

Unified Payment Interface Mechanism for the Development of Digital Banking in India

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ABSTRACT

Demonetization and the digital India initiatives pave the way for the development of various digital payment systems, allowing the economy to transition to a cashless system. As a result of the country's increasing use of the internet and mobile phones, India's digital payment infrastructure is expanding, and a variety of payment methods have emerged to enable quick and real-time payment processing. The National Payment Corporation of India's UPI (Unified Payment Interface) is one of the most popular digital payment methods in India. The research looks at the fundamentals of the UPI payment system as well as the various UPI apps that are widely used based on their features and market share. The study discusses the UPI technology development phase and aims to analyze the growth of UPI in India to determine whether UPI acts as a driving force for the development and growth of digital payments. The study's findings shed light on the UPI payment system's year-over-year growth. It also shows a significant increase in the market share of various UPI applications. The paper concludes that the banking sector is on its way to a tech-driven landscape by embracing various technological innovations and payment modes, such as UPI, which assists banks in achieving a milestone transformation in the Indian banking sector's payment infrastructure.

Keywords: Digital Payments, UPI, Digitalisation, Growth Of Banking Services, Cashless Economy

INTRODUCTION

The progress of a country's financial institutions is crucial to its economic development. As a result, an economy's banking sector serves as a catalyst for the overall growth and development of the economy. Today, all Indian banks are incorporating various technological innovations into their existing business models and attempting to implement growth- and customer-oriented plans and strategies rather than profit-oriented plans and strategies. Prior to 2016, India's banking system relied on traditional methods of fund transfer such as RTGS, NEFT, IMIMPS, and so on. The emergence of a more standardized payment platform was required due to the complexity of the paper-based system and the rigid system of rules. Furthermore, India's digital India initiative requires the banking sector to adhere to a digitally covered ecosystem centered on paperless and cashless economies. Thus, various types of digital payment modes emerged in the banking sector landscape, and the Unified Payment Interface was one of them. The National Payments Corporation of India (NPCI) created the Unified Payment Interface, and its operations are governed by the Reserve Bank of India (RBI). It is a payment system that enables interbank fund transfers and serves as a fact-track digital payment method for facilitating real-time and instant payment transactions between multiple bank accounts.

Users can transfer funds using a UPI virtual payment address or by scanning a QR code with UPI applications. UPI allows for the free transfer of funds, and it has earned the title of the simplest and most convenient payment platform.

REVIEW OF LITERATURE

With the introduction of the information system, India's banking sector is now undergoing a digital transformation in all operational aspects. Banking operations are shifting from a paper-based to a virtual mode of operation as technology advances. Banks are working to create a digitally enabled ecosystem and a new age of technology known as UPI to facilitate quick and secure fund transfers. Related studies highlighted the situations and served as the foundation for this study. Mahesh, A., et al. (2021) stated that the advent of ICT enabled a wide variety of electronic payment mechanisms, and among them, the UPI allowed users to facilitate a safe and secure mode of payment. The study examined the strengths, weaknesses, opportunities, and threats of the UPI platform and pointed out that it had a superior advantage over the existing payment system and was one of the leading payment platforms in the retail payment industry. Kakade, R.B., et al. (2017) explained the working mechanism and features of the UPI platform and argued that the UPI was in its starting stage and that many problems and challenges, like server issues, etc., were more common on this platform. It highlighted that the UPI would change how transactions took place, as the growth of internet banking and smartphones resulted in the adoption of the UPI digital platform by bank customers. Gochhwal (2017) pointed out that the new generation of technology called UPI had the potential to transform the payment environment with a real-time and instant payment system. It stated the key driving forces behind the improvement of the UPI over the existing payment methods and discussed the analysis of the UPI architecture. The study tried to analyse the impact of UPI on the retail payment industry by examining the impact on the physical world, online payments, and business. It was concluded that the UPI became the most advanced payment system, working on a safe, secure, and robust platform for digital payments. Tung V. V. (2018) stated that the demonetization resulted in the emergence of the concept of a cashless economy, and thereby many digital payment systems emerged in the banking sector. The study found that the UPI was a convenient method of payment, and the users had a positive attitude towards the UPI transaction.

The review of the literature revealed that, several studies in the field of digital payment systems and their various modes have been conducted, but the current study focuses on the UPI platform for analyzing the growth rate attained by UPI transactions and the market share of the various UPI applications up to this point. It also attempts to bridge the gap by analyzing the various stages of development of UPI technology, and the study goes into detail about UPI technology and the growth and value addition that UPI brings to the existing digital payment environment.

STATEMENT OF THE PROBLEM

The banking industry is undergoing a financial revolution as a result of the development of numerous technological applications. The innovations force banks to adopt digitally empowered applications to provide their customers with more convenience and personalized services. The introduction of new technology, the implementation of innovative products and services, and the emergence of new competitors in a technologically enabled environment all contribute to the rapid development and growth of various digital payment platforms. Digital payment modes transform the banking industry by providing a more transparent and user-friendly transaction environment, and they enable instant real-time payment without any kind of delay, as opposed to the traditional paper-based transaction system.

The Indian banking industry's roadmap shows that they are moving toward digital means for providing a better customer experience, and almost all banks' customer bases are inclined toward the Internet and digital banking for more personalized services. This promotes the emergence of various digital payment modes, with a focus on creating a cashless and digitalized economy from a cash economy. All the digital payment modes offer various kinds of services and benefits to interested parties.

The UPI also attained popularity for creating a convenient digital platform for payments, and various UPI apps are being used for their attractive features and uniqueness. The UPI has greater advancements over the existing payment system, and the UPI has the potential to provide adequate digital payment infrastructure to the Indian economy in a very cost-effective manner. Various reports show that India has become a leader in providing real-time payment

facilities due to UPI technology, and many other nations are now trying to acquire and follow the success of India's UPI system in their own payment markets. It is essential to analyse the contribution and status of such a superior payment technology called UPI towards the digital payment ecosystem.

By analyzing the fundamentals of UPI, its features, and its basic infrastructure, the study investigates the digital payment environment with the new-age technology of the Unified Payment Interface. It investigates the various stages of UPI technology development and the features added to each phase. It also investigates the various UPI applications and their market share, and in order to determine the popularity and growth of the UPI, UPI transactions in terms of both value and volume are examined.

SCOPE OF THE STUDY

The current study investigates the Unified Payment Interface platform for digital payments, as well as its rate of growth and current status over the last five years. The study's goal is to see if UPI payment platforms can act as a driving force in the digitalized economy. The analysis assists in determining the UPI transaction's rate of growth and market share. Furthermore, UPI transaction analysis will aid marketers in identifying and comprehending users' payment patterns and spending habits. The study's findings will assist the Indian banking sector in strengthening and enforcing their digital payment platforms through the development and implementation of various strategies to increase the market share of various applications and customer adoption of these digital payment modes.

OBJECTIVES

The present study, titled "**Digital Banking: India's Unified Payment Interface Mechanism for the Development of Digital Banking**", has been initiated to attain the following objectives:

- To study the digital payment modes regarding UPI and the fundamentals of UPI
- To examine the various development phases of UPI technology and the features added to each phase
- To understand the various UPI applications and their market share
- To analyse the growth rate and status of the UPI transactions in terms of value and volume

METHODOLOGY

The present study is based on secondary data. The data are collected from the RBI database, NPCI reports, recognized periodicals, journals, the RBI Bulletin, and websites. The paper employed percentage analysis to find out the growth of UPI transactions. The period of the UPI transactions statistical report ranges from 2018 to 2022. The study mainly aims to gain insight into the digital payment environment and UPI technology and its status and growth over the years

UNIFIED PAYMENT INTERFACE (UPI): STAGES OF DEVELOPMENT

Unified Payment Interface was developed by the National Payments Corporation of India (NPCI) in August 2016, and its operations are regulated by the Reserve Bank of India (RBI). It is a payment system that allows the interbank transfer of funds, and it acts as a digital payment method for facilitating a real-time and instant payment transaction between multiple bank accounts. UPI applications allow users to transfer funds using a UPI virtual payment address or by scanning the QR code. UPI facilitates the transfer of funds free of charge, and it achieves the status of the easiest and most convenient form of payment platform. UPI allows interbank peer-to-peer (P2P) and person-to-merchant (P2M) payment transactions.

UPI APPLICATIONS

Various applications are working on the UPI platform. The UPI payment mode is designed for mobile phone applications. Today's banking mobile application can also provide the UPI platform in their application for providing UPI services. Each application is unique, with its own added features and a personalized customer experience through each UPI application.

Most Popular UPI applications

UPI APPS	DETAILS
1.PhonePe 	<ul style="list-style-type: none"> • Leading online app for UPI services • Launched in 2015 • Owned by Flipkart, and it's a subsidiary of Walmart • It protects the user's money with the best-in-class security system • Services provided include digital payments, mobile payments, and payment systems • It is available in 11 spoken languages • The users can make payments such as utility bills, charges, money transfers, credit card bills, and even the insurance premium
2. Gpay 	<ul style="list-style-type: none"> • Google Pay also known as GPay • Developed by Google • It is quite popular because of its simple way of operation and feature richness • It allows users to earn scratch application cards and other rewards after each transaction • It works with all the banks that support the BHIM UPI • It allows users to make transactions for in-store and online purchases by linking their credit or debit cards.
3. Paytm 	<ul style="list-style-type: none"> • Founded in 2010, • Acronym-Pay through mobiles • Promotes secure and fast digital payments • More than 20 million merchants and businesses have adopted Paytm for accepting payments in digital mode. • Services offered: fund transfer, bill payments, ticketing services, online gaming, retail brokerage products • The main aim is to bring at least half a billion people into the mainstream of the economy through digital payments
4. SBI Pay	<ul style="list-style-type: none"> • Launched by the SBI bank

		<ul style="list-style-type: none"> • The easiest and most simple app • It allows the account holders of almost all banks that are live members of UPI to fund transfers, bill payments, recharges, shopping, etc. • Provide the flexibility of making payments at the user's convenience 24*7
<p>5.BHIM</p> 	<ul style="list-style-type: none"> • BHIM-Bharat Interface For Money • Developer: NPCI (National Payments Corporation Of India) • Launched in 2016 • It is a UPI-enabled platform for facilitating safe and secure payments using mobile phones • Services: send and request money, scan and pay, check transaction history, view the static QR code and the virtual payment addresses linked to the account, switch between multiple accounts, bill payments, IPO application, UPI autopay 	

Source: Reserve Bank of India, Annual Reports

ANALYSIS

UPI payment solution, which provides a user-friendly, mobile-centric, instant, and real-time payment facility through various UPI applications, has marked a milestone in capturing market share. Digital payment infrastructure in India and many payment modes have arisen as a means for making instant and real-time payments. UUPI (Unified Payment Interface), developed by the National Payment Corporation of India, is one of the most popular digital payment modes in India. The study examines the fundamentals of the UPI payment system and includes the various UPI apps that are widely in use based on their features and market share.

MARKET SHARE OF UPI APPS IN INDIA AS ON 2022

TABLE 1: Market share of the UPI apps

UPI APPS	MARKET SHARE
Phone pay	46%
Google pay	33%
Paytm	15%
Amazon pay	1%
Others	5%

Source: Statista,2023

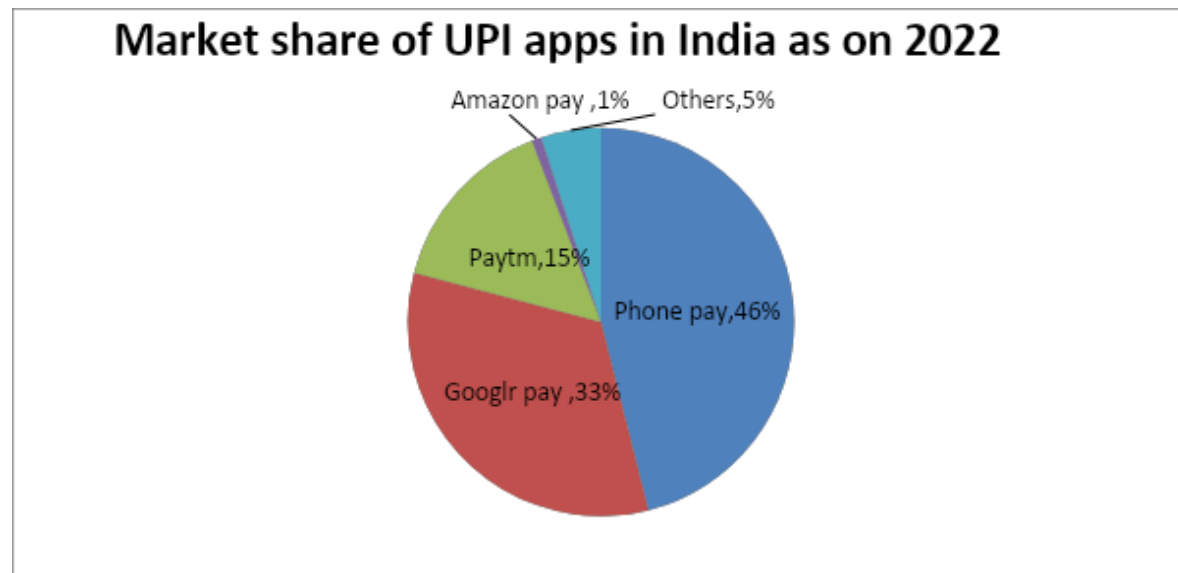


Fig.1

UPI can be termed a revolutionary payment platform in the entire retail payment ecosystem. The UPI payment solution, which provides a user-friendly, mobile-centric, instant, and real-time payment facility through various UPI applications, has marked a milestone in capturing market share. From the analysis, it is clear that PhonePe and Google Pay are the two major leaders that are dominating the UPI market as of 2022. As per the data (Fig. 1), PhonePe contributes 46% to the total UPI market share, followed by Google Pay with a 33% share, Paytm with a 15% share, Amazon Pay with a 1% share, and other applications such as Whatsapp Pay and Mobikwik with a share of 4.1%.

UPI DIGITAL PAYMENT PLATFORM GROWTH AND STATUS

Today, all the Indian banks are on the way to the adoption of various technological innovations to their existing business models and are trying to adopt growth- and customer-oriented plans instead of profit-oriented plans and strategies. The banking system in India before 2016 followed a tradition of traditional fund transfers such as RTGS, NEFT, IMPS, etc. Due to the complexity of the paper-based system and the rigid system of rules, there is a need for the emergence of an automated and more standardized payment platform. Also, the Digital India initiative forces the banking sector to follow a digitally covered ecosystem focusing on paperless and cashless-enabled economies. Thus, various digital payment modes have emerged in the banking sector landscape, and the unified payment interface is one of them.

UPI TRANSACTION IN VOLUME AND VALUE

Table 2: UPI transactions in volume and value and its growth rate

YEAR & MONTH	Volume(in Mn.)	Growth rate	Value(in Cr.)	Growth rate
Dec-22	7,829.49	33.55	12,82,055.01	26.38
Jun-22	5,862.75	28.38	10,14,384	22.6
Dec-21	4,566.30	62.66	8,26,848.22	51.05
Jun-21	2,807.51	25.64	5,47,373.17	31.5
Dec-20	2,234.16	67.21	4,16,176.21	58.94

Jun-20	1336.93	2.1	2,61,835.00	29.28
Dec-19	1,308.40	73.47	2,02,520.76	38.17
Jun-19	754.54	21.61	1,46,566.35	42.86
Dec-18	620.17	152.03	1,02,594.82	151.24
Jun-18	246.37	69.65	40,834.03	209.95

Source: NPCI report-2022

According to the NPCI report, the UPI platform has witnessed a rapid rise in recent years in both the volume and value of transactions. Since its launch in 2016, the UPI transaction has witnessed a positive growth rate in both volume and value. The data about the period of 2018 to 2022 is taken for analysis. As of December 2022, the total volume had jumped to 7,829 million transactions worth 12,82,055 crores. The analysis of the volume and value of UPI transactions shows a positive growth rate, which indicates that the UPI platform is growing at a much faster rate. The UPI transactions achieved a higher growth rate during December 2018 in terms of both the volume and value of transactions, which implies that the development taking place in the UPI technology in each phase has marked an upward trend in the growth rate of the UPI payment platform year by year.

THE NUMBER OF BANKS ON THE UPI PLATFORM

Banks in India are now witnessing a digital transformation in all their operational aspects. The technological advancement transformed banking operations from a paper mode to a virtual mode of operation. The banks are working towards the development of a digitally enabled ecosystem and a new age of technology called UPI to facilitate a speedy and secure way of transferring funds.

Table 3. Number of banks that live on the UPI platform

Year	No. of Live members
Dec-22	382
Jun-22	330
Dec-21	282
Jun-21	229
Dec-20	207
Jun-20	155
Dec-19	143

Source:NPCI report

UPI has witnessed rapid growth since then in terms of the number of live members, volume, and value of transactions. Since the launch of the UPI platform in 2016, the number of banks participating in this real-time payment solution to enable transactions has marked an upward movement.

The rising trend of live members joining the UPI platform marks a milestone achievement in the history of the UPI platform. When the UPI was started, only 21 banks lived on the platform. Further, that will grow to 207 banks in December 2020 and 282 in December 2021. Presently, about 382 banks are participating in the UPI platform. Each year, the number of live members shows an increasing trend, which implies the rising trend of the adoption of such a new-age payment solution by most banks.

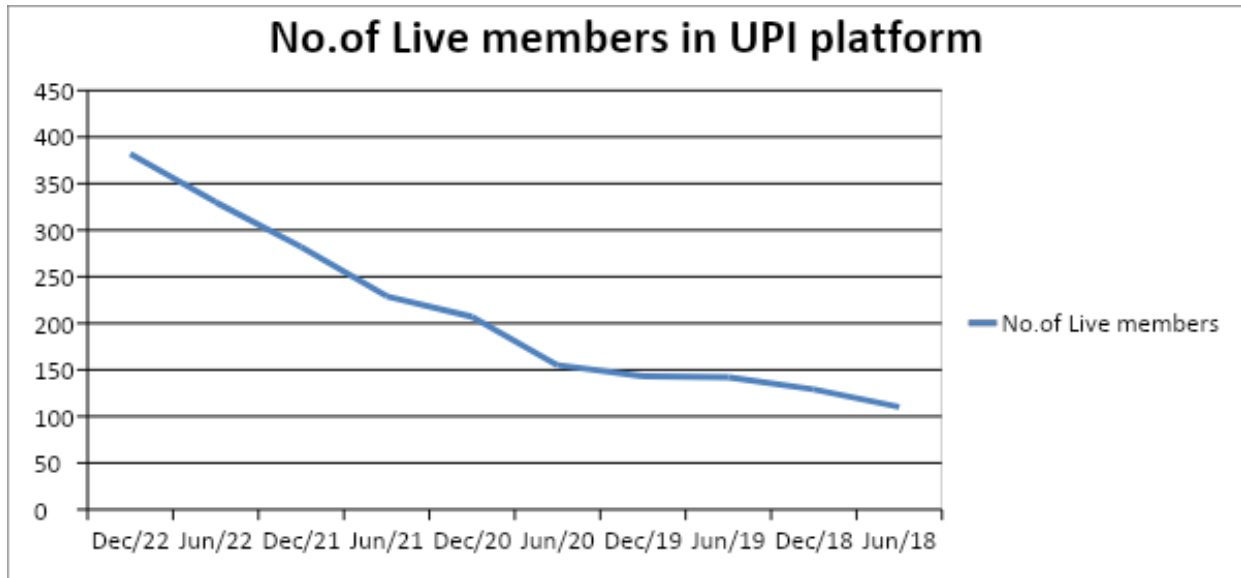


FIG.4

UPI'S POSITION IN INDIA'S RETAIL DIGITAL PAYMENT

UPI is considered one of the most advanced and user-friendly payment methods. Users can send and receive money through this platform very instantly. When compared to other payment methods in the digital ecosystem, the position that the UPI platform holds is a remarkable achievement. The usage statistics of UPI transactions in the total financial transactions for the last 5 years are shown in Table 4 below.

Table 4: Position of UPI in India's Retail Digital Payment

Year	Total of Financial transactions (volume)	UPI transaction(volume)	% of UPI transactions to the total Financial transaction
2022	98937.87	73054.21	73
2021	66222.66	42184.32	63
2020	39978.5	20716.19	51
2019	29454	11483.6	38
2018	2568.37	482.36	18

Source: RBI Bulletin-2022

According to the above data, the UPI transaction percentage of the total financial transaction shows an upward trend, and major portion of the financial transaction constitutes the UPI transaction. The financial transaction volume consists of the contributions from various payment methods in the digital payment ecosystem. As of 2022, 73% of the total financial transactions constitute UPI transactions, which implies that the UPI platform occupies a notable position in the entire digital ecosystem.

REPORT

UPI achieves the status of the easiest and most convenient form of payment platform. Each UPI application is unique, with its own added features, and succeeds in giving a different customer experience through each UPI application. The most popular UPI applications have marked a milestone in capturing market share. It shows massive growth in the market share of various applications.

FINDINGS

1. PhonePe and Google Pay are the two major leaders that are dominating the UPI market as of 2022.
2. The UPI platform has witnessed a rapid rise in recent years in both the volume and value of transactions.
3. The analysis of the volume and value of UPI transactions shows a positive growth rate, which indicates that the UPI platform is growing at a much faster rate. Since the launch of the UPI platform in 2016, the number of live members has shown an increasing trend, which implies the rising trend of the adoption of such a new-age payment solution by most banks.
4. The UPI transaction percentage to the total financial transaction shows an upward trend, and the major portion of the financial transaction constitutes the UPI transaction, which implies that the UPI platform occupies a notable position in the entire digital ecosystem.
5. Due to the rapid growth and the increasing adoption rate of the UPI platform, it is necessary to give the full potential of this tech-driven new-age payment platform to the entire customer base.
6. It is important to develop a merchant-centric UPI payment solution and thereby bring every consumer to the UPI platform. It is essential to encourage more customers to the UPI platforms, so the app developers are required to give attractive features and offers to the users so that people may feel inclined to try this innovative platform, thereby promoting the growth of UPI transactions.
7. It is high time to make digital payments a part of everybody's life, so every player in the digital payment ecosystem needs to uplift the payment industry by promoting payment methods to boost economic development. We also need to create and educate people to operate such payment systems along with their utilities.

CONCLUSION

The study focuses on an overview of the UPI, its development, status, and growth in India. The results show that there is high growth in the usage of UPI transactions, and UPI has become a superior digital payment platform over the existing payment methods. With the advancement and development of the UPI in each phase, users and beneficiaries can obtain a secure and convenient mode of payment with attractive and unique features. UPI has become one of the most successful technology-driven innovations in the banking landscape, and it enables India to become a successful leader in the list of countries making real-time payment markets. The banking sector is on its way to a tech-driven landscape by adopting various technological innovations and payment modes, such as UPI, which helps the banks achieve a milestone transformation in the payment infrastructure of the Indian banking sector. It is essential to point out that the UUPI has become one of the most advanced new-age payment systems in the world, and it acts as a momentum force or an enabler to promote financial inclusion in the economy and also bring the customer base into the digital and cashless economies.

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