

A Review on Different Types of E-Payment Applications in India

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Abstract: *The growth of modern civilization depends on payments. Systems of payment have substantially changed over time, from the Stone Age barter system, through to coins and to virtual payment. Digital payments refer to electronic consumer transactions, which include payments for goods and services that are made over the internet, mobile payments at point-of-sale (POS) via smartphone applications (apps), and peer-to-peer transfers between private users. Demonetization and Covid 19 pandemic has driven consumers to sudden adoption of e-payments or digital payments. In this paper an attempt has been made to study different types of e-payment systems and apps that are helping in building the online businesses.*

KEY WORD: *E-Payment, type, application, transaction*

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I. INTRODUCTION

The advancements in Information Technology have come to play a significant role in the area of development of newer modes of payment systems. Today this end, innovative products such as e-banking and e-payments have been introduced. Internet banking has been the predominant mode of e-banking in India with the internet offering itself as a new delivery mechanism for the banks in reaching the customer. Electronic based business models are replacing conventional banking system and almost banks are rethinking business process designs and customer relationship management strategies. Digital payment system has remarkable momentum particularly after demonetization in India. The Government of India is taking various steps for efficient utilization of digital payment platforms to wipe out corruption and black money from the Indian economic system. Presently, around 60 per cent of the transactions in India are taken place through digital platforms. Adoption of cashless transaction has been significantly pushed by Prime Minister Mr. Narendra Modi as part of government reforms after demonetization of high value currency of Rs. 500 and 1000 which accounts for 86% of cash circulation.

The demonetization resulted in unprecedented growth in digital payment. By February 2018, digital wallet companies had shown a growth of 271 percent for a total value of US\$2.8 billion (Rs. 191 crores), Indian government and private sector companies such as Paytm, Free charge and Mobikwik had 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 has brought behavioral change and helped in the adoption of digital payment. This has resulted in ease of transfer of money in rural areas which was not touched earlier by the digital payment method. There are number of facilitators which are leading to the growth of digital payment and transition from cash economy to less cash economy. These facilitators include penetration of internet connectivity on smart phones, non-banking financial institution facilitating digital payment, one touch payment, rise of financial technology sector and push by government either by giving incentives or tax breaks. These all factors are creating positive atmosphere for growth of digital payment in India. Now many foreign investors want to invest in digital payment industry which is new attractive destinations because of scope of tremendous expansion in India.

The outbreak of Covid 19 has installed fear amongst the people of India of getting infected by others has given impetus to use smartphones to make e-payments to remain safe (Alber and Dabur 2020). Further researcher Sibi (2021) in his study infers that people were using digital payment methods irrespective of age, education, profession and income. This clearly gives an understanding that Covid 19 has created a huge impact on the usage of e-payments.

Government of India is committed to expand digital transactions in the Indian economy, and thereby enhance the quality and strength of the financial sector, as well as ease of living for citizens. Digital payment transactions have significantly increased as a result of coordinated efforts of the Government as a whole, along with all stake holders concerned, from 2,071 crore transactions in FY 2017-18 to 8,840 crore transactions in FY 2021-22. New rules and procedure for levying charges in different payment system in the country is necessary for the growth and acceptance of payment system (RBI, 2022).

The total number of digital payment transactions undertaken during the last five financial years and the current financial year are as under:

Financial Year (FY)	Total number of digital transactions (in crore)
2017-18	2071
2018-19	3134
2019-20	4527
2020-21	5554
2021-22	8840
2022-23	9192

Source: RBI, NPCI and Banks

The total value of digital payments during the last five financial year and in the current financial year are as under:

Financial Year (FY)	Total value of digital transactions (in lakh crore)
2017-18	1962
2018-19	2482
2019-20	2953
2020-21	3000
2021-22	3021
2022-23	2050

Source: RBI, NPCI and Banks

II. ELECTRONIC PAYMENT SYSTEM

E-payment is the “exchange of monetary value online via the Internet, private networks or a combination of it” (Majhi et al., 2000). The electronic payment system has grown increasingly over the last decades due to the growing spread of internet-based banking and shopping. As these increase, improve, and provide ever more secure online payment transactions the percentage of check and cash transactions have decreased. Money and the idea of its exchange through payments have evolved a lot from the time of its inception. From goods to grain, from metal coins to paper, from bank accounts to e-wallets, money has taken various shapes, sizes, and forms. Payments evolved from a barter system (exchange of goods for grains) to the token system (exchange of coins and cash on paper) to cash pooling (bank accounts and deposits) to cashless payments (credit cards, checks, e-wallets).

Over the last decade or so, payment technologies have grown at a dizzying pace. Payments are now evolving at a rapid pace with new providers, new platforms, and new payment tools launching on a near daily basis. E-payment systems, like all other e-services, require an electronic platform to work. E-payment covers a wide range of monetary transactions (Z. J. Zuopeng and J. M. Sajjad 2012), including normal transactions such as paying for groceries or utility bills, as well as B2B transactions and others, allowing the buyer and seller to benefit from a faster and easier payment system (W. Chaiyasoonthorn and W. Suksa-ngiam 2019). As consumer behavior evolves, an expectation of Omni commerce emerges – that is the ability to pay with the same method whether buying in-store, online or via a mobile device. This shift precipitates a need for retailers to adapt toward fast, simple and secure mobile payments. The ongoing war with alternative payment channels will intensify and challenges in emerging markets would force the incumbents to take drastic measures.

III. KEY DRIVERS OF E-PAYMENTS

3.1 Real-Time Payments: RTP represents a new phase of evolution within the payments industry, with several key features that differentiate them from current payment methods, specifically speed, value-added messaging capabilities and immediate availability of transaction status. RTP will provide FIs with the functionality/features to innovate and meet customer demand.

3.2 Distributed Ledger Technology (DLT)/ Block chain: Block chain has the potential to completely change the financial transaction processing cost model amongst its various applications. It also enables all processing to be done over a distributed system network or in the cloud, avoiding the usage of costly data centers or mainframes.

3.3 Expansion of Payments to Non-Physical Interfaces: Traditional interfaces are challenged by external stakeholders (Amazon, Google, Facebook, and Apple) in two ways

– voice assistants and VR. Connected assistants become smarter and add functionality with the enhancement of NLP and image recognition. Betting on physical interfaces, and mobile, in particular, can no longer ensure long-term relevance as voice-first solutions evolve. With Facebook obsessed on killing the smartphone to own a virtual space, classic interfaces and solutions developed for them will gradually fall out of grace.

3.4 Unified Platforms: The first Visa/MasterCard/SWIFT-free payments system – the Unified Payments Interface (UPI) by NPCI was launched in 2016. UPI is an open-source platform designed for the mobile age that helps with easy integration of various payment platforms. UPI is powered by a single payment API and a set of supporting APIs. UPI offers a whole new model of the financial services industry ecosystem. UPI became a starting point of what SWIFT called a journey to a single payments platform. Penetration of the telecommunication, increase in bank coverage and eliminating the sharing of sensitive information about the customers has paved path to improvement in usage of UPI (Gochhwal, 2017).

IV. PAYMENT SYSTEMS CAN BE BROADLY PLACED INTO ONE OF THE FOLLOWING PAYMENT CHANNELS

4.1 Paper-Based systems such as checks or drafts. Payments are initiated when one party writes an instruction on paper to pay another. These systems are one of the oldest forms of non-cash payment systems. Checks are a common paper-based channel and are still widely used in the United States and a few other countries.

4.2 RTGS (Real Time Gross Settlement) or High-Value Payments, commonly called wire transfers. Wires came into being in the late 1800s with the invention of the telegraph but did not become widely used until the early 1900s.

4.3 RTNS, or Real Time Net Settlement systems or Automated Clearing House (ACH) batch payments were introduced in the early 1970s and were designed to replace checks with electronic payments. Unlike wires, which are processed individually, ACH payments are processed in batches and were originally intended for small payments under \$100,000 such as payroll and consumer transactions.

4.4 Cards are a payment channel that includes credit, debit and stored value cards. They are a fast growing segment of the methods for making and receiving payments.

5.5 Mobile payment is defined as the use of mobile phone to pay for the purchase of goods and services at a retail POS terminal or on the Internet. Payment may be initiated via SMS text message, mobile browser, downloadable app, contactless near-field communication (NFC), or quick response (QR) code.

4.6 Real-Time Low-value payments provide consumers and businesses with the ability to conveniently send and receive immediate fund transfers directly from their accounts at FIs, anytime 24/7/365. Financial institutions can leverage a variety of features – enhanced speed, security, and messaging capabilities – to create unique offerings for their retail and corporate customers. RTP also provides a backbone on which new business models can be redefined.

V. PAYMENT SCHEMES

5.1 OBEP Scheme: The Online Banking e Payments (OBEP) scheme is a type of payments network, developed by the local or international banking industry in conjunction with technology providers designed to facilitate online bank transfers or direct debits. In an OBEP scheme, the consumer is authenticated in real-time by the consumer's financial institution's online banking infrastructure. The availability of funds is validated in real-time and the consumer's financial institution provides a guarantee of the payment to the merchant in case the payment is made as a credit transfer (push payment): the consumer/buyer initiates the payment. In case the merchant initiates the payment – a debit transfer (pull payment) – the consumer is protected from wrong debits and has the right to reverse the payment depending on scheme regulation and market legislation.

5.2 OBEP Types: Across markets, there are several OBEP scheme types to distinguish

5.2.1 Mono-Bank OBEP Scheme: Entails that a seller or Payment Service Provider has separate connection to each participating financial institution.

5.2.2 Multi-Bank OBEP Scheme: Entails that a seller or Payment Service Provider has one single connection to the OBEP network in order to accept payment from any participating financial institution (Ex.: the ideal scheme in the Netherlands and Bank Axes in Norway)

5.2.3 Overlay OBEP Scheme: Similar to the Multi-Bank or Mono-Bank scheme, however, there is a third party (the overlay provider) who sits between the payment network and the consumer. The overlay provider requires the consumer to share their online banking credentials with them in order to have access to the consumer's bank account and to initiate the credit transfer to the merchant

VI. THE FOLLOWING ARE THE E PAYMENT APPLICATIONS PRESENT IN INDIA

6.1 *PAYTM*: Paytm ("Pay-T-M", pronounced similar to ATM) is an Indian e-commerce payment system and financial technology company, based out of Noida, India. Paytm is available in 11 Indian languages and offers online use-cases like mobile recharges, utility bill payments, travel, movies, and events bookings as well as in-store payments at grocery stores, fruits and vegetable shops, restaurants, parking, tolls, pharmacies and educational institutions with the Paytm QR code. As per the company, over 31.4 million (as of December 2022), increasing by 26% year-on-year across India use this QR code to accept payments directly into their bank account. The company also uses advertisements and paid promotional content to generate revenues.

6.2 *Mobikwik*: Mobikwik is an Indian company founded in 2009 that provides a mobile phone based payment system and digital wallet. Customers add money to an online wallet that can be used for payments. In 2013 the Reserve Bank of India authorized the company's use of the Mobikwik wallet, and in May 2016 the company began providing small loans to consumers as part of its service. The company launched its Mobikwik Lite mobile app in November 2016, designed for users of older 2G mobile networks and for those in areas with poor internet connectivity. Mobikwik has about 4 million merchants on its platform. "We have been scaling lending in a very healthy manner. For Mobikwik, the lending business disbursements in FY21 were around Rs 300 crore, and in FY22 it was Rs 5,100 crore.

6.3 *FreeCharge*: Free Charge, is an Indian digital marketplace for financial services based in Gurugram, Haryana, India. FreeCharge services are available across a range of financial instruments including savings, payments, insurance, and investment and lending. The company's focus is to create an ecosystem of innovative products and features that enables cashless transactions. FreeCharge consumers can pay utility bills (Electricity, Gas), pay Landline bills or recharge Mobile, Broadband, DTH and Metro cards. In addition, FreeCharge powered by Axis Bank enables the users to invest in mutual funds and get easy credit through FreeCharge EMI. FreeCharge UPI and payment gateway allows consumers to instantly send or receive money, shop at leading offline and online merchants across categories movies, entertainment, food, shopping, travel to get cashback & discounts. On 8 April 2015, Snap deal acquired Freecharge in what is being referred to as the second biggest takeover in the Indian e-commerce sector so far, after the buyout of Ibibo by rival MakeMyTrip, and the biggest venture capital exit in India to date. The deal was for approximately US\$400 million as cash and stock. On 27 July 2017, Axis Bank acquired FreeCharge for \$60 million.

6.4 *Phonepe*: PhonePe Private Limited, d/b/a PhonePe, is an Indian e-commerce payment system and digital wallet company headquartered in Bangalore, India. It was founded in December 2015, by Sameer Nigam and Rahul Chari. PhonePe app went live in August 2016 and was the first payment app built on Unified Payments Interface (UPI). The PhonePe app is available in over 11 Indian languages. Using PhonePe, users can send and receive money, DTH, recharge mobile, data cards, make utility payments, buy gold and shop online and offline. In addition PhonePe also allows users to book Ola rides, pay for Redbus tickets, and order food on Fresh menu, fit and avail Goibibo Flight and Hotel services through micro apps on its platform. PhonePe is accepted as a payment option across 5 million offline and online merchant outlets covering food, travel, groceries, movie tickets etc. The app crossed 100 million user mark in June 2018 and also crossed 5 billion transactions in December 2019. It is licensed by the Reserve Bank of India for issuance and operation of a Semi Closed Prepaid Payment system. In the year 2023 PhonePe has 150 million merchants.

6.5 *Google Pay (GPAY)*: Google Pay (stylized as G Pay; formerly Pay with Google and Android Pay) is a digital wallet platform and online payment system developed by Google to power in-app and tap-to-pay purchases on mobile devices, enabling users to make payments with Android phones, tablets or watches. As of January 8, 2018, the old Android Pay and Google Wallet have unified into a single pay system called Google Pay. Android Pay was rebranded and renamed as Google Pay. It also took over the branding of Google Chrome's auto fill feature. Google Pay adopts the features of both Android Pay and Google Wallet through its in-store, peer-

to-peer, and online payments services. The rebranded service provided a new API that allows merchants to add the payment service to websites, apps, Stripe, Braintree, and Google Assistant. The service allows users to use the payment cards they have on file with Google Play. The Google Pay app also added support for boarding passes and event tickets in May 2018.

On January 8, 2018, Google announced that Google Wallet would be merged into AndroidPay, with the service as a whole rebranded as Google Pay. This merger extends the platform into web-based payments integrated into other Google and third-party services. The rebranding began to roll out as an update to the Android Pay app on February 20, 2018; the app was given an updated design, and now displays a personalized list of nearby stores which support Google Pay. On December 21, 2018, Google Payment, obtained an e-money license in Lithuania - the license will enable Google to process payments, issue e-money, and handle electronic money wallets in the EU. As of 2023 Google Pay has 67 million active users across India.

6.6 BHIM UPI: BHIM (Bharat Interface for Money) is a mobile payment App developed by the National Payments Corporation of India (NPCI), based on the Unified Payments Interface (UPI). Named after B. R. Ambedkar and launched on 30 December 2016, it is intended to facilitate e-payments directly through banks as part of the 2016 Indian banknote demonetization and drive towards cashless transactions. The app 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 bank accounts of any two parties. It can be used on all mobile devices.

BHIM allow 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 IFSC code or MMID (Mobile Money Identifier) Code). Unlike mobile wallets (Paytm, MobiKwik, mPesa, 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 24/7 including weekends and bank holidays. During last five years, various easy and convenient modes of digital payments, including Bharat Interface for Money-Unified Payments Interface (BHIM-UPI), Immediate Payment Service (IMPS), and National Electronic Toll Collection (NETC) have registered substantial growth and have transformed digital payment ecosystem by increasing person-to-person (P2P) as well as person-to-merchant (P2M) payments. BHIM UPI has emerged as the preferred payment mode of the citizens and has recorded 803.6 crore digital payment transactions with the value of ₹ 12.98 lakh crore in January 2023.

6.7 HDFC PayZapp: PayZapp from HDFC is available to customers of all banks and allows you to make payments with just a single click. Make payments easily by adding credit or debit card details. Your card details are safe with the bank and no need to worry about that. PayZapp mobile wallet does three security checks for every transaction. It is available for Android and iOS. The total traffic on the PayZapp mobile app in 2023 is generated from referrals. As per PayZapp statistics, the e-wallet facility accounts for more than 14 million users.

6.8 ICICI Pockets: Pockets app is the first mobile wallet app in India allows you bring UPI-based payments. ICICI developed this mobile wallet, and it helps you to make payments online. Now you can shop anywhere, pay anyone and bank with ease. It allows you to transfer money, book tickets, do mobile recharge and more. With just a single click, sending and receiving payments to and from Pocket users. It is available for Android and iOS. ICICI Bank's e-wallet, Pockets, topped the list of digital payment brands in India, followed by HDFC Bank's PayZapp, and Google Pay, based on their Net Promoter Score (NPS), which measures brand perception and customer experience and is considered a predictive metric for business growth.

VII. CONCLUSION

The growth in Indian economy is vividly evident with the volume of increase in e-payment transactions. India is the second largest smartphone market after China. Thus the usage of digital wallets and other services are significantly supported with the internet service providers. As per the report of "Internet in India" based on an ICUBE 2021 survey reveals that there are 692 million active internet users and forecast that it will reach 900 million in 2025. All these statistics clearly give the importance of e-payments and the study of these become imperative. Thus this paper has attempted to study the different types of e-payment systems that enable the merchants and consumers to use the new and upcoming mechanisms that would ease the transactions by protecting the personal data.

BIBLIOGRAPHY

- [1]. Ref: RBI. (2022). Discussion paper on charges in digital payment system. 1-25.
- [2]. SIBY, K. M. (2021, march 1). A Study on Consumer Perception of Digital Payment Methods in times of Covid Pandemic. International Journal of Scientific Research in Engineering and Management ,, 05(03), 1-12.
- [3]. Alber, Nader, and Mohamed Dabour. 2020. The Dynamic Relationship between FinTech and Social Distancing under COVID-19 Pandemic: Digital Payments Evidence. International Journal of Economics and Finance 12: 109.
- [4]. Z. J. Zuopeng and J. M. Sajjad, "Knowledge market in organizations: incentive alignment and IT support," Industrial Management & Data Systems, 1101 - 1122, 2012. doi:10.2991/ijcis.d.191025.002
- [5]. W. Chaiyasoonthorn and W. Suksa-ngiam, "The diffusion and adoption of electronic payment systems in bangkok," International Journal of e- Business Research, 15(2), 102-115, 2019.doi:10.1086/261933
- [6]. Ravi, C. S. (2017). Digital payments system and rural India: A review of transaction to cashless economy. International Journal of Commerce and Management Research, 3(5), 169–173.
- [7]. Gochhwal, R. (2017). Unified Payment interface-an advancement in payment systems. American Journal of Industrial and Business Management, 7, 1174–1191.
- [8]. Majhi, B., Panda, G., & Dash, P. K. (2000). Electronic money: An essence of e-commerce. IETE Technical Review, 17(4), 203-207.
- [10]. Internet in India 2021, IAMAI- KANTAR <https://inc42.com/buzz/rural-india-drives-internet-penetration-with-351-mn-users-iamai-report>