

A Study on Unified Payments Interface (UPI) Applications

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Abstract

This research paper aims at determining the types of Unified Payments Interface applications that are available in India and gaining an understanding of the UPI architecture. It also focusses on the growth of the UPI applications and a comparative analysis of the applications (apps) with regards to the volume and value of transactions performed on these apps. The study will enable a deeper understanding of the UPI segment of digital payments.

Keywords – Unified Payments Interface, UPI apps

Introduction

Unified Payments Interface (UPI) is a payment system developed by National Payments Corporation of India (NPCI) which enables mobile based interbank payments. The uniqueness of UPI was in its ability to facilitate easy and convenient peer-to-peer (P2P) money transfer by aggregating bank accounts of an individual on a UPI application. UPI, launched in 2016, has revolutionised the Indian digital payment ecosystem and is seen as a major driver towards a less cash reliant economy. It has also led to greater financial inclusion and has given a boost to small retail businesses and vendors who have emerged as one of the prominent beneficiaries of UPI. Its widespread use can be seen in the large quantum of transactions that are undertaken daily on the platform. In March 2025, the volume of UPI transactions crossed a record 18.3 billion while the value of transactions undertaken on UPI breached Rs.24 lakh Crores for the first time.¹ In 2024, UPI contributed to 83% of the digital payment transactions undertaken in India emerging year-on-year as the most widely used payment system as against alternatives like IMPS, AePS, RTGS, NEFT, NETC, etc.²

The unique attributes of UPI that have led to its large scale adoption in India include its mobile number and QR code enabled convenient single click 2 factor authenticated secure transaction facilitation. The ease with which it has enabled P2P transactions alongwith payments to merchants and vendors as well as providing an avenue for utility bills, credit card payments, account based bank transfers, is the hallmark of this payment system. UPI's success can be observed in the fact that India contributed to 49% of global real time fund transfers in 2023 thereby emerging as a digital payments leader globally.³

UPI has various participants and intermediaries who form a crucial component of the fund transfer ecosystem, these include Issuer Banks, Payment Service Provider (PSPs) Banks, Third Party Application Providers (TPAP) and Prepaid Payment Instrument issuers (PPIs). The Issuer Banks are the banks with which the customer or vendor maintains their bank account while the PSPs are the banks or intermediaries which onboard the TPAPs as well as the UPI users and verifies and registers the users and through the PSPs own apps or through TPAPs, whereby the users can carry out transactions. For instance, Google Pay is a TPAP which can access UPI through its PSPs – Axis Bank, HDFC Bank, ICICI Bank and State Bank of India. These banks can themselves provide their own PSP apps and also serve as PPI issuers - ICICI Bank has its own UPI linked e-wallet called Pockets. Thus, the UPI app ecosystem can be divided primarily into TPAPs and PSP apps with certain PPI functionalities provided by specific PPI apps.

Review of Literature

Waykar (2019) described the different mechanisms by which UPI can be utilised and also elaborated upon UPI transaction volume in brief.⁴ Tripathi et al. (2024) identified that UPI users surveyed considered that the convenience of UPI transactions positively affected their spending habits.⁵ De Souza et al. (2023) found that complexity of the app may serve as a barrier in its adoption and that bill payments were one of the major uses of UPI apps.⁶

Statement of the problem:

The research paper entails an in depth study of the various UPI apps and an analysis of their growth in terms of volume and value of transactions.

Research Methodology:

The research is based on secondary data sources.

Secondary Data Collection: Secondary data has been collected from statistical databases of RBI, NPCI. Research journals, publications, books, newspaper articles, blogs have also been referred to through the course of the research.

Limitations of the study:

- a) Study is based on secondary data sources and does not involve primary research.
- b) Scope of research is limited upto 2021 due to data availability constraints.

- c) While analysing the value and volume of transactions, a year on year analysis has been undertaken in March of each year starting from 2021 to 2025.
- d) The analysis is restricted to the top 10 applications based on volume and value of transactions which have operational for 5 years atleast.

Research Objectives

- 1) To analyse the growth of UPI applications in India.
- 2) To assess the trends with regards to value of transactions on UPI applications.
- 3) To evaluate the trends with regards to volume of transactions on UPI applications.

Data Analysis

Analysis of the growth of UPI applications in India

UPI was launched in India in 2016 and the earliest TPAP to onboard on the system was Phonepe in August 2016 which still leads the market along with the 2017 entrant Google Pay (Gpay). As of November 2024 there are 40 TPAPs functional on the UPI system.⁷

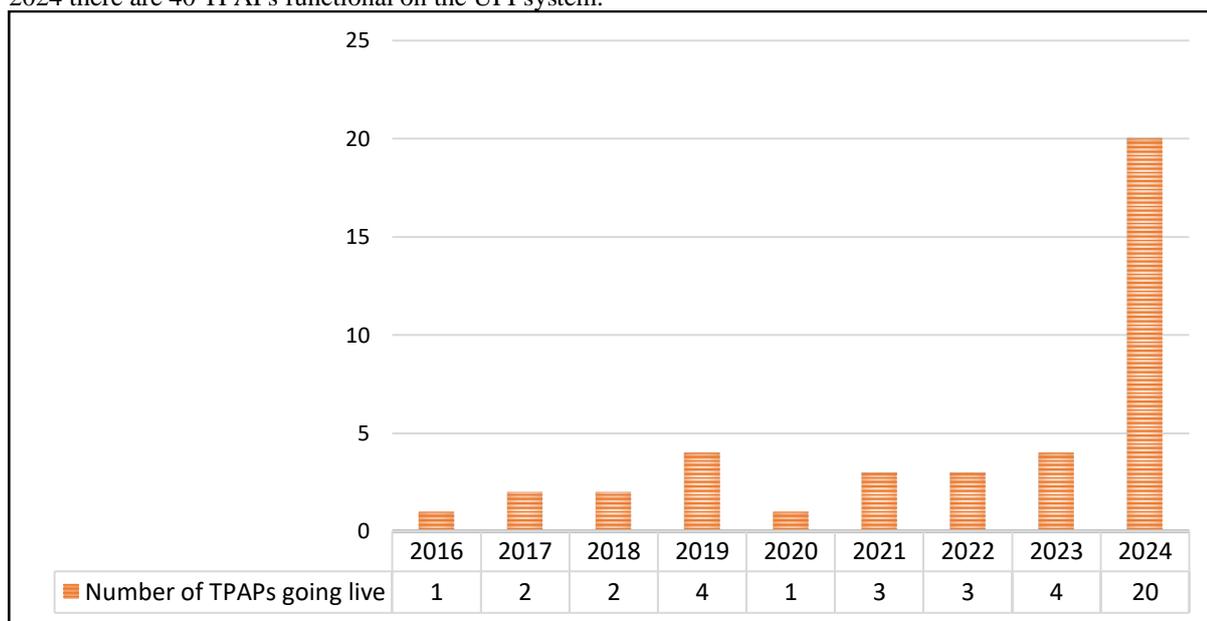


Figure 1 – Number of TPAPs onboarded

The significant increase in the number of TPAPs onboarded on UPI in 2024 is due to the grant in licenses by NPCI to new entities in a bid to promote digital payments further.

Assessment of the trends with regards to value of transactions on UPI applications.

Analysing the UPI app based transactions on a year-on-year format (March of each year from 2021 to 2025), it was observed that in March 2025 out of the total value of UPI transactions amounting to Rs. 24,77,221.61 Crores, 91% of the value of transactions were carried out on the 3 biggest apps – Phonepe, Gpay and Paytm. The study therefore focusses on the top 10 UPI apps which have been operational for atleast 5 years with an emphasis on the biggest 3 apps since they contribute most significantly to the UPI ecosystem.

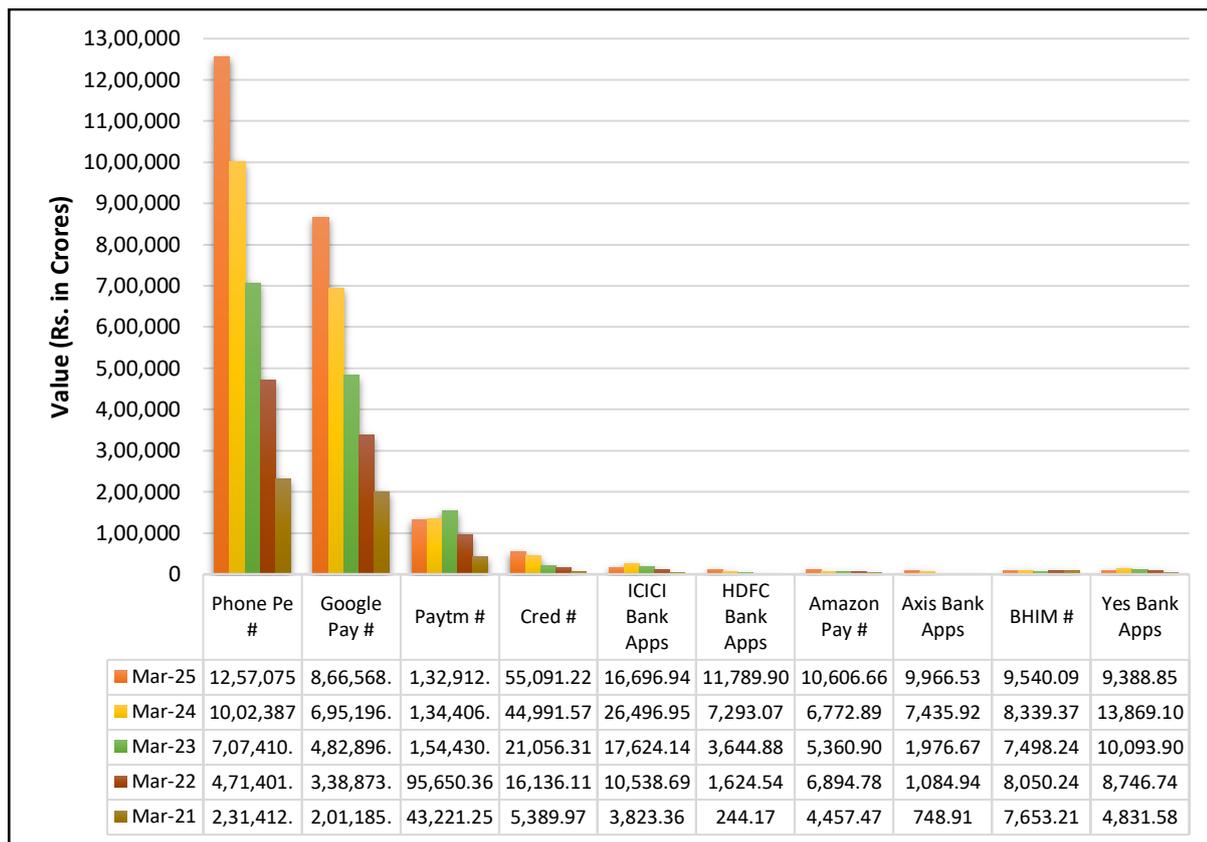


Figure 2 – Transaction Value

Phonepe alone contributes to approximately 50% of the UPI transactions in terms of value exhibiting a clear leadership along with Gpay which follows behind with around 35% share in terms of value of transactions in the month of March 2025.

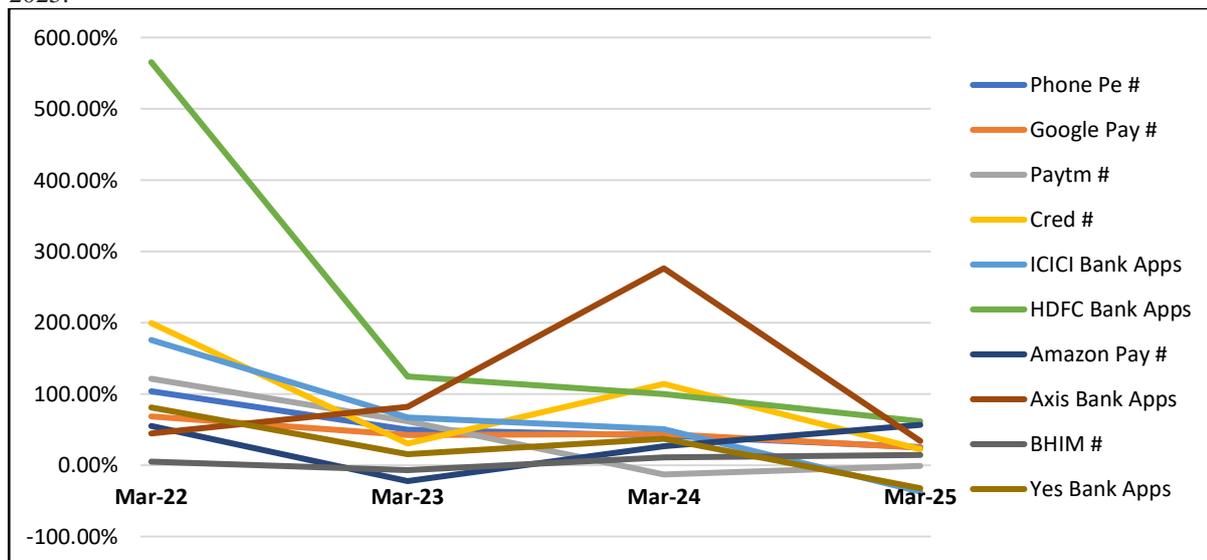


Figure 3 – YoY growth in value of transactions

As can be observed in Figure 2 and 3, Phonepe and Google Pay were almost on par but in March 2022 as compared to March 2021, Phonepe doubled its transaction value and then maintained a generally higher growth rate YoY than Gpay thereby emerging as a clear leader establishing a significant gap between itself and its immediate competitor GPay. Paytm on the other hand being affected by regulatory restrictions on its payment bank suffered from negative YoY growth in the past 2 years.

Evaluation of the trends with regards to volume of transactions on UPI applications.

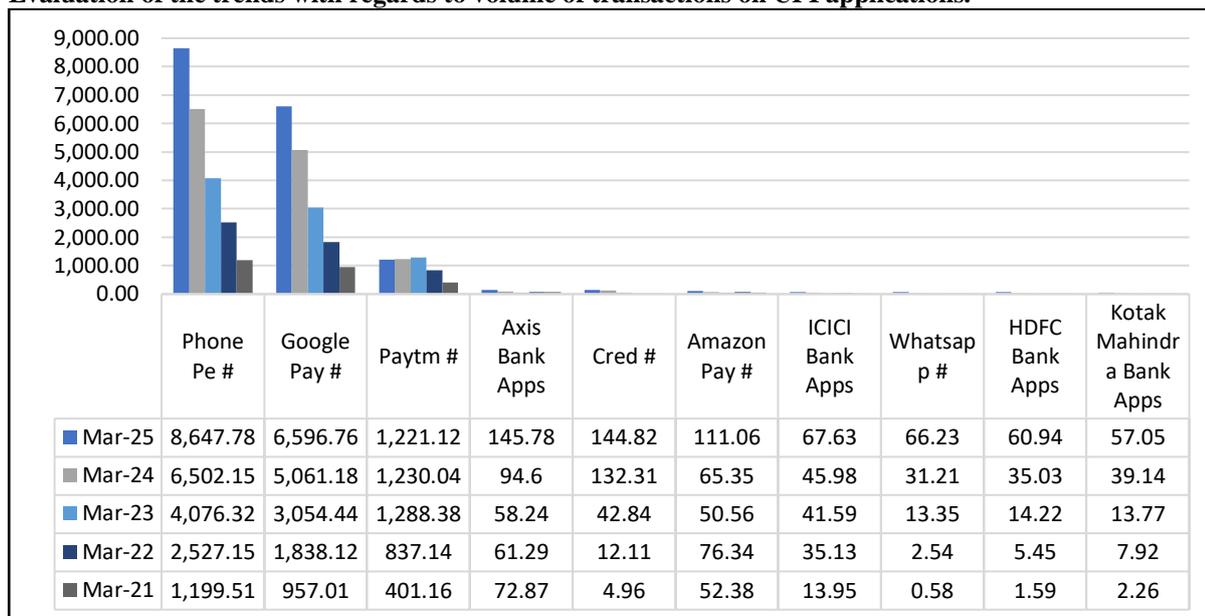


Figure 4 – Transaction Volume (MN)

Even in terms of transaction volume, Phonepe and Gpay are the clear leaders since out of 18,301.51 Mn UPI transactions in March 2025, 47.25% transactions occurred via Phonepe and 36% transactions occurred through Gpay. Certain new entrants such as Navi, which was granted a license in 2023 and super.money have also shown rapid growth within a span of less than 2 years just being just behind Paytm in terms of volume of transactions, however despite having a high volume, their total transaction value is much lower indicating that average transaction value is low. Another interesting observation is that while most apps have their volume and value driven by customer initiated (P2P) transactions, Axis Bank Apps has a majority of its volume and value being driven by B2C and B2B transactions since it is the leading PSP in the country and the B2B and B2C transactions of TPAPs is attributed to the PSPs.

Conclusion

The UPI app ecosystem in India is currently being led by the three TPAPs – Phonepe, Gpay and Paytm, having more than 90% market share in terms of value of transactions. This over-dependence on these three TPAPs can cause systemic risk issues and a more diversified and level playing ground in the UPI ecosystem is essential. As was recently observed with the regulatory restrictions being imposed on Paytm Payments Bank, there was sense of fear amongst Paytm app users with regards to their UPI transactions. Hence the decision to grant 20 TPAP licenses in 2024 is laudable and was essential to broad base the UPI segment and reduce the over-dependence on the top three UPI TPAPs. Any risks emanating in the UPI ecosystem will have to be dealt with deftly by the governmental authorities since UPI has become the bedrock of India’s cashless economy ambitions.

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