers. The breach resulted in significant financial losses for Target and highlighted the need for enhanced cybersecurity measures, such as encryption and real-time fraud detection, to protect against future attacks.

Regulatory Compliance: The implementation of the European Union's General Data Protection Regulation (GDPR) has posed challenges for businesses operating in the EU. GDPR imposes stringent requirements for data protection and privacy, impacting how companies handle customer information. For example, in 2019, Google was fined €50 million by the French data protection authority for GDPR violations related to transparency and consent, highlighting the importance of compliance with regulatory requirements.

Interoperability Issues: The lack of interoperability between mobile payment apps has hindered the seamless transfer of funds in some regions. For example, in the United States, users may encounter difficulties transferring funds between different mobile payment apps due to incompatible systems and protocols. This lack of interoperability limits the choice and flexibility available to consumers and inhibits innovation in the digital payment ecosystem.

Technological Limitations: System outages or network congestion can disrupt transactions and undermine user confidence in digital payment systems. For instance, in 2019, a technical glitch at Visa resulted in widespread payment disruptions across Europe, affecting millions of cardholders and businesses. The incident underscored the importance of robust infrastructure and contingency plans to ensure the reliability and resilience of digital payment systems.

Consumer Education: Many consumers may be unfamiliar with digital payment technologies or wary of potential risks such as fraud or identity theft. For example, in a survey conducted by the Federal Trade Commission (FTC), 43% of consumers reported being unsure about how to protect themselves from fraud when using mobile payment apps.

Research Methodology

Sample Size:

The number of survey respondents: 86

Sampling Technique:

Random Sampling Technique: This technique is used when every person has an Equal chance of getting selected to be part of the sample.

Methodology:

We are collecting data via google forms. The sample has been selected at random customers. We are using quantitative methods of data collection only.

Primary Data:

Primary data is being collected via google form-based survey which has been Shared with customers.

Secondary Data:

Secondary data has been collected from a review of credible research from various institutions on similar topics. In addition to this, secondary data about company and industry performance has been collected from official websites

Tools and techniques used for analysis:

Tools: Google Form, MS WORD, etc.

Techniques: Data analysis and interpretation

CHAPTER – 2

TYPES OF

DIGITAL PAYMENT METHODS

Different Modes of Digital Payment (2010– 2015):

NEFT

National Electronic Funds Transfer (NEFT) is an electronic funds transfer system maintained by the Reserve Bank of India (RBI). Started in November 2005, the setup was established and maintained by Institute for Development and Research in Banking Technology.NEFT enables bank customers in India to transfer funds between any two NEFTenabled bank accounts on a one-to-one basis. It is done via electronic messages.

Unlike real-time gross settlement, fund transfers through the NEFT system do not occur in real-time basis. Previously, NEFT system settled fund transfers in hourly batches with 23 settlements occurring between 00:30 hrs. To 00:00 hrs.

From 16 December 2019, there would be 48 half-hourly batches occurring between 00.30 am to 00:00 am every day regardless of a holiday or otherwise

As of 30 November 2019, NEFT facilities were available at 1,48,477 branches/offices of 216 banks across the country and online through the website of NEFT-enabled banks. NEFT has gained popularity due to the ease and efficiency with which the transactions can be concluded.

There is no limit – either minimum or maximum – on the amount of funds that can be transferred using NEFT.

Process

The customer fills up an application form providing details of the beneficiary (like name, bank, branch name, IFSC, account type and account number) and the amount to be remitted. The remitter authorizes his/her bank branch to debit his

account and remit the specified amount to the beneficiary. This facility is also available through online banking, and some banks also offer the NEFT facility through ATMs. The originating bank branch prepares a message and sends the message to its pooling Centre (also called the NEFT Service Centre).

The pooling Centre forwards the message to the NEFT Clearing Centre (operated by National Clearing Cell, Reserve Bank of India, Mumbai) to be included for the next available batch.

The Clearing Centre sorts the funds transfer transactions destination bank-wise and prepares accounting entries to receive funds from the originating banks (debit) and give the funds to the destination banks (credit). Thereafter, bank-wise remittance messages are forwarded to the destination banks through their pooling Centre (NEFT Service Centre). The destination banks receive the inward remittance messages from the Clearing Centre and pass on the credit to the beneficiary customers' accounts.

Settlement timings charges for NEFT transactions

The structure of charges is as follows:

Inward transactions at destination bank branches (for credit to beneficiary accounts):
Free, no charges to be collected from beneficiaries

Outward transactions at originating bank branches (charges for the remitter):

With effect from January 1, 2020, banks have been advised to not levy any charges from their savings bank account holders for NEFT funds transfers initiated online. Maximum charges which can be levied for outward transactions at originating bank for other transactions, i.e. offline transactions (at bank branch through NEFT form), transactions done through current/other accounts –

For transactions up to 10,000: not exceeding 2.50 (+ Applicable GST) For transactions above 10,000 up to 1 lakh: not exceeding 5 (+ Applicable GST) For transactions above 1 lakh and up to 2 lakhs: not exceeding 15 (+ Applicable GST)

For transactions above 2 lakhs: not exceeding 25 (+ Applicable GST)

The scenario varies from bank to bank, whether they levy this charge or not matter of the transaction done online or offline for the accounts other than a savings bank account.

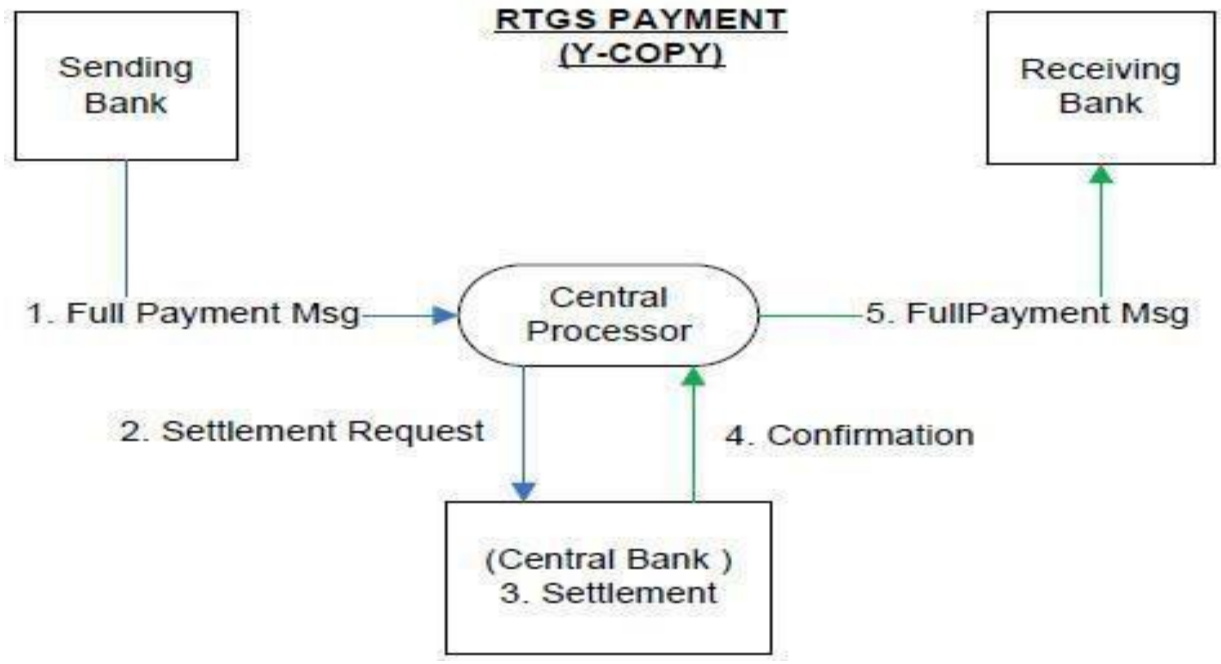
The RBI announced on 11 June 2019 that all charges for NEFT and realtime gross settlement transactions collected from banks would be waived from 1 July 2019, and asked banks to pass on the benefits to customers (so RBI charges nothing for these transactions to its member banks & the only charge that's levied is by the bank through which the outward transaction is initiated

Statistics

216.71 million National Electronic Funds Transfers transactions worth ₹1,811,780.90 crores (equivalent to ₹23 trillion or US$281.96 billion in 2023) were made in September 2019, as against 661 million transactions worth ₹44 trillion (US$550 billion) the entire year 2013–15.

RTGS:

Real-time gross settlement (RTGS) systems are specialist funds transfer systems where the transfer of money or securities takes place from one bank to any other bank on a "real-time" and on a "gross" basis to avoid settlement risk. Settlement in "real time" means a payment transaction is not subjected to any waiting period, with transactions being settled as soon as they are processed. "Gross settlement" means the transaction is settled on a one-to-one basis, without bundling or netting with any other transaction. "Settlement" means that once processed, payments are final and irrevocable.



History

As of 1985, three central banks implemented RTGS systems, while by the end of 2005, RTGS systems had been implemented by 90 central banks.

The first system that had the attributes of an RTGS system was the US Fed wire system which was launched in 1970. This was based on a previous method of transferring funds electronically between US federal reserve banks via telegraph. The United Kingdom and France both independently developed RTGS type systems in 1984. The UK system was developed by the Bankers' Clearing House in February 1984 and

was called CHAPS. The French system was called SAGITTAIRE. A number of other developed countries launched systems over the next few years. These systems were diverse in operation and technology, being country-specific as they were usually based upon previous processes and procedures used in each country.

In the 1990s international finance organizations emphasized the importance of large-value funds transfer systems which banks use to settle interbank transfers for their own account as well as for their customers as a key part of a country's financial market infrastructure. By 1997 a number of countries, inside as well as outside the Group of Ten, had introduced real-time gross settlement systems for large-value funds transfers. Nearly all G-10 countries had plans to have RTGS systems in operation in the course of 1997 and many other countries were also considering introducing such systems.

Operation

RTGS systems are usually operated by a country's central bank as it is seen as critical infrastructure for a country's economy. Economists believe that an efficient national payment system reduces the cost of exchanging goods and services, and is indispensable to the functioning of the interbank, money, and capital markets. A weak payment system may severely drag on the stability and developmental capacity of a national economy; its failures can result in inefficient use of financial resources, inequitable risk-sharing among agents, actual losses for participants, and loss of confidence in the financial system and in the very use of money.

RTGS system does not require any physical exchange of money; the central bank makes adjustments in the electronic accounts of Bank A and Bank B, reducing the balance in Bank A's account by the amount in question and increasing the balance of Bank B's account by the same amount. The RTGS system is suited for low-volume, high-value transactions. It lowers settlement risk, besides giving an accurate picture of an institution's account at any point in time. The objective of RTGS systems by central banks throughout the world is to minimize risk in high-value electronic payment settlement systems. In an RTGS system, transactions are settled across accounts held at a central bank on a continuous gross basis. The

settlement is immediate, final, and irrevocable. Credit risks due to settlement lags are eliminated. The best RTGS national payment systems cover up to 95% of high-value transactions within the national monetary market.

RTGS systems are an alternative to systems of settling transactions at the end of the day, also known as the net settlement system, such as the BACS system in the United Kingdom. In a net settlement system, all the inter-institution transactions during the day are accumulated, and at the end of the day, the central bank adjusts the accounts of the institutions by the net amounts of these transactions.

Mobile Wallets:

Mobile wallets are digital applications that allow users to store, manage, and make transactions with their financial information using a smartphone or other mobile devices. Here are some key points about mobile wallets:

Types of Mobile Wallets: There are various types of mobile wallets, including:

Closed wallets: Operated by a specific retailer or service provider for transactions within their ecosystem.

Open wallets: Allow users to store multiple payment methods and are accepted at various merchants.

Functionality: Mobile wallets typically offer features such as:

Storing payment information: Credit/debit card details, bank account information, loyalty cards, etc.

Making payments: In-store, online, peer-to-peer transfers.

Managing finances: Tracking transactions, budgeting tools, bill payments.4

Integration with loyalty programs: Accumulating and redeeming points or rewards.

Security: Mobile wallets employ various security measures to protect users' financial information, biometric authentication

Popular e-wallets used in India:

G-pay

Google Pay (payment method)

Google Pay (formerly Android Pay) is a mobile payment service developed by Google to power in-app, online, and in-person contactless purchases on mobile devices, enabling users to make payments with Android phones, tablets, or watches. Users can authenticate via a PIN, passcode, or biometrics such as 3D face scanning or fingerprint recognition.

Security

Google Pay uses near-field communication (NFC) to transmit card information facilitating funds transfer to the retailer. It replaces the credit or debit card chip and PIN or magnetic stripe transaction at pointof-sale terminals by allowing the user to upload these in Google Wallet. It is similar to contactless payments already used in many countries, with the addition of two-factor authentication. The service lets Android devices wirelessly communicate with point of sale systems using a near field communication (NFC) antenna and host-based card emulation (HCE).

When the user makes a payment to a merchant, Google Pay does not send the actual payment card number. Instead, it generates a virtual account number representing the user's account information. Google Pay requires that a screen lock be set on the phone or watch.It has no card limit.

Users can add payment cards to the service by taking a photo of the card, or by entering the card information manually. To pay at points of sale, users hold their authenticated device to the point of sale system. The service has smart-authentication, allowing the system to detect when the device is considered secure (for instance if unlocked in the last five minutes) and challenge if necessary for unlock information

Technology

Google Pay uses the EMV Payment Tokenization Specification

The service keeps customer payment information private from the retailer by replacing the customer's credit or debit card Funding Primary Account Number (FPAN) with a tokenized Device Primary Account Number (DPAN) and creates a "dynamic security code [...] generated for each transaction". The "dynamic security code" is the cryptogram in an EMV-mode transaction, and the Dynamic Card Verification Value (dCVV) in a magnetic-stripe-data emulation-mode transaction. Users can also remotely halt the service on a lost phone via Google's Find My Device service.

To pay at points of sale, users hold their authenticated Android device to the point-of-sale system's NFC reader. Android users authenticate unlocking their phone by using biometrics, a pattern, or a passcode, whereas Wear OS users authenticate by opening the Google Wallet app prior to payment.

Security

In most regions, Google Pay on Android permits the issuing bank to determine whether to allow its payment cards to be able to transmit when the mobile device is locked under a certain monetary amount. Issuers in Argentina, Brazil, Ecuador, Mexico, and the United States of America cannot allow locked-device payments except for select transit transactions.

PhonePe

PhonePe is an Indian multinational digital payments and financial services company headquartered in Bengaluru, Karnataka, India. PhonePe was founded in December 2015, [3] by Sameer Nigam, Rahul Chari and Burzin Engineer.The PhonePe app, based on the Unified Payments Interface (UPI), went live in August 2016.

The PhonePe app is accessible in 11 Indian languages. It enables users to perform various financial transactions such as sending and receiving money, recharging mobile and DTH services, topping up data cards, making utility payments, conducting in-store payments.

History

PhonePe was incorporated in December 2015.In April 2016, the company was acquired by Flipkart and as part of the acquisition, the FxMart license was transferred to PhonePe and rebranded as the PhonePe wallet. PhonePe's founder Sameer Nigam was appointed as the CEO of the company.

In August 2016, the company partnered with Yes Bank to launch a UPIbased mobile payment app, based on the government-backed UPI platform.

In January 2018, the app garnered ten million downloads. In August 2017, the PhonePe app surpassed BHIM in UPI transactions.

In 2022, PhonePe became the first UPI TPAP (Third Party Application Providers) App to allow UPI activation through Aadhaar. A year later, it further expanded its services by launching international UPI payments, allowing Indian users traveling abroad to pay foreign merchants with
Unified Payments Interface (UPI). As per NPCI's UPI ecosystem statistics, PhonePe currently holds a 50% market share by value of transactions in the UPI market.

In 2022, PhonePe obtained licensing from the Reserve Bank of India for operating a Semi-Closed Prepaid Payment system.

BHIM

BHIM (Bharat Interface for Money) is an Indian mobile payment app developed by the National Payments Corporation of India (NPCI), based on the Unified Payments Interface (UPI). Launched on 30 December 2016, it is intended to facilitate e-payments directly through banks and encourage cash less transactions. It was named after Bhimrao Ambedkar.

The application supports all Indian banks which use UPI, which is built over the Immediate Payment Service (IMPS) infrastructure and allows the user to instantly transfer money between 170 member banks of any two parties. It can be used on all mobile devices.

Operation

BHIM allows users to send or receive money to or from UPI payment addresses, or to non-UPI based accounts (by scanning a QR code with account number and IFS code or MMID code).

Unlike mobile wallets (Paytm, Mobikwik, M-Pesa, Airtel Money, etc.) which hold money, the BHIM app is only a mechanism which transfers money between different bank accounts. Transactions on BHIM are nearly instantaneous and can be done at any time, including weekends and bank holidays.

BHIM now also allows users to send or receive digital payments through Aadhaar authentication.

Transaction fees and limits

Currently, there is no charge for transactions from ₹1 to ₹100,000. Some banks might, however, levy a fee for UPI or IMPS transfers.

In 2017, Indian banks proposed transaction charges on UPI transactions, but there is no information on whether transactions through BHIM will also be charged.

Security

In May 2020, VPNMentor, a cyber-security firm, disclosed that the BHIM app suffered a huge data breach leaking approximately 7.26 million Indian users' personal and financial data, such as name, contact details, Aadhaar card, PAN card, caste certificate, fingerprint scans, educational certificates and more. The 4.09 GB files were leaked from a CSC operated website because of a misconfigured AWS S3 bucket, and not the official BHIM website. CSC explicitly mentioned, however, that it is working with BHIM and NPCI in partnership. VPNMentor and other cybersecurity experts confirm the data to be authentic, but BHIM and NPCI claim that the breach never took place. The issue has now been fixed.

paytm

Paytm (pay through mobile) is a third-party mobile and computer-based digital payment service with Indian origins. Paytm was founded in 2010 as a private business operating company. Ecommerce, financial technology, and digital wallets are among the application's specialties. It is a commonly used program that provides services in 11 distinct Indian languages, with the goal of being easily understood by all citizens of the country. Aside from providing the ability to send and receive payments, the app also caters to a variety of client demands through its Paytm Money, Paytm Smart Retail, and Paytm Payments bank services. As of now, the application has over 350 million active users.

History

Paytm was founded in August 2010 with an initial investment of US$2 million by its founder Vijay Shekhar Sharma in Noida, Delhi NCR. It started off as a prepaid mobile and DTH recharge platform, and later added debit card, postpaid mobile and landline bill payments in 2013.

In October 2011 Sapphire Ventures (fka SAP Ventures) invested $10 million in One97 Communications Ltd. By January 2014, the company had launched the Paytm Wallet, which the Indian Railways and Uber added as a payment option. It launched into e-commerce with online deals and bus ticketing. In 2015, it added education fees, metro recharges, electricity, gas, and water bill payments. Paytm's registered user base grew from 1.18 crore in August 2014 to 10.4 crore in August 2015. Its

travel business crossed $500 million in annualized GMV run rate, with 20 lakh tickets booked per month.

In March 2015 Paytm received its huge stake from Chinese e-commerce company Alibaba Group, after Ant Financial Services Group, an Alibaba Group affiliate, took 40% stock in Paytm as part of a strategic agreement.
Soon after, it received backing from Ratan Tata, the MD of Tata Sons. In August 2016, Paytm raised funding from Mountain Capital, one of Taiwan-based MediaTek's investment funds at a valuation of over $5 billion. Also in 2016, it launched movies, events and amusement parks ticketing as well as flight ticket bookings and Paytm QR. Later that year, it launched rail bookings and gift cards.

In May 2017 Paytm received its biggest round of stake from a single investor – SoftBank, thus bringing the company's valuation to an estimated $10 billion. In August 2018, Berkshire Hathaway invested $356 million for 3%- 4% stake in Paytm, although Berkshire Hathaway confirmed that Warren Buffett was not involved in the transaction.

March 2019 the firm launched a subscription based loyalty program called Paytm First, and in May 2019, it partnered with Citibank to launch Paytm First credit cardOn 25 November 2019, Paytm raised $1 billion in a funding round led by US asset manager T Rowe Price along with existing investors Ant Financial and SoftBank Vision Fund. In July 2020, Tata Starbucks partnered with Paytm allowing its customers to order food online during the COVID-19 pandemic.

In July 2021 One97 Communications filed a draft red herring prospectus with the Securities and Exchange Board of India to launch its initial public offering (IPO). It launched its IPO in November 2021, raising ₹18,300 crores (US$2.3 billion) at a valuation of US$20 billion. It was the largest ever IPO in India. The shares began trading on 18 November
2021, opening at ₹1,950 on the NSE, 9.3% below the upper band of the IPO price range, and closed down more than 27% at ₹1,560, making it the biggest drop on a listing day in Indian IPO history.

In December 2021 Paytm launched Paytm Wealth Academy.

Amazon pay

Amazon Pay is an online payments processing service owned by Amazon. Launched in 2007, Amazon Pay uses the consumer base of Amazon.com and focuses on giving users the option to pay with their Amazon accounts on external merchant websites. As of March 2021, the service became available in Austria, Belgium, Cyprus, Denmark, France, Germany, Hungary, India, the Republic of Ireland, Italy, Japan, Luxembourg,
Malaysia, Netherlands, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States. Amazon Pay provides the option to purchase goods and services from websites and mobile apps using the addresses and payment methods stored in the Amazon account, such as credit cards or a direct debit bank account or the Unified Payments Interface (UPI) in India.

Amazon Pay Express

Amazon Pay Express is a payments processing service for simple ecommerce use cases on websites. It is built on Amazon Pay but without requiring a full e-commerce integration, it can be used to create a button that can be copied and pasted onto a website or added via a WordPress plug-in. It is best suited for merchants selling a small number of products with a single item in each order, such as a digital download.

Amazon Pay UPI

On 14 February 2019, Amazon launched Amazon Pay Unified Payments Interface (UPI) for Android users in partnership with Axis Bank. This service issues UPI IDs

to its Indian customers to allow for secure payments. The mechanism of Amazon Pay UPI is the same as other UPI apps like BHIM, Paytm and PhonePe. Anyone with Amazon India app can access this service.

Security

On September 22, 2010, Amazon published a security advisory regarding a security flaw in its Amazon Payments SDKs. This flaw allows a shopper to shop for free in web stores using those SDKs. Amazon mandated all web stores to upgrade to its new SDKs before November 1, 2010. Amazon acknowledged security researcher Rui Wang for finding this bug.

Evolution of Amazon pay

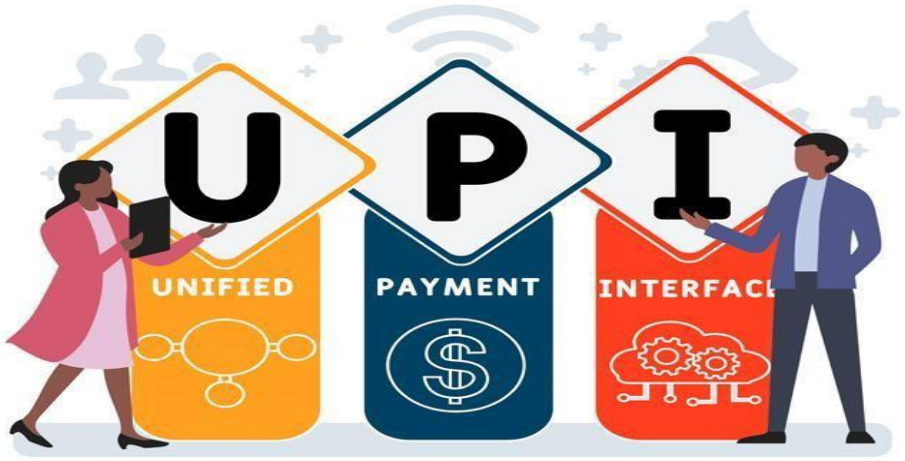
Checkout by Amazon (CBA) was an e-commerce solution that allowed web merchants to accept Amazon account information and use Amazon for payment processing. CBA could manage several aspects of the transaction, including order processing, promotional discounts, shipping rates, sales tax calculation, and up-selling. Depending on the merchant's needs, CBA could be integrated into the merchant's systems with manual processing (through Seller Central) or through SOAP APIs or downloadable CSV files. CBA also claimed to reduce the bad debt because of Amazon's fraud detection capabilities. CBA was discontinued in the UK and Germany in 2016 and in the US in April 2017.

Amazon Flexible Payments Service (FPS)

Flexible Payments Service (FPS) was an Amazon Web Service that allowed money transfer between two entities using a technology built on single, multiple, and unlimited use payment tokens. Merchants managed their service use via API or solution providers. They accessed the account through a merchant account on the Amazon Payments website. The service was launched as a limited beta in August 2007 and, later in February 2009, was promoted to General Availability FPS differed from CBA because FPS did not handle additional capabilities associated with order processing, such as promotions, tax, and shipping. FPS also provided the payments processing for the Amazon Web Services DevPay service but it was discontinued in June 2015.

.

The Unified Payments Interface (UPI)



Unified Payments Interface, commonly referred as UPI, is an Indian instant payment system developed by the National Payments Corporation of India (NPCI) in 2016. The interface facilitates inter-bank peer-to-peer (P2P) and person-to-merchant (P2M) transactions. [1][2] It is used on mobile devices to instantly transfer funds between two bank accounts. The mobile number of the device is required to be registered with the bank. The UPI ID of the recipient can be used to transfer money. It runs as an open source application programming interface (API) on top of the Immediate Payment Service (IMPS), and is regulated by the Reserve Bank of India (RBI). Indian Banks started making their UPI-enabled apps available on the Google Play on 25 August 2016.With UPI, India maintains its position as the global leader in instant payments, accounting for 46% of all global instant payment transactions in 2022. As of November 2022, the platform had over 300 million monthly active users in India. The proportion of UPI transactions in total volume of digital transactions grew from 23% in 2018–19 to 55% in 2020–21 with an average value of 1,849 per transaction. It enabled over 2,348 transactions every second in 2022.

According to data from the NPCI, 12.20 billion UPI transactions worth ₹18.41 lakh crore (equivalent to $222.17 billion) were processed in January 2024, representing a 41.72% increase in transaction value compared to January 2023. In 2023, the total annual value of UPI transactions in India reached ₹182 lakh crore (equivalent to $2.2 trillion), reflecting a 59% increase in transaction volume and 45% increase in transaction value compared to 2022.The success of UPI made it a soft power tool for India.

History

In April 2009, the National Payment Corporation of India (NPCI) was formed to integrate all the payment mechanisms in India and make them uniform for all retail payments. By March 2011, RBI found out that in India, only six non-cash transactions were executed each year by individual citizens while 10 million retailers accepted card-based payments. Around 145 million families had no access to any form of banking. There was also the problem of tackling black money and corruption that happened mostly in cash.

RBI in 2012 released a vision statement for a period of four years that indicated commitment towards building a safe, efficient, accessible, inclusive, interoperable, and authorized payment and settlement system in India. It was also part of the Green Initiative to decrease the usage of paper in the domestic payments market.UPI was officially launched in 2016 for public use.

Under RBI guidance, NPCI became the primary body tasked with developing a new payment system that is simple, secure, and interoperable. UPI works on a four-pillar push-pull interoperable model where there will be a remitter/beneficiary front-end PSP (payment service provider) and a remitter/beneficiary back-end bank that settles the monetary transaction for the users. According to the CEO of Netmagic Solutions, UPI became one of the most successful deep-tech financial innovations India has produced.

In December 2019, noting the success of UPI, Google suggested that the US Federal that the US Federal Reserve Board should follow UPI as an example in developing FedNow, a real-time payment system for the United States.

UPI 2.0

On 16 August 2018, UPI 2.0 was launched, which enabled users to link their overdraft accounts to a UPI handle. Users were also able to preauthorize transactions by issuing a mandate for a specific merchant. This version also included a feature to view and store an invoice for each transaction. An Auto Pay facility for recurring payments was also added.
As of August 2021, State Bank of India, Bank of Baroda and Paytm Payments Bank have been live on UPI AutoPay, each registering

660,000, 204,000, and 186,000 mandates, respectively. From 15 March 2022, the government removed the need for debit cards for UPI registration. NPCI is planning to expand AutoPay to international markets and operationalize real-time payment dispute resolution mechanisms covering 90% of the complaints by September 2022.

From 8 June 2022, RBI allowed linking RuPay credit cards with UPI. Customers can now make credit card payments using UPI, in the absence of a physical card. NPCI developed a real-time feature that will reduce the 24-hour time period taken by banks to unblock funds over time-out or transaction declines to 30 seconds. The service was officially launched on 20 September 2022.On 7 December 2022, RBI announced that UPI will upgrade from single-block-single to single-block-multiple debit for recurring transactions and investments in securities. This

feature is expected to help users block funds for specific purposes and release them when needed.

UPI 123PAY

As part of a financial inclusion initiative, NPCI with fintech start-up Naffa Innovations with their product ToneTag in 2021 started working on developing a voice-based payment service for feature phone users in low connectivity zones over UPI payment ecosystem under Interactive Voice Response (IVR) project. The system utilised Dual Tone Multi-
Frequency (DTMF) signalling technology with two-factor authentication (2FA) flow for peer-to-peer (P2P) transaction. From September 2020 to June 2021, it was under beta testing while awaiting RBI approval for large-scale deployment. [47] The beta testing and pilot experiment were completed by October 2021 and RBI started formulating guidelines for nationwide use. [48]

The RBI governor Shaktikanta Das launched the service called UPI 123PAY on 8 March 2022, with an aim to help almost 400 million feature phone users in the country. [49] Till now, UPI payments were only possible through payment applications on smartphones and
USSDbased service for feature phones. However, as per Deputy Governor T Rabi Shankar, the latter has been found to be cumbersome due to the unavailability of the services on several mobile networks.

UPI 123PAY has four options for payment.

App-based functionality where a mobile phone manufacturer can install a UPI app through over-the-air programming, that can be used for payment.

Missed calls based: where a customer can use a dedicated merchant payment number by giving a missed call. The incoming authentication call will ask for PIN verification to complete the transaction. Interactive Voice Response (IVR) based where the payment transaction will be completed using pre-defined phone numbers.

Factors that could influence the Digital Payment system:

Banking Cards:

Banking cards, commonly referred to as debit or credit cards, are plastic cards issued by financial institutions such as banks or credit unions. They are linked to the cardholder's bank account and enable electronic transactions, offering convenience and security for making purchases, accessing funds, and managing finances. Debit cards deduct funds directly from the cardholder's checking or savings account, while credit cards allow users to borrow money up to a predetermined credit limit, with the obligation to repay the borrowed amount later. Both types of cards are widely accepted for various transactions, including in-store purchases, online shopping, bill payments, and ATM withdrawals. They often come with features like PIN numbers, EMV chips, and security measures to protect against fraud and unauthorized use. Additionally, many credit cards offer rewards programs, cashback incentives, travel benefits, and other perks to cardholders based on their spending patterns. It's essential for cardholders to understand the terms, fees, and responsibilities associated with their banking cards to use them responsibly and effectively manage their finances.

Types of banking cards

- Debit card
- Credit card

DEBIT CARD

A debit card, also known as a check card or bank card, is a payment card that can be used in place of cash to make purchases. The card usually consists of the bank's name, a card number, the cardholder's name, and an expiration date, on either the front or the back. Many of the new cards now have a chip on them, which allows people to use their card by touch (contactless), or by inserting the card and keying in a PIN as with swiping the magnetic stripe. These are similar to a credit card, but unlike a credit card, the money for the purchase must be in the cardholder's bank account at the time of the purchase and is immediately transferred directly from that account to the merchant's account to pay for the purchase.

Some debit cards carry a stored value with which a payment is made (prepaid cards), but most relay a message to the cardholder's bank to withdraw funds from the cardholder's designated bank account. In some cases, the payment card number is assigned exclusively for use on the Internet, and there is no physical card. This is referred to as a virtual card.

In many countries, the use of debit cards has become so widespread that they have overtaken checks in volume or have entirely replaced them; in some instances, debit cards have also largely replaced cash transactions. The development of debit cards, unlike credit cards and charge cards, has generally been country-specific, resulting in a number of different systems around the world that are often incompatible. Since the mid2000s, a number of initiatives have allowed debit cards issued in one country to be used in other countries and allowed their use for internet and phone purchases.

Debit cards usually also allow an instant withdrawal of cash, acting as an ATM card for this purpose. Merchants may also offer cashback facilities to customers so that they can withdraw cash along with their purchase. There are usually daily limits on the amount of cash that can be withdrawn. Most debit cards are plastic, but there are cards made of metal and, rarely, wood.

There are currently three ways that debit card transactions are processed: EFTPOS (also known as online debit or PIN debit), offline debit (also known as signature debit), and the Electronic Purse Card System. One physical card can include the functions of all three types, so it can be used in a number of different circumstances. The five major debit card networks are Union Pay, American Express, Discover, MasterCard, and Visa. Other card networks are STAR, JCB, Pulse, etc. There are many types of debit cards, each accepted only within a particular country or region; for example, Switch (since merged with Maestro) and

Solo in the United Kingdom; Interac in Canada; Carte Bleue in France; EC electronic cash (formerly Eurocheque) in Germany;
Bancomat/PagoBancomat in Italy; UnionPay in China; RuPay in India; and EFTPOS cards in Australia and New Zealand. The need for crossborder compatibility and the advent of the euro recently led
[dubious – discuss] to many of these card networks (such as Switzerland's "EC direkt", Austria's "Bankomatkasse", and Switch in the United Kingdom) being re-branded with the internationally recognized Maestro logo, which is part of the MasterCard brand. Some debit cards are dualbranded with the logo of the (former) national card as well as
Maestro (for example, EC cards in Germany, Switch and Solo in the
UK,
[dubious – discuss] Pinpas cards in the Netherlands, Bancontact cards in Belgium, etc.). The use of a debit card system allows operators to package their products more effectively while monitoring customer spending.

Online debit system

Online debit cards require electronic authorization of every transaction, and the debits are reflected in the user's account immediately. The transaction may be additionally secured with the personal identification number (PIN) authentication system; some online cards require such authentication for every transaction, essentially becoming enhanced automatic teller machine (ATM) cards.

One difficulty with using online debit cards is the necessity of an electronic authorization device at the point of sale (POS) and sometimes also a separate PINpad to enter the PIN, although this is becoming commonplace for all card transactions in many countries.

Overall, the online debit card is generally viewed as superior to the offline debit card because of its more secure authentication system and live status, which alleviates problems with processing lag on transactions that may only issue online debit cards. Some online debit systems are using the normal authentication processes of Internet banking to provide real-time online debit transactions.

Offline debit system

Offline debit cards have the logos of major credit cards (for example, Visa or Mastercard). These cards connect straight to a person's bank account, but there is a delay before the money is taken out.

Credit Card

credit card is a payment card, usually issued by a bank, allowing its

users to purchase goods or services or withdraw cash on credit. Using the card thus accrues debt that has to be repaid later. Credit cards are one of the most widely used forms of payment across the world.

regular credit card is different from a charge card, which requires the balance to be repaid in full each month or at the end of each statement cycle. In contrast, credit cards allow the consumers to build a continuing balance of debt, subject to interest being charged. A credit card differs from a charge card also in that a credit card typically involves a thirdparty entity that pays the seller and is reimbursed by the buyer, whereas a charge card simply defers payment by the buyer until a later date. A credit card also differs from a debit card, which can be used like currency by the owner of the card.

Business credit cards

Business credit cards are specialized credit cards issued in the name of a registered business, and typically they can only be used for business purposes.

Business credit cards offer a number of features specific to businesses. They frequently offer special rewards in areas such as shipping, office supplies, travel, and business technology. Most issuers use the applicant's personal credit score when evaluating these applications. In addition, income from a variety of sources may be used to qualify, which means these cards may be available to businesses that are newly established. In addition, some issuers of this card do not report account activity to the owner's personal credit, or only do so if the account is delinquent. In these cases, the activity of the business is separated from the owner's personal credit activity.

Business credit cards are offered by American Express, Discover, and almost all major issuers of Visa and MasterCard cards. Some local banks and credit unions also offer business credit cards. American Express is the only major issuer of business charge cards in the United States, however.

Secured credit cards

A secured credit card is a type of credit card secured by a deposit account owned by the cardholder. Typically, the cardholder must deposit between 100% and 200% of the total amount of credit desired. Thus if the cardholder puts down $1,000, they will be given credit in the range of $500–1,000. In some cases, credit card issuers will offer incentives even on their secured card portfolios. In these cases, the deposit required may be significantly less than the required credit limit and can be as low as 10% of the desired credit limit. This deposit is held in a special savings account. Credit card issuers offer this because they have noticed that delinquencies were notably reduced when the customer perceives something to lose if the balance is not repaid.

The cardholder of a secured credit card is still expected to make regular payments, as with a regular credit card, but should they default on a payment, the card issuer has the option of recovering the cost of the purchases paid to the merchants out of the deposit. The advantage of the secured card for an individual with negative or no credit history is that most companies report regularly to the major credit bureaus.

INTERNET BANKING

Online banking, also known as internet banking, virtual banking, web banking or home banking, is a system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website or mobile app. Since the early 2000s this has become the most common way that customers access their bank accounts.

The online banking system will typically connect to or be part of the core banking system operated by a bank to provide customers access to banking services in addition to or in place of historic branch banking. Online banking significantly reduces the banks' operating cost by reducing reliance on a physical branch network and offers convenience to some customers by lessening the need to visit a branch bank as well as being able to perform banking transactions even when branches are closed, for example outside the conventional banking hours or on weekends and holidays.

Internet banking provides personal and corporate banking services offering features such as making electronic payments, viewing account balances, obtaining statements, checking recent transactions and transferring money between accounts.

ELECTRONIC FUNDS TRANSFER

Electronic funds transfer (EFT) is the electronic transfer of money from one bank account to another, either within a single financial institution or across multiple institutions, via computer-based systems, without the direct intervention of bank staff.

According to the United States Electronic Fund Transfer Act of 1978 it is "a funds transfer initiated through an electronic terminal, telephone, computer (including on-line banking) or magnetic tape for the purpose of ordering, instructing, or authorizing a financial institution to debit or credit a consumer's account".

EFT transactions are known by a number of names across countries and different payment systems. For example, in the United States, they may be referred to as "electronic checks" or "e-checks"..

ATM

An automated teller machine (ATM) is an electronic telecommunications device that enables customers of financial institutions to perform financial transactions, such as cash withdrawals, deposits, funds transfers, balance inquiries or account information inquiries, at any time and without the need for direct interaction with bank staff.

ATMs are known by a variety of names, including automatic teller machines (ATM) in the United States (sometimes redundantly as "ATM machine"). In Canada, the term automated banking machine (ABM) is also used, although ATM is also very commonly used in Canada, with many Canadian organizations using ATM over ABM.In British English, the terms cashpoint, cash machine and hole in the wall are most widely used.][better source needed] Other terms include any time money, cash line, time machine, cash dispenser, cash corner, bankomat, or bancomat. ATMs that are not operated by a financial institution are known as "white label" ATMs.

Using an ATM, customers can access their bank deposit or credit accounts in order to make a variety of financial transactions, most notably cash withdrawals and balance checking, as well as transferring credit to and from mobile phones. ATMs can also be used to withdraw cash in a foreign country. If the currency being withdrawn from the ATM is different from that in which the bank account is denominated, the money will be converted at the financial institution's exchange rate. Customers are typically identified by inserting a plastic ATM card (or some other acceptable payment card) into the ATM, with authentication being by the customer entering a personal identification number (PIN), which must match the PIN stored in the chip on the card (if the card is so equipped), or in the issuing financial institution's database.

According to the ATM Industry Association (ATMIA), as of 2015, there were close to 3.5 million ATMs installed worldwide. However, the use of ATMs is gradually declining with the increase in cashless payment
systems.

IMPS

Immediate Payment Service (IMPS) is an instant payment inter-bank electronic funds transfer system in India. IMPS offers an inter-bank electronic fund transfer service through mobile phones. The service is available 24x7 throughout the year

including bank holidays. NEFT was also made available 24x7 from December 2019. RTGS was also made available 24x7 from 14 December 2020.

It is managed by the National Payments Corporation of India (NPCI) and is built upon the existing National Financial Switch network. In 2010, the NPCI initially carried out a pilot for the mobile payment system with 4 member banks (State Bank of India, Bank of India, Union Bank of India and ICICI Bank), and expanded it to include Yes Bank, Axis Bank and HDFC Bank later that year. IMPS was publicly launched on 22 November 2010. As of April 2023, there are 722 member banks which signed up for the IMPS service. Around 200 million IMPS transactions amounting to roughly US$20 billion of transaction amount happen every month in India.

CHAPTER – 3
HISTORY AND EVOLUTION
IN INDIA

HISTORY OF DIGITAL PAYMENT IN INDIA:

Origins and Early Adoption (1980s - 2000s):

The inception of digital payments in India can be traced back to the late 1980s when the Reserve Bank of India (RBI) introduced the National Electronic Funds Transfer (NEFT) system in 1987. NEFT facilitated electronic fund transfers between bank accounts, although its adoption remained limited due to infrastructure constraints and low digital literacy levels.

The 1990s witnessed the establishment of the Indian Financial Network (INFINET), providing a secure communication backbone for financial institutions. INFINET laid the groundwork for electronic transactions but was predominantly utilized within the banking sector, with limited accessibility to the general population.

The early 2000s marked the advent of online banking services, allowing customers to conduct financial transactions remotely. However, widespread adoption of digital payments was hindered by factors such as limited internet penetration, technological barriers, and a preference for traditional cash-based transactions.

Innovations Driving Adoption (2008 - 2015):

The landscape of digital payments underwent a significant transformation with the introduction of innovative solutions aimed at enhancing accessibility, convenience, and security.

In 2008, the National Payments Corporation of India (NPCI) launched the Immediate Payment Service (IMPS), enabling realtime interbank fund transfers. While IMPS offered a revolutionary solution, its adoption was initially slow due to low awareness and infrastructure challenges.

The year 2010 witnessed a paradigm shift with the introduction of the Aadhaar platform, a biometric-based identification system. Aadhaar facilitated secure and reliable identity verification, laying the foundation for seamless digital transactions.

In 2014, the government launched the Pradhan Mantri Jan Dhan Yojana (PMJDY), aiming to promote financial inclusion by providing every household with access to a bank account. PMJDY aimed to bridge the gap between the banked and unbanked populations, thereby expanding the potential user base for digital payments.

The introduction of the Unified Payments Interface (UPI) in 2015 marked a watershed moment in India's digital payments journey. UPI revolutionized electronic transactions by enabling instant and seamless fund transfers between bank accounts through mobile phones. The simplicity and convenience offered by UPI played a pivotal role in driving widespread adoption of digital payments across the country.

Explosive Growth and Policy Interventions (2016 - Present):

The years following the introduction of UPI witnessed a rapid acceleration in the adoption of digital payments, fueled by policy interventions, technological advancements, and changing consumer behaviors.

The government's demonetization initiative in 2016 served as a catalyst for the adoption of digital payments. With the sudden withdrawal of high-denomination currency notes, consumers and businesses were compelled to explore alternative payment methods, leading to a surge in digital transactions.

The proliferation of smartphones and internet connectivity further accelerated the adoption of digital payments, particularly among urban populations. However, the rural segment faced challenges such as limited internet access, language barriers, and a lack of awareness regarding digital payment solutions.

Government initiatives such as Digital India and the establishment of Common Service Centers (CSCs) aimed to address these challenges and promote digital literacy and awareness in rural areas. While these initiatives have made significant strides in bridging the digital divide, there is still room for improvement in terms of accessibility and inclusivity.

The COVID-19 pandemic in 2020 underscored the importance of digital payments as consumers and businesses increasingly relied on contactless transactions to minimize the risk of virus transmission. The pandemic served as a catalyst for the adoption of digital payments solutions, driving further innovation and expansion in the digital payments ecosystem.

Current Landscape and Future Outlook:

As of the present day, digital payments have become an integral part of everyday life for millions of Indians. UPI has emerged as the preferred mode of digital transactions, processing billions of transactions every month with remarkable efficiency and security.

While the adoption of digital payments has made significant strides, there are still challenges to be addressed, particularly in rural and underserved areas. Initiatives aimed at promoting digital literacy, improving internet connectivity, and enhancing accessibility will play a crucial role in driving further adoption of digital payment solutions.

Looking ahead, the future of digital payments in India appears promising, with continued innovation, regulatory support, and infrastructure development expected to propel the growth of the digital payments ecosystem. As technology continues to evolve and consumer preferences evolve, digital payments will play an increasingly important role in shaping the future of India's economy and society.

EVOLUTION OF DIGITAL PAYMENT IN INDIA:

Traditional Methods:

India's history of financial transactions reflects a tapestry woven with traditional methods like cash, checks, and later, plastic cards. Cash transactions were predominant, with cash being the primary medium for conducting everyday transactions. Checks were used for larger transactions, although they posed challenges such as clearance delays and fraud risks. Plastic cards, including credit and debit cards, gained popularity in urban areas, offering convenience but remained limited due to infrastructure constraints and security concerns.

Emergence of Digital Payment Systems:

The emergence of digital payment systems in India marked a transformative shift, empowering millions with access to efficient, secure, and convenient financial transactions. Electronic fund transfers, initiated with the introduction of the National Electronic Funds Transfer (NEFT) system by the Reserve Bank of India (RBI) in ß2005, provided a platform for electronic transactions within the banking system. NEFT transactions witnessed steady growth, reaching 2750.75 million transactions in FY 2020-21, with a total value of Rs. 256.8 trillion.

Innovations like Immediate Payment Service (IMPS) and Unified Payments Interface (UPI) further revolutionized digital payments in India. IMPS, launched by the National Payments Corporation of India (NPCI) in 2010, facilitated real-time interbank fund transfers 24/7. IMPS transactions surged from 86.4 million in FY 2014-15 to 3344.76 million in FY 2020-21, reflecting its widespread adoption and popularity.

The introduction of UPI in 2016 marked a watershed moment in India's digital payments journey. UPI enabled instant and seamless fund transfers between bank accounts through mobile phones, leveraging a unique virtual payment address (VPA) system. UPI transactions witnessed exponential growth, surpassing 31819.25 million transactions in FY 2020-21, with a total value of Rs. 41.5 trillion.

Future Aspects:

Looking ahead, the future of digital payment systems in India holds immense promise, driven by technological advancements, regulatory reforms, and changing consumer preferences. Some key future aspects include:

1.Enhanced Security Measures: With cyber threats on the rise, digital payment systems will focus on implementing robust security measures such as biometric authentication, tokenization, and encryption to safeguard sensitive financial information. The adoption of multi-factor authentication and dynamic authentication methods will enhance security and protect users against fraud.

2.Artificial Intelligence (AI) and Machine Learning (ML): AI and ML technologies will play a crucial role in optimizing digital payment processes, detecting fraudulent activities, and personalizing user experiences. AI-powered fraud detection systems will analyze transaction patterns in real-time, identifying suspicious activities and preventing unauthorized transactions.

3.Internet of Things (IoT) Integration: The integration of IoT devices with digital payment systems will enable seamless and secure transactions in various sectors such as retail, healthcare, and transportation. Smart devices equipped with payment capabilities will facilitate frictionless payments, enhancing user convenience and driving IoT adoption.

4.Blockchain Technology: Blockchain technology holds the potential to revolutionize digital payments by providing a decentralized and tamper-proof ledger for recording transactions. Cryptocurrencies and digital assets powered by blockchain, such as Bitcoin and Ethereum, offer alternative payment methods with lower transaction costs and faster settlement times. The adoption of blockchainbased solutions for cross-border payments and remittances will streamline international transactions and reduce intermediary costs.

1. Biometric Payments: Biometric authentication methods, including fingerprint scanning, facial recognition, and iris scanning, will gain prominence in digital payment systems. Biometric payments offer enhanced security and user convenience, eliminating the need for physical cards or devices. Aadhaar-enabled Payment System (AePS), leveraging Aadhaar biometric authentication, will

facilitate financial transactions for individuals without traditional banking access, driving financial inclusion and accessibility.

2. Contactless and Near Field Communication (NFC) Payments: Contactless payment methods, facilitated by NFC technology, will continue to gain traction, especially in retail and transportation sectors. Contactless payments offer speed and convenience, allowing users to make transactions with a simple tap of their mobile devices or cards. The adoption of wearable devices and contactless payment cards will further drive the growth of NFCbased payments, providing a seamless and hygienic payment experience.

3.Cross-Border Payments and Digital Currencies: The rise of digital currencies and central bank digital currencies (CBDCs) will facilitate cross-

4.border payments, reducing transaction costs and settlement times. CBDCs issued by the Reserve Bank of India (RBI) will provide a secure and regulated digital alternative to traditional fiat currencies, fostering financial inclusion and interoperability.

Effect of Demonetization

Demonetization undoubtedly aided the adoption of digital payments. The country's demonetization on November 8, 2016, marked a watershed moment in the country's economy, with massive cash transactions taking place. Digital payments have changed everyone's way of life since demonetization, and the country's cashless economy is one among the key benefits of demonetization. Every disturbance, it is claimed, offers possibilities, and the announcement of demonetization was one such disruption. Demonetization provided a significant development opportunity for digital payments in India, and digital wallet businesses seized it with both hands to increase their market share For Indian customers, demonetization has provided a different opportunity for the adoption of digital payment as an alternative to cash. (Singh, Shamsher, Rana, 2017)

The demonetization resulted in unprecedented growth in digital payments. By February of this year, digital wallet companies had grown by 271 percent. government and private sector companies such as Paytm, Freecharge, and Mobikwik have been aggressively pushing several digital payment applications, including the Aadhaar Payment app, the UPI app, and the National Payments Corporation of India (NPCI) developed the Bharat Interface for Money (BHIM) app. Digital transfers using apps have brought behavioral change and helped in the adoption of digital payment. This has resulted in the ease of money transfer in rural areas which was not touched earlier by the digital payment method. Many foreign investors now want to invest in the digital payment industry, which is a new attractive destination because of the scope of tremendous expansion in India. (Manocha et al., 2019)

According to another study, there was a significant increase in digital payment methods and transactions following demonetization. The effect they saw from the use of various mobile wallets like Paytm, Razorpay, Mobikwik, Freecharge, etc. just one day after demonetization. Various grocery startups saw an increase in sales of 40–50%. Furthermore, one of the studies showed that the liquidity state of the economy is highly affected in a positive manner as demonetization helped the country to go cashless while at the same time increasing transparency in the financial aspect of the economy. It was also observed that digital payment transactions through internet banking and mobile digital wallets saw a tremendous rise in value. Paytm wallet, for example, grew from 125 million wallet customers prior to demonetization to 185 million three months later. And it continued to grow, hitting 280 million users by November 2017. PWC India reported that post demonetization, the transactions through digital payment methods of NEFT and RTGS have seen a substantial rise, both in terms of volumes and values. The value of

NEFT transactions increased from 8,808 billion INR to 14,182 billion

INR. And the value of RTGS increased from 78,179 billion INR to 1,02,348 billion INR. The transactions from E-wallets reportedly increased from 17 lakhs per day to 63 lakhs per day (Dr. Swati Kulkarni, Dr. Aparna J Varma, 2021). It was also seen that in various metro cities, even small market merchants started keeping Point of Sales (POS) machines at their shops to accept payment digitally.

The New Digital System

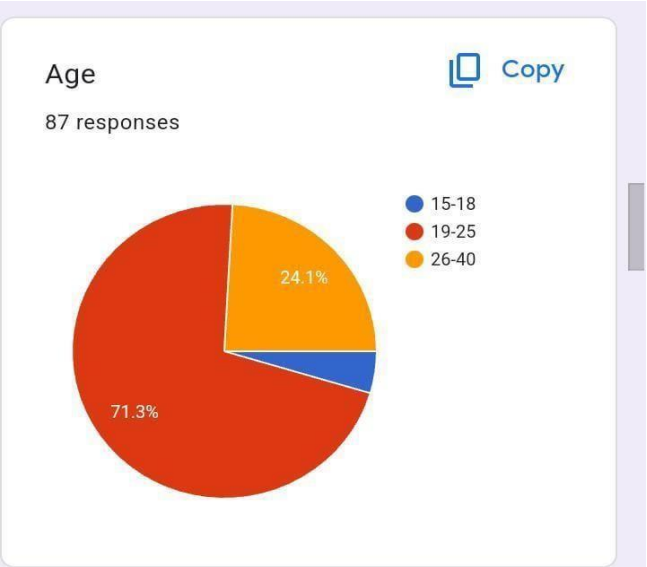
Even if people in India were aware of the new digital system, they were not digitally literate. People have to start utilizing the internet on a regular basis and become familiar with its functionalities in order to overcome this. And, once again, this was a watershed event, since Reliance Jio launched their sim at the same time in 2016, offering 1 GB of data per day. Digital literacy is a necessary ability for all Indian citizens to engage fully in the democratic process. For effective usage of digital activities, basic knowledge and competencies are required. The Indian telecom business, as well as people's internet usage patterns, were forever changed by Reliance. In the first month, Jio claimed that 16 million people had signed up. No other mobile network operator in the world has ever created a network as quickly as this one. Jio attracted 50 million users in 83 days by offering 1 GB of data per day. As a result of this increased accessibility, the use of social media, social networking sites, and digital payment has increased. People were more fearless when it came to using the internet. As a result, Jio played a key role in the growth of digital payments in India.

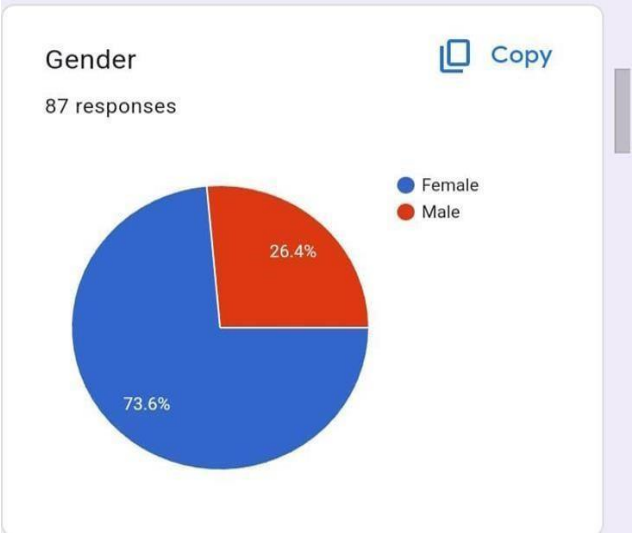
Jio triggered the widespread use of digital transactions, however, studies show that UPI has gained more traction in the long run by popularizing the digital payment methods. It has been observed that UPI overtook all the digital financial transaction instruments by increasing the volume of transaction by 450% at the end of the financial year 2018-2019. According to the industry experts the affordability of smartphones and internet data too have accelerated the widespread acceptability among the customers from different strata of the society.

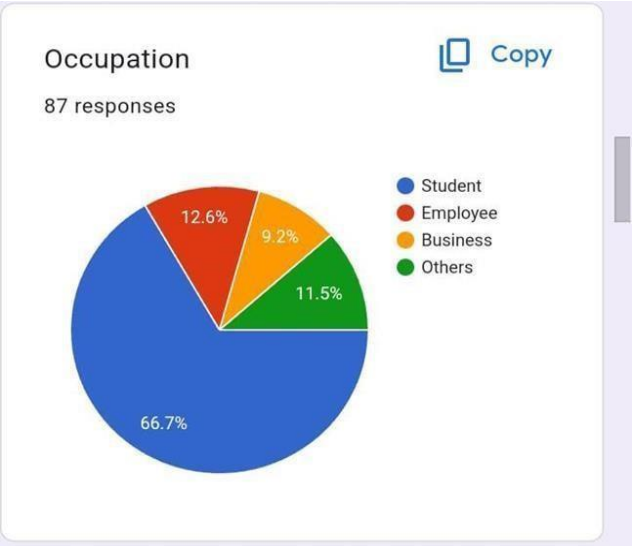
CHAPTER 4:

FINDINGS AND CONCLUSION

REPRESENTATION OF DATA ACQIRED



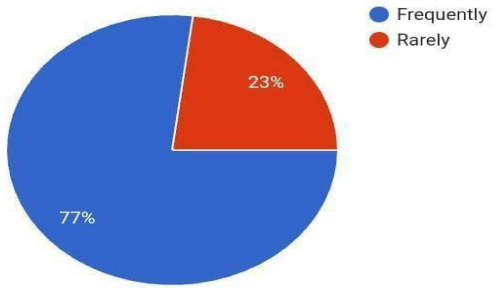




How often do you make online payments..?

Copy

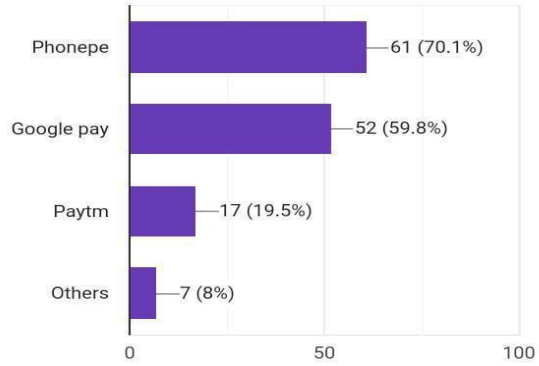
87 responses



Which app do you use for online transactions..?

Copy

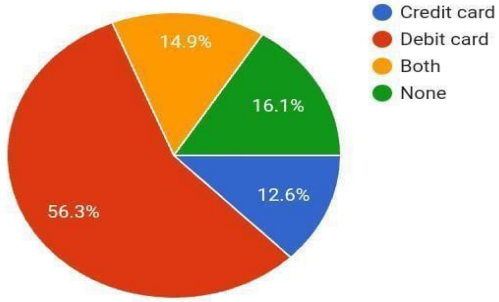
87 responses



Which type of cards do you use..?

Copy

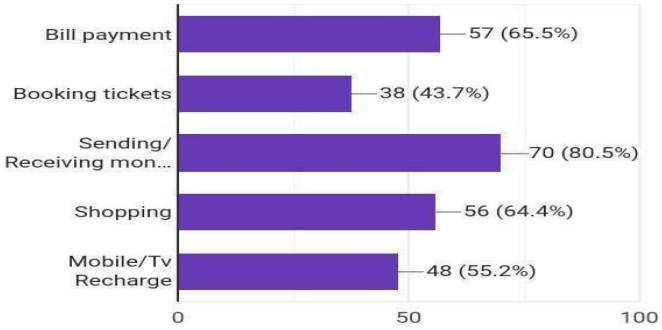
87 responses



Pupose of using digital transactions

Copy

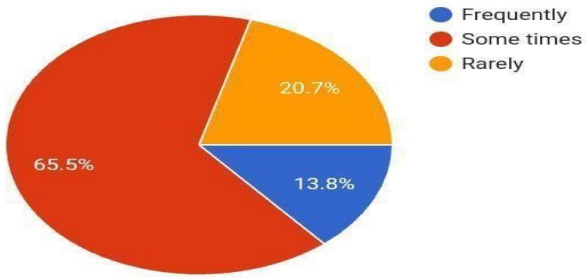
87 responses



While making online transactions do you face any issues..?

Copy

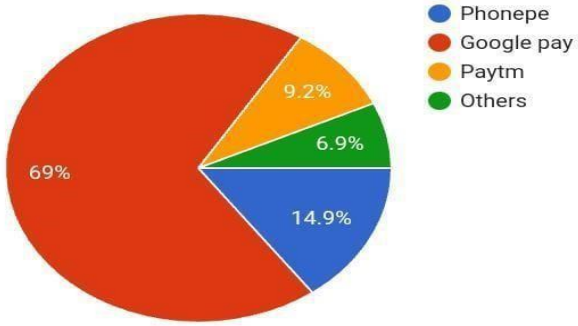
87 responses



In which app you have earned more rewards..?

Copy

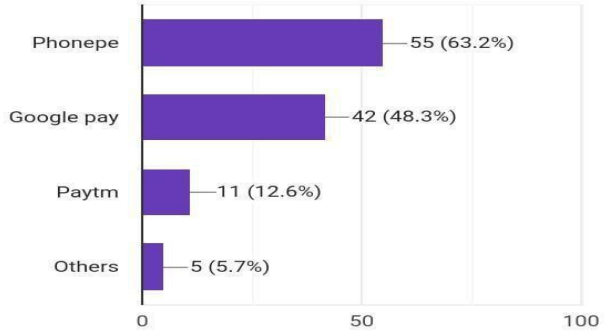
87 responses



Which app is user friendly..?

Copy

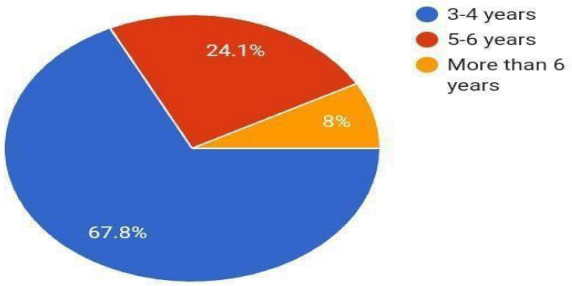
87 responses



Since how many years you are using online transactions..?

Copy

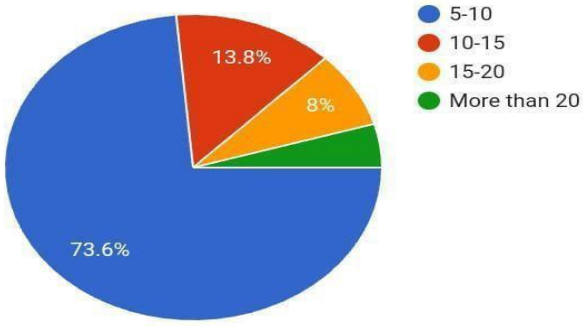
87 responses



How many transactions you will make in a day..?

Copy

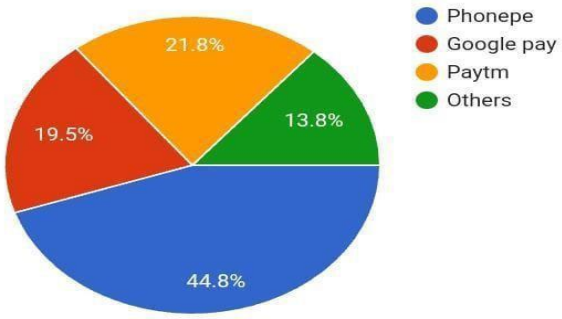
87 responses



In which app do you face more issues..?

Copy

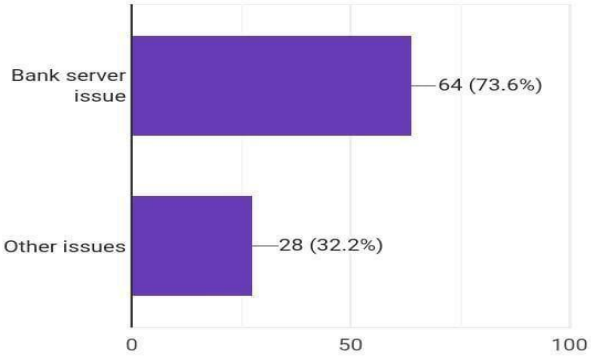
87 responses



What type of issues do you face..?

Copy

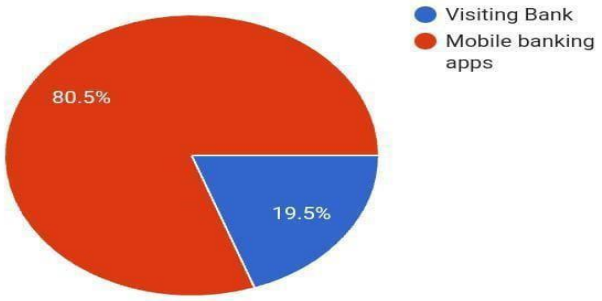
87 responses



How do you check your Bank statement..?

Copy

87 responses



FINDINGS:

- 72% of people are in the age group 19-25 which forms the majority.
- Majority of the respondents were females with 74%
- Students are the majority population to use digital payments than employees.
- Many people make online payments very frequently since 6to 7 years than cash payments.
- 70% of population use “phone pe”.
- 60% of population use “google pay”
- And very less percentage of population use Paytm.
- There are many types of cords such as credit cards, debit cards etc.
- Majority of the people are using debit cards such as ATM cards, visa cards etc.
- In Now-a-days in very sector wage of online transactions is increasing. We can make bill payments, ticket bookings, sending/receiving money, shopping, mobile or TV recharges and many other ways.
- Sometimes, while making online payments we get server issues, network issues.
- In encourage the online transactions the online apps are providing some records, cash back offers.

BIBLIOGRAPHY:

https://www.researchgate.net/publication/362342507_DIGITAL_PAYMENT_IN_INDIA
https://en.wikipedia.org/wiki/Mobile_payment
https://www.linkedin.com/pulse/evolution-digitalpayment-systems-india-dharmendra-kumar