



IMPLICATION OF PANDEMIC ON THE GROWTH OF UNIFIED PAYMENT SYSTEM IN INDIA: A PRE AND POST PANDEMIC ANALYSIS

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Abstract

Unified Payment Interface (UPI) was launched in 2015 to ease the digital retail payment system in India by the National Payment Corporation of India (NPCI). This paper tries to study and trace the development of UPI from its inception to the present time and focuses on the impact of COVID-19 on UPI. From the study, it is found that on average UPI's transaction value is by 135% per year. It has also been found that the annual growth of UPI for 2021-22 is 105.1% in transaction value, which is higher than its previous financial year, which had a growth rate of only 92.5%. The study concludes that COVID-19 has helped Indians to increase the use of digital payment instruments. This growth has further increased in the post-pandemic period showing the shift of Indians' preference towards modern techniques of transaction from traditional methods.

Keywords: *Unified Payment Interface, Digital Payments, BHIM App, National Payments Corporation of India, RuPay Cards, Digital Banking.*

Introduction:

Unified Payment Interface (UPI) combines several financial features, easy fund routing, and merchant payments into one application accessible from any bank participating in the program. The system also allows for "Peer to Peer" collection requests, which can be scheduled at the convenience of the user.

The government launched the Unified Payment Interface (UPI) System and Bharat Interface for Money (BHIM) developed by the National Payments Corporation of India (NPCI), kicking off the era of mobile banking that we know today.



As a result, NPCI conducted a pilot launch with 21 member banks. Dr Raghuram G. Rajan, Governor of the Reserve Bank of India, launched the pilot program in Mumbai on 11th April 2016. As of 25th August 2016, banks have begun uploading their UPI-enabled apps to Google Play (NPCI, 2014).

The COVID-19 pandemic which halted the world made India's digital system flourish and through this India's major chunk of population shifted towards the use of digital methods of payments. A total of 8,572 crore transactions were conducted through UPI till December 2023. For other NPCI products (such as BHIM, RuPay, etc.) in November 2023, the data is as follows:

NPCI Operated Systems	Volume (in Mn)	Value (in Bn)
UPI – Unified Payments Interface	11,235.29	17,397.41
BHIM	23.22	79.20
IMPS	472.38	5,350.02
RuPay Card usage at (POS)	56.39	136.98
RuPay Card usage at (eCom)	21.43	76.38
BBPS (Bill Payment passing through BBPCU)	122.67	275.68
NACH- National Automated Clearing House	597.83	3,316.96

Source: <https://www.npci.org.in/statistics> (2023)

Thus, we can see that UPI transaction volume and value in November 2023 were the highest in comparison to other NPCI-operated systems. In order to emphasize the growth of digital payments in India, this study is well-needed since it traces the development of UPI from its inception to the present time. This study provides insight into the future of UPI in India. The main objective of the study is to analyse the growth of UPI during COVID-19 by estimating the growth of UPI in pre and post pandemic era.

Literature Review:

(Kakade & Veshne, 2017) has done conceptual and descriptive research on the Unified Payment Interface. In their study, they have concluded that UPI is changing the way of transacting now and transforming into digital payments where each person's smartphone will be their primary device for all payments. They have talked about the increasing number of smartphone users in India in recent years and concluded that this will be a potential for UPI to increase in the Indian Economy and lead to the adoption of UPI as a payment by Indian customers. In the last, they have concluded that UPI will



gradually end cash payments and help in reducing the circulation of currency notes. This will lead to a transparent system and a cashless economy.

(Das & Tewari, 2020) have studied the Impact of digitalization on the Indian banking sector with the main objective to know about the concept of Digital India and its impact on the Indian banking sector. They have done descriptive cum analytical research on the secondary data. In the study, they found that the digital banking system reduces the cost of banks. They also found that the digital banking system helps and makes a safe way to handle financial transactions. Their study suggested that different new regulations should be implemented for the promotion of digital banking in the Indian economic environment. At last, they have concluded that through digitalisation banks are able to reduce human error and enhance customer satisfaction.

(Prem, Babu, & Hariharan, 2018) they studied the effect of launching BHIM on the banking sectoral indices like Nifty Bank, Nifty Private Bank and Nifty PSU Bank. The results of the study indicated that the indices experienced positive returns during the pre-launch period but during the period of post-launch, they recorded negative returns. The study found that there was a significant difference, in the volatility of daily prices of the sample indices, before and after the launching of the BHIM application. In the study, it is to be noted that the information about economic initiatives affected the bank index prices. Hence investors may consider the economic events before investing their money in these stocks.

(Chinni, Mohini, & Srinadh, 2021) have studied the impact of digitalization on banks with the main objective to understand the impact as well as the pros and cons of digitalization. The study is done by studying and referring to theoretical data available from various online resources. They have concluded that digitalization was very much adopted by Indian banks and the Indian banking future is very bright and India can expect many new innovations in this trend.

Methods & Materials:

A secondary data set has been collected from the official websites of both NPCI and RBI to conduct the study. This study involves information from other papers. This study is an analytical one as it conducts trend analysis on the available data and the presentation of data was shown through graphs and tables.

The period of the study is from 2015-16 to 2022-23. A study has been done on the performance of the Unified Payment Interface (UPI) and Bharat Interface for Money (BHIM) for this period. The study has used the following tools for the analysis of data:

- a. Trend Analysis – Used for checking the trend of UPI in the given period. The analysis was used to show the growth rate of UPI in recent years.



b. Descriptive Statistics – Used for analysing the growth of digitalization (proxied by UPI and BHIM) using percentage method and graphical methods.

Formulation of Model:

To measure the trend of the dependent variable on time, a regression analysis was made, where time is the independent variable:

$$Yd_t = \beta_1 + \beta_2 T_t + \mu_i$$

Where,

Yd_t = Value of Transaction of UPI at time t

T_t = Change in time

μ_i = Error term

In the above equation dependent variable, is the value of the transaction of UPI, on which a natural log was applied to reduce its variability so that the data can be easily interpreted. So, the new function formed can be shown as:

$$\ln(Yd_t) = \beta_1 + \beta_2 T_t + \mu_i \tag{1} \text{ equation}$$

The result of the above equation is shown in the next section.

Results and Discussion:

The results of trend analyses of equation (1) are shown below in Table No. 2.

Table 2: Results of Trend Growth Rate (β_2 of equation 1)	
UPI Transaction Value	1.93***
UPI Transaction Volume	1.73***

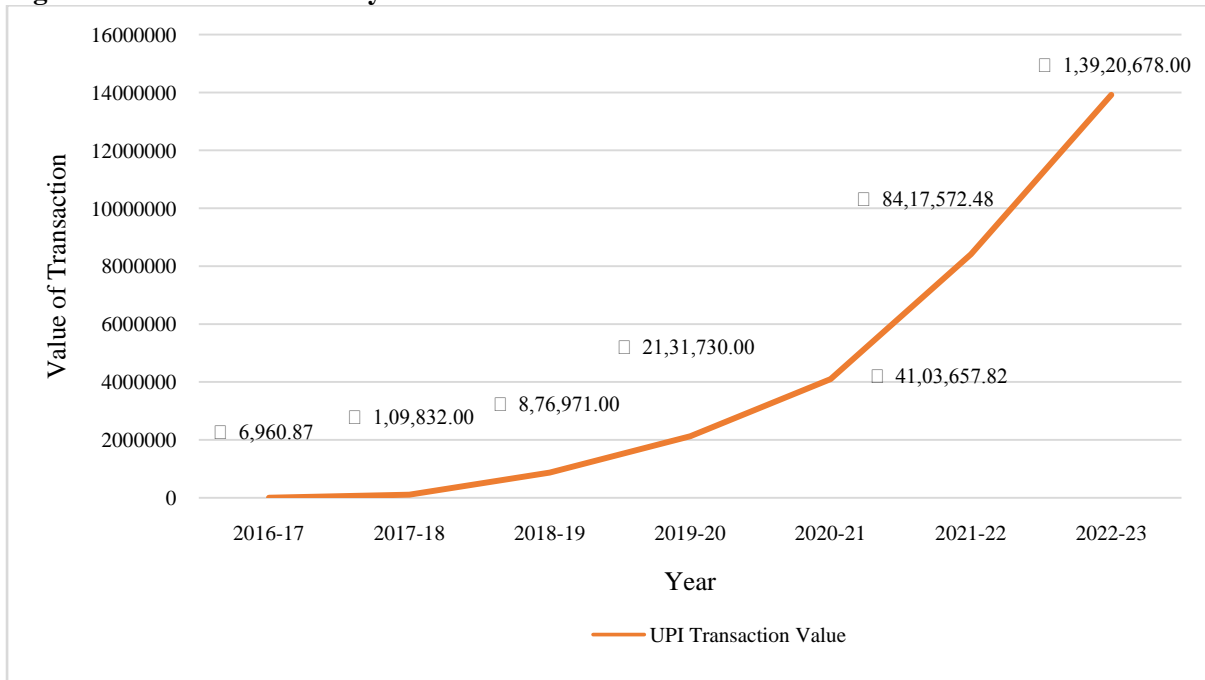
Note: Authors' Computation; ***1% significance.

Table no. 2 shows that the value involved during UPI transactions is increasing at a rate of 1.93 per year which is significant at a 1% confidence interval. This means that with a change in the year, the value of the transaction involved increases by 193%. In other words, the value involved increases by 193% every year in India. In the case of volume of transaction, there is a high percentage growth of 173%. This result is very important as it shows the increasing dependency of Indian citizens on the UPI system for transacting large as well as small amounts of money.

To show the year-on-growth, this paper has used the graphical method as well as the percentage change method as mentioned above. In this paper, there are two charts, that were made from the data collected from both RBI – Database for Indian Economy (2023), and NPCI (2023). The graphical method shows the amount of transaction involved and the usage of UPI in India. Both the volume and values of transactions through UPI are shown in different charts and were analysed separately. The Year-on Percentage change was done for only the value of the transaction and not for volume, as this paper, attempts to incorporate the number of transactions through UPI so that the economic benefit of its growth could be understood.

So, to show the cashless dream of India it is important to show how much money amount is involved in the UPI transaction and how fast it is growing.

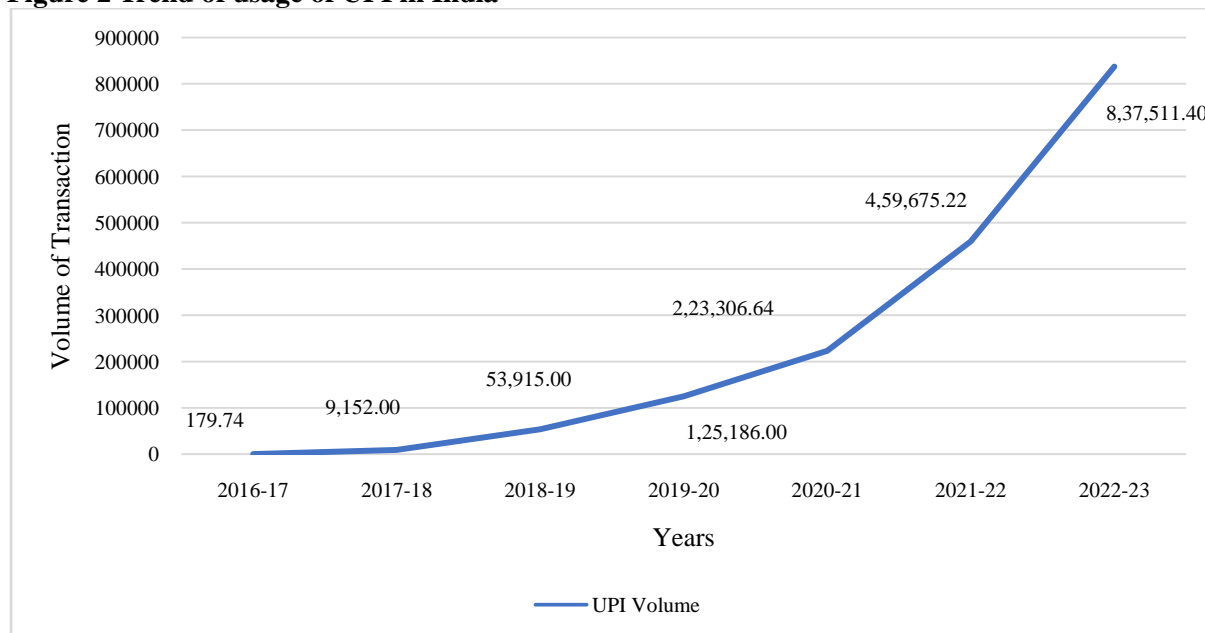
Figure1: Trend of Unified Payment Interface in India



Note: Authors' Compilation

Figure 1, shows the increasing trend of UPI from 2016. The value of transactions of UPI has increased from ₹ 6,960 crores in 2016-17 to ₹ 1,39,20,678 crores in 2022-23. This shows how much speed the UPI is growing in the economy. As (Kakade & Veshne, 2017) have shown UPI is growing fast in the Indian Economy, and this paper also shows the same result. The result of both the graphical method and trend analysis shows that UPI usage is growing at a fast rate. Figure 2 shows the trend of UPI usage from 2016.

Figure 2 Trend of usage of UPI in India



Note: Authors' Compilation



In India, the usage of UPI has also grown significantly since its commencement. UPI transaction volume has increased from 180 lakh transactions in 2016-17 to 8,37,511 lakh transactions in 2022-23. This means that both transactions done by the UPI and the value of transactions done through UPI have increased significantly.

Now, after showing the trends of UPI, the year-on-year change of UPI is shown in the next table:

Year	Value of Transaction (in ‘Crore ₹)	Percentage Change (%)
2015-16	-	-
2016-17	6,961	100
2017-18	1,09,832	1,477.8
2018-19	8,76,971	698.5
2019-20	21,31,730	143.1
2020-21	41,03,658	92.5
2021-22	84,17,572	105.1
2022-23	1,39,20,678	65.4

Source: RBI (2023), NPCI (2023); Note: Authors’ Computation

Table 3 shows that the highest increase in the value of transactions was in FY 2017-18, where the value of transactions increased by 1,478%. It can be also seen that from FY 2019-20 to FY 2020-21 there is a decline in the increase of UPI payments in India and it can be because of the Pandemic. While FY 2021-22 has shown an improvement in the value of UPI transactions in India which has further seen a decrease in subsequent year, i.e., 2022-23.

Conclusion:

Indian citizens have shown a strong dedication to the UPI system as a means of making transactions. The increasing Usage of UPI has shown that a large amount of the Indian population is using the UPI system. Local markets of India have adopted the UPI system very easily and widely. This has made UPI widely used digital payment systems in India. Indian banks have adopted the UPI system for providing the customer experience to their customers.

To conclude it can be said that the UPI system is a very progressive scheme of the government of India which can be a milestone in achieving the dream of a cashless economy. In May 2022, digital payments achieved a new milestone by achieving the mark of ₹ 10 lakh crore in overall transaction value, while in April 2022, the value of the transaction was ₹ 9.8 lakh crore. This is an example of how the UPI system is growing in India with every passing month. This also shows how UPI payment system has grown after the COVID pandemic in India. Till November 2022, had monthly active users on this platform in India has exceeded over 300 million users. In August 2023, UPI has crossed 10 billion transactions. While making digital payments easily using UPI and RuPay cards, the Indian government also collaborated with other countries like UAE, Singapore, Bhutan, France, and other countries to start this initiative in their countries as it has proven its worth during the tough times. As per Economist Intelligence Report 2021, UPI made India a leader in the global real-time payment market followed by China. (Das S. , 2022) In May 2022, the UPI data showed that PhonePe became the first payment app to cross ₹ 5 lakh crore (in transaction value), while Google Pay grabbed the second spot with ₹ 3.66 lakh crore worth of transactions. BHIM UPI covers only 0.90% of the total UPI market share according to the data of May 2022. While PhonePe covers 48.30% of the market share followed by Google Pay (34.59%) and Paytm (10.23%).



Suggestion:

- A technological development program should be implemented by the government of India in rural areas to increase UPI use there.
- It would be better for the government to move one step ahead and make UPI payments less smartphone-centric to make this payment system more efficient. In this way, the poor section of society can also benefit from this.
- It is necessary to promote the BHIM Aadhar pay initiative more widely in rural areas.
- A RuPay card must be included in the 'One Nation, One Card' scheme in order for its use to be expanded in the Indian market.

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