

Consummated Performance of Unified Payments Interface (UPI) In India During Pre and Post Pandemic Period

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Abstract: The Unified Payment Interface (UPI) is a rapid real-time payment system, developed by the National Payments Corporation of India (NPCI), designed to enhance the efficiency of banking services. UPI facilitates inter-bank transactions for both peer-to-peer (P2P) and person-to-merchant (P2M) transactions. With the convenience of mobile devices, funds can be swiftly and instantly transferred between bank accounts, requiring only the registration of a mobile number with the associated bank account. As of November 2022, UPI boasts more than 300 million monthly active users in India. Notably, the share of UPI transactions in the total volume of digital transactions surged to 55% in 2020-21, with an average transaction value of Rs. 1,849, a substantial increase from the 23% recorded in 2018-19. UPI has emerged as a pivotal digital payment tool within the Indian financial system, catalyzing transformative changes in the banking landscape. In light of this context, this study provides an overview of the growth and development of UPI payments in India. It aims to identify the various applications of UPI payments and assess the performance of UPI transactions during the pre and post-pandemic periods using descriptive statistics and secondary data. The study found that i) There has been remarkable growth and an increase in UPI usage during both the pre and post-pandemic periods. ii) A significant difference exists in the number of banks actively participating in UPI before and after the pandemic. iii) There is a notable disparity in the volume and value of UPI transactions before and after the pandemic, signifying its continued expansion. Furthermore, UPI's global appeal is expanding, with cross-border transactions gaining momentum. This increase in UPI adoption not only lowers the cost of fund transfers and remittance payments but also extends its reach to international markets, including Nepal, BENELUX countries, Singapore, France, Malaysia, UAE, and the UK.

Keywords: Unified payment interface, UPI transactions, and performance.

INTRODUCTION

In today's digital landscape, the Unified Payments Interface (UPI) has evolved beyond a mere platform for financial transactions and fund transfers. It now offers an array of convenient services, including bill payments for electricity, D2H recharge, mobile top-ups, and handling general utility bills. Additionally, UPI serves as a means to make investments, facilitating SIP payments, IPO subscriptions, and more. With its seamless 24/7 availability, UPI caters to users around the clock, and the best part is, it comes at no extra cost. Currently, there are 458 banks and 24 third-party applications actively operating on the UPI platform.

The National Payments Corporation of India (NPCI) deserves credit for developing UPI, a real-time payment system that has become an integral part of India's financial landscape. UPI streamlines inter-bank transactions, supporting both peer-to-peer (P2P) and person-to-merchant (P2M) transactions. Utilizing a mobile device, users can effortlessly and instantly transfer funds from one bank account to another. To initiate mobile transactions, users need to register their mobile numbers with their respective bank accounts. Transactions are carried out using the recipient's UPI ID. UPI is overseen and regulated by the Reserve Bank of India (RBI) and operates as an open-source application programming interface (API) built on top of the Immediate Payment Service (IMPS).

The inception of UPI dates back to April 11, 2016, when RBI Governor Dr. Raghuram G. Rajan launched it as a pilot project. This marked the beginning of commercial banks introducing their UPI-enabled apps on various platforms,

including Google Play, PhonePe, Amazon Pay, and PAYTM, starting from August 25, 2016. As of May 2022, UPI boasts over 300 million monthly active users in India and accommodates 500 million merchants who rely on UPI for receiving payments in their businesses. Additionally, there are 24 third-party applications actively utilizing UPI. A remarkable surge has been witnessed in the proportion of UPI transactions within the total volume of digital transactions, growing from 23% in 2018-19 to a significant 55% in 2020-21, with an average transaction value of Rs. 1,849. In line with these trends, the Reserve Bank of India, based on PwC data, predicts that UPI is poised to dominate the retail digital transactions landscape, potentially capturing a 90% share within the next five years, up from 75.6% in the fiscal year 2023. In terms of volume, UPI has recorded impressive year-on-year growth of 59.2%, reaching Rs. 9.33 billion in June 2023, and an astounding Rs. 15,22,536.44 crores in terms of value. The transaction volume for July 2023 stands at an impressive 9.96 billion.

UPI PAYMENTS AFTER PANDEMIC

The COVID-19 pandemic has left an indelible mark on the way people embrace contactless payment methods in their daily routines. Although a significant number of individuals had already started using contactless payment options like UPI before the pandemic, its adoption saw a remarkable surge during and after the lockdown period. Notably, nearly one-third of the total transactions on this platform, which has been in operation for four years, occurred in the six months immediately following the lockdown. The National Payments Corporation of India (NPCI) introduced UPI on August 26, 2016. Over the course of four years, from 2016 to 2020, the total transaction volume on the UPI platform amounted to Rs. 43.45 lakh crore. Significantly, Rs. 14.26 lakh crore of this sum was transacted during the six-month period from March to August 2020, coinciding with the peak of the COVID-19 pandemic. This accounted for nearly one-third, or 33%, of the total transactions on the UPI platform during the entire 2016 to 2020 timeframe. Moreover, the number of transactions conducted on the UPI platform witnessed a substantial increase in the post-pandemic era. Out of the total 2,552 crore transactions recorded between August 2016 and August 2020, nearly 793.40 crore transactions, equivalent to 31%, occurred specifically during the COVID-19 period from March to August 2020.

REVIEW OF RESEARCH AND LITERATURE

Vasantha Kumar and Sowbarnika (2019) in their study related to “A study on customer satisfaction of UPI with reference to Coimbatore city” tried to find out the customer preferences and satisfaction levels towards UPI Payments and problems faced by customers during usage of UPI and they applied cluster analysis which showed low mean value on bill payment system of which means customers are not satisfied with the bill system of UPI and the UPI app makers need to concentrate on the bill payment related problems and they also found students are more satisfied with UPI because merchants are giving more cash back offers and coupons. Whereas, Bhaswar Bagmitaparida(2022) in their study made an attempt to know how the UPI transactions have performed during pre and post pandemic period”, from the study they found that it is very clear massive increment in the value of transactions in post-pandemic period and the increment in the transactions had a significant impact as compared to the value of transaction during the pre-pandemic period, hence they concluded that there is a huge impact of Covid-19 pandemic on UPI transactions that created a big boom in usage of UPI transaction during the pandemic period.

A recent study by Ashok and Kokate (2022) titled “Impact of Covid-19 pandemic on UPI payment system” found that people are worried and very much feared by exchanging currency notes there is a possibility of spread of the corona therefore everyone is interested to make payments online due to the fear of spreading, thus the use of UPI payments and their value has grown tremendously after Covid 19 in India and after the demonetization before the pandemic was not grown very fast as compared the number of UPI transactions and their value has increased after the spread of the corona virus in India. Bijin Philip (2019) “in their study found that the customer has a positive attitude towards unified payment interface services and functions and there is positive relationship between education of the respondents and usage of UPI services and identified the customer preference towards unified payment interface and analyze the impact of UPI services on satisfaction of the customers. The study revealed that educated bank customers is more inclined to use the UPI services and they are encouraging more peoples to use UPI services”.

Rahul Gochhwal (2017) made an attempt to know the most advanced payment system through study titled “Advancement in payment Systems through Unified Payment Interface” and found that UPI is the most advanced

payment system in the world as it involves low transaction cost and Instant delivery of transactions as there are no intermediaries involved in the process. Another recent study by Prakash (2022) "The study investigates a customer's perception towards Digital payments", found that electronic commerce and electronic banking are now widely used around the globe by the new technologies accessing through the wider global network and especially through internet, within and outwardly. They also found that Increasing use of internet, electronic devices and government initiative towards making digital India and vision to transforming India into digital society by cashless transaction. They concluded that, after demonetization in India the digital payment system tremendously developed and in recent days many changes are taking place in the payment system such as UPI, digital wallets, QR Codes, AEPS, and BHIM apps for easy and fast access to digital payments".

Chaudhari and Kumar (2021) "they examined the economies world over during the financial year 2020-21 when world was under a severe grip of a once in a century Corona pandemic. But the Indian economy has shown that the pandemic has led to a surge in digital payment in the retail sector which are offering resilience through its strong fundamentals. The study has found that there has been a sizable increase in both volume and value terms in the digital payments (retail) during the pandemic-hit financial year 2020-21 when compared with the pre- pandemic financial year 2019-20. There is high positive impact and it was proved that digital payment system in India handled a large volume of digital payments through various digital platforms during pandemic-hit financial year 2020-21." Somanjoli Mohapatra (2017) in her study on titled "A cashless Indian e-transactions process" focused on e-transaction process through UPI and its various features of UPI along with its app BHIM-UPI. The whole payment mechanism and its security features are studied and a comparative analysis has been done among different online payment apps like Google pay, phone pay etc., and concluded that UPI helps users to transfer money easily from account to account. Through UPI quick and hassle free transactions are taking place.

Roshna Thomas & Abhijit Chatterjee (2017) the study investigates by title "UPI as the catalyst tool supporting digitalization" and through their research, they focused on utility prospects and issues of UPI payments. According to the study, the major challenge for UPI is the level of adoption in financial inclusion where they investigated that, most of the rural population doesn't have accounts in banks and they do not have any access to the banking sector and the other major challenge is services provided by the mobile service operators are still out of the reach to rural people. Hence, the customers do not use digital wallets. Wallets were not allowed to provide the UPI services as it is in communication with the banks with which the customer can link their UPI in order to overcome these situations. However, they concluded that UPI has the potential to transform the face of the nation and UPI can create a broad scope for digital banking system to expansion and its usage.

NEED FOR AND SIGNIFICANCE OF THE STUDY

UPI (Unified payment interface) is the one of the significant and revolutionary innovation introduced by NPCI (National Payments Corporation of India) as a supporting tool for digitalization. In India, the Covid-19 hit during the year 2020-21 has encouraged many people to use digital payments. The RBI has also encouraged and advocated the customers to use digital payment instruments to ensure contactless transactions. Now UPI is creating its hegemony not only in India but also in foreign countries like Nepal, Singapore, France, Malaysia, UAE, BENELUX countries, and UK. Further, covid-19 pandemic pushed public to make online transaction to maintain social distancing and large number of people forced and adopted to use UPI payment system for making routine payments like vegetable buying, purchase of groceries, general utility bills, electricity bills, mobile recharge etc. Even the small vegetable seller, street food vendor and every retailer started to accept UPI payments for routine transaction. Effect of Covid 19 made many people to use UPI payments and there is also a fear in their mind whether UPI is safe or not, in this regard customer satisfaction is an important area to study and analyze. So it becomes very important to be studied and also there are other important reasons are: i) it may help in creating cashless economy; ii) it may push digital India mission; iii) it may enhance transparency in transaction; iv) it may help in decreasing tax evasion; v) it may push the development in banking sector, etc. Hence, it is important to know the benefits and drawback of UPI services, its performance during Pre and post-pandemic period along with customer perception, satisfaction and challenges towards using UPI payments.

OBJECTIVES OF THE STUDY

The main aim of the study is to realize the following objectives:

1. To present the overview of growth and development of UPI payments in India and also identify the various usages of UPI Payments; and
2. To evaluate the performance of UPI payments during pre and post pandemic period in terms of volume and value of UPI transactions;

HYPOTHESES

The following null hypotheses were designed in tune with the above objectives:

1. There is no significant difference between the number of banks live on UPI pre and post-pandemic period.
2. There is no significant difference between the volume of UPI transactions taken place during pre and post-pandemic period.
3. There is no significant difference between the value of UPI transactions taken place during pre and post-pandemic period.

RESEARCH METHODOLOGY

The present study is a descriptive and quantitative in nature. It requires qualitative and quantitative information for analyzing the performance of UPI transactions during pre-pandemic and post-pandemic period. For this study, secondary data were collected from NPCI data base from Jan 2017 to Dec 2022 used to compile the information and also from IDBRT website articles, IBA Bulletins, Public and Private sector banks, websites, Government published & unpublished lecture notes and browsing or surfing from the internet. It further includes: i) quantitative tables available on the “RBI”; ii) annual reports of banks; and data related to UPI transactions from “National Payment Commission of India (NPCI)” by using appropriate statistical tools like **Descriptive statistics** which is used to evaluate the performance of UPI payments during pre and post pandemic period, to know the pre and post pandemic affect and to test the hypotheses of the study ‘**Paired t-test**’ has been used. Accounting methods like **Incremental percentage (Pre-Pandemic / Post Pandemic * Pre pandemic)** have been used to know the increment in the performance of UPI and the Software’s used are SPSS and MS-Excel.

RESULTS AND DISCUSSION

This section-1 deals with the data related to **Number of banks live on UPI** Pre & Post-pandemic Period (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022. The following table-1 presents the number of live banks on UPI during pre-pandemic and post pandemic period.

Table-1: Number of Banks live on UPI

STATEMENTS SHOWING NUMBER OF BANKS LIVE ON UPI							
	PRE PANDAMIC PERIOD				POST PANDAMIC PERIOD		
Months	2017	2018	2019	2020	2020	2021	2022
January	36	71	134	144		207	297
February	44	86	139	146		213	304
March	44	91	142	148		216	314
April	48	97	144		153	220	316
May	49	101	143		155	224	323
June	52	110	142		155	229	330
July	53	114	143		164	235	338
August	55	114	141		168	249	346
September	57	122	141		174	259	358
October	60	128	141		189	261	365
November	61	128	143		200	274	376
December	67	129	143		207	282	382

Sources: NPCI data base www.npci.org.in

According to the above, the number of banks live on UPI for the pre-pandemic was 36 in the month of Jan 2017 and in December 2017, the number of banks live on UPI is 67, when it comes to December 2018 it increased to 129. Here we can see that the increment of 62 banks lived on UPI within one year of time. In December 2019 it was increased to 143 in the year 2020 it was increased to 207. Here we can observe that due to Covid-19 more 64 banks became live on UPI to avoid liquid transactions. However it was increased to 282 and 382 in December 2021 & 2022 respectively. Overall, we can see that there is a tremendous increase in usage of UPI during pandemic and post - pandemic period due to this the more banks were added to become live on UPI. Hence we can conclude that the more number of banks are registering their banks on UPI live as the customers prefer their payments using more with UPI.

H_{01} : There is no significant difference between the number of banks live on UPI pre and post-pandemic period.

NUMBER OF BANKS LIVE ON UPI BY USING ACTUAL DATABASE FROM NPCI USING PAIR T TEST

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre - pandemic - Post - pandemic	-160.51515	35.32980	6.15013	-173.04256	-147.98775	-26.099	32	.000

(SPSS Output and Researchers data sheet)

PAIRED T-TEST RESULTS

The above table analysed the performance of UPI payments with respect **Number of banks live on UPI** during Pre – Pandemic & Post-pandemic Period (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022 (post-pandemic period) by taking **actual values**, it shows that, the mean difference of actual values mean is **-160.5** in the pre and post pandemic period, it indicates that there is tremendous increase in the usage of UPI in post pandemic period. Since, p-value is found to be **less than 0.05**, it indicates **rejection of null hypothesis and acceptance of alternative hypothesis**. Hence, there is a significant difference between number of banks live on UPI during pre-pandemic and post-pandemic period.

NUMBER OF BANKS LIVE ON UPI

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PRE PANDEMIC	39	36.00	148.00	103.8718	39.44829
POST PANDEMIC	33	153.00	382.00	257.0606	71.29470
Valid N (list wise)	33				

(SPSS Output and Researchers data sheet)

According to the above summary, the means of the Number of banks live on UPI during pre-pandemic and post-pandemic periods are 103.87 and 257.06 respectively. If the increment in the number banks live on UPI is calculated by comparing the means of the Number of banks live on UPI of the pre-pandemic and post-pandemic period is as given below:

Increment = $[(257.06 - 103.87) / 103.87] * 100 = 148\%$.

Hence, it is clearly evident from the above analysis is that there is a (148%) increment in Number of banks live on UPI after pandemic.

Section-2 deals with the data related to **Volume of UPI Transaction** (IN MN) pre & post-pandemic period (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022 (post-pandemic period). The

following table presents the volume of transactions on UPI which were collected from NPCI database (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022 (post-pandemic period)

Table-2: Volume of UPI Transactions (In Millions)

STATEMENTS SHOWING THE VOLUME OF UPI TRANSACTIONS (In Millions)							
	PRE PANDAMIC PERIOD				POST PANDAMIC PERIOD		
Months	2017	2018	2019	2020	2020	2021	2022
January	4.46	151.83	672.75	1305.02		2302.73	4617.15
February	4.38	171.4	674.19	1325.69		2292.90	4527.49
March	6.37	178.05	799.54	1246.84		2731.68	5405.65
April	7.2	190.08	781.79		999.57	2641.06	5583.05
May	9.36	189.48	733.54		1234.5	2539.57	5955.20
June	10.35	246.37	754.54		1336.93	2807.51	5862.75
July	11.63	273.75	822.29		1497.36	3247.82	6288.40
August	16.8	312.02	918.35		1618.83	3555.55	6579.63
September	30.98	405.87	955.02		1800.14	3654.30	6780.80
October	76.96	482.36	1148.36		2071.62	4218.65	7305.42
November	105.02	524.94	1218.77		221.23	4186.48	7309.45
December	145.64	620.17	1308.4		2234.16	4566.30	7829.49

Sources: NPCI data base & Researcher's data sheet www.npci.org.in

In above table, the volume of UPI transactions (in millions) taken place during 2017 to 2022 are stated. According to the above summary the volume of UPI transaction was 4.46 billion which has raised to 7829.49 billion in December 2022. The results shows the tremendous growth in the volume of UPI transactions in India. In the first three years the UPI transactions was quietly increasing. But in the year 2020 it has decreased because of the government of India has declared the lockdown in the country. But after that there is quick recovery of the number of transactions done through UPI, Large number of retailers, traders adopted to cashless transactions, people also feared about the transmission of COVID-19 may take place due to exchange of currency notes. It also explains how the impact of Covid-19 effects in the tremendous growth of UPI payments in India

H₀₂: There is no significant difference between the volume of transactions taken place during pre and post-pandemic period.

VOLUME OF UPI TRANSACTIONS (In Millions) BY USING NPCI DATABASE

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRE PANDEMIC - POST PANDEMIC	-3470.17848	1802.47849	313.77123	-4109.30957	-2831.04740	-11.060	32	.000

(Sources: SPSS Calculation)

PAIRED T-TEST RESULTS

The above table analyzed the performance of UPI payments with respect **Volume of UPI Transaction** during Pre – Pandemic & Post-pandemic Period (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022 (post-pandemic period) by taking **actual values** collected from NPCI database. The results indicates that, the actual value mean difference is **-3470.17**during pre and post pandemic period, it indicates that there is tremendous

increase in the volume of UPI transactions in post pandemic period. Since, p-value is found to be **less than 0.05** indicates **rejection of null hypothesis and acceptance of alternative hypothesis**. Hence, there is a significant difference between volume of UPI transactions during pre-pandemic and post-pandemic period.

DESCRIPTIVE STATISTICS OF (VOLUME OF UPI TRANSACTIONS)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PRE PANDEMIC	39	4.38	1325.69	483.0913	447.58590
POST PANDEMIC	33	221.23	7829.49	3812.2233	2115.12205
Valid N (listwise)	33				

(Sources: SPSS Calculation)

According to the above summary, the means of the volume of UPI transaction for the pre-pandemic and post-pandemic periods are 483.0913 million 3812.2 respectively. If the increment in the value of UPI transactions is calculated by comparing the means of the UPI transaction values of the pre-pandemic and post-pandemic period, then it will be as follows.

$$\text{Increment} = [(3812.2 - 483.0913) / 483.0913] * 100 = 689 \%$$

Hence, it is clearly evident from the above analysis is that there is a **689 %** increment in volume of UPI transactions UPI after pandemic.

Section-3 deals with the data related to **Value of UPI Transactions (IN CR)** pre & post-pandemic period (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022 (post -pandemic period). Table-3 gives the value of UPI transactions and their respective trend percentages during pre-pandemic and post pandemic period.

Table -3: Value of UPI transactions (INR in Cr)

STATEMENTS SHOWING THE VALUE OF UPI TRANSACTIONS (In Crores)							
	PRE PANDEMIC PERIOD				POST PANDEMIC PERIOD		
Months	2017	2018	2019	2020	2020	2021	2022
January	1,696.22	15,571.2	109,932.43	216,242.97		4,31,181.89	8,31,993.11
February	1,937.71	19,126.2	106,737.12	222,516.95		4,25,062.76	8,26,843.22
March	2,425.14	24,172.6	133,460.72	206,462.31		5,04,886.44	9,60,581.66
April	2,271.24	27,021.85	142,034.39		151,140.66	4,93,663.68	9,83,302.27
May	2,797.07	33,288.51	152,449.29		218,391.60	4,90,638.65	10,41,520
June	3,098.36	40,834.03	146,566.35		2,61,835.00	5,47,373.17	10,14,384
July	3,411.35	51,843.14	146,386.64		2,90,537.86	6,06,281.14	10,62,747
August	4,156.62	54,212.26	154,504.89		2,98,307.61	6,39,116.95	10,72,792.68
September	5,325.81	59,835.36	161,456.56		3,29,027.66	6,54,351.81	11,16,438.1
October	7,057.78	74,978.27	191,359.94		3,86,106.74	7,71,444.98	12,11,582.51
November	9,669.33	82,232.21	189,229.09		3,90,999.15	7,68,436.11	11,90,593.39
December	13,174.24	102,594.82	202,520.76		4,16,176.21	8,26,848.22	12,82,055.01

Sources: NPCI data base& Researchers data sheet www.npci.org.in

From the above table-3, the Value of UPI transactions in January 2017 was 1,696.22 crores however there is tremendous increase by December 2022 which is 12 82,055.01 crores. It also explains how impact of Covid-19 effects the growth of UPI. According to above summarised data of trend value of UPI in March 2020 before pandemic were 206,462.31 crores and thus, it crossed **12, 82,055.01** crores in December 2022 after pandemic which shows multiple increases in usage of UPI in India. Hence, from the above figures we can get into the finalized statement which reveals that, there is a tremendous impact of Covid-19 on the usage of UPI transactions.

H_{03} : There is no significant difference between the value of transactions taken place during pre and post-pandemic period.

PAIRED T- TEST VALUE OF UPI TRANSACTIONS (In Crores) USING ACTUAL NPCI DATABASE

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre - pandemic - Post - pandemic in crores	-624253.55485	274303.93478	47750.18599	-721517.50084	-526989.60886	-13.073	32	.000

(Sources: SPSS Calculation)

PAIRED T-TEST RESULTS

The above table analyzed the performance of UPI payments with respect **Value of UPI Transaction** during Pre – Pandemic & Post-pandemic Period (i.e., from January 2017 to March 2020 (pre-pandemic period) and April 2020 to December 2022 (post-pandemic period) by taking **actual values** collected from NPCI database. The both results indicates that, the mean difference trend percentage mean difference and actual value mean difference is **-624253.5** respectively in the pre and post pandemic period, it indicates that there is tremendous increase in the value of UPI transactions in post pandemic period. Since, p-value is found to be **less than 0.05** indicates **rejection of null hypothesis and acceptance of alternative hypothesis**. Hence, there is a significant difference between volume of UPI transactions during pre-pandemic and post-pandemic period.

DESCRIPTIVE STATISTICS OF VALUE OF UPI TRANSACTIONS (In Crores)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PRE PANDEMIC(VALUE)	39	1696.22	222516.95	80117.7367	75530.80428
POST PANDEMIC(VALUE)	33	151140.66	1282055.01	681715.9703	329475.64801
Valid N (list wise)	33				

(Sources: SPSS Calculation)

According to the above summary, the means of the UPI transaction values for the pre-pandemic and post-pandemic periods are 681716 and 80117.74 respectively. If the increment in the value of UPI transactions is calculated by comparing the means of the value of UPI transaction of the pre-pandemic and post-pandemic period, then it will be as follows.

$$\text{Increment} = [(681716 - 80117.74) / 80117.74] * 100 = 751\%$$

Hence, it is clearly evident from the above analysis is that there is a 751% increment in value of UPI transactions after pandemic.

MAJOR FINDINGS OF THE STUDY

1. There is boom in number of banks live on UPI, Volume of transactions and value of UPI transactions in India during post-pandemic period.

2. It is found that by applying descriptive statistics analysis, the number of banks live on UPI has an increment of 148%, the Volume of UPI Transactions has an increment of 689%, and Value of UPI Transactions (in crores) has an increment of 751% after covid outbreak.
3. The number of banks live on UPI for the pre-pandemic was 36 in the month of Jan 2017 and it was increased to 382 in December 2022. Overall, we can see that there is a tremendous increase in usage of UPI during pandemic and post - pandemic period due to this the more banks were added to become live on UPI.
4. The volume of UPI transactions (in millions) taken place during 2017 the volume of UPI transaction was 4.46 billion which has raised to 7829.49 billion in December 2022. The results shows the tremendous growth in the volume of UPI transactions in India. In the first three years the UPI transactions was quietly increasing. But in the year 2020 it has decreased because of the government of India has declared the lockdown in the country. But after that there is quick recovery of the number of transactions done through UPI, Large number of retailers, traders adopted to cashless transactions, people also feared about the transmission of COVID-19 may take place due to exchange of currency notes. It also explains how the impact of Covid-19 effects in the tremendous growth of UPI payments in India
5. The Value of UPI transactions in January 2017 was 1,696.22 crores however there is tremendous increase by December 2022 which is 12 82,055.01 crores. It also explains how impact of Covid-19 effects the growth of UPI. Hence, from the above figures we can get into the finalized statement which reveals that, there is a tremendous impact of Covid-19 on the usage of UPI transactions.

SUGGESTIONS

1. In order to safeguard against incidences of hacking by fraudsters, the study suggests that the UPI makers should adopt an appropriate strategy to provide electronic security to attract and target customers by ensuring consistent interface with the customers.
2. Awareness campaigns should be implemented to solve the problems faced by the customers while using UPI services and also to middle aged and senior citizens to use UPI apps, offers discounts, coupons, and cash backs to attract the UPI customers. Moreover to encourage the usage and adoption of UPI Services to customers, RBI and UPI app makers should focus on providing necessary awareness programs and campaigns to make it more useful and effective.
3. The UPI users should not accept random/ unknown collect requests and advised to change their UPI pin on a regular basis and never ever use public Wi-Fi for your UPI transaction. If any fraud takes place, contact UPI customer care immediately. If any misplacement of the money or if money is transferred to the wrong person you can visit help and customer care in app. Online cyber security is open for 24/7, UPI users can file a complaint if fraud takes place. At the same time, do not open the unknown links send through an unknown number.
4. The banks and UPI makers need to understand their customer's demand, needs by providing better customer experience which helps UPI apps to retain the customers easily.

CONCLUSION

UPI Has changed the way payments are made. Increased usage of UPI has reduced the dependence on bank system for all types of banking activities. UPI brought a revolutionary change in streamline of transaction easy and secure. RBI opened doors for foreign countries for instant, low-cost, cross-border fund transfers and connecting Singapore, Nepal, France, Malaysia, UAE, BENELUX countries, and UK will connect their respective UPI and Pay Now fast digital payment system. Government initiative like Jan Dhan Yojana, expansion of MSMEs, personal data protection bill, high Smartphone penetration as well as the millennial generation needs, all these factors also expected to contribute to the growth of UPI. According to the findings, it is very clear the post-pandemic period witnessed a massive increment in the value of transactions and the increment is significant as compared to the value of transactions during the pre-pandemic period. It can be concluded that the covid-19 lockdown has a huge impact on UPI transactions that created a boom in UPI transactions during the post-pandemic period. From the above study, it is found that there is an inclination in the usage of UPI payments after the impact of covid-19, as the contactless mode of payment came into major consideration. This study gives us the overview of what exactly is the UPI how does it work and problems faced by the bank customers. Hence we can conclude that now a days UPI become the most preferable mode of payment as it is covenant to use and secure to use.

Limitations of the study: Even though the research is carried out in a systematic manner, it has its own limitations like any other study. Even though there are many people using UPI payments, but our study is confined to our network only. The present study is confined to geographical extent Hyderabad only. The size of the sample respondents is 300 only. Hence the conclusions arrived cannot be generalized.

Utility of the Study: UPI (Unified payment interface) is the one of the significant and revolutionary innovation introduced by NPCI (National Payments Corporation of India) as a supporting tool for digitalization. In India, the Covid-19 hit during the year 2020-21 has encouraged many people to use digital payments. The RBI has also encouraged and advocated the customers to use digital payment instruments to ensure contactless transactions. In India roughly (40 % to 46%) (According to <https://m.economictimes.com>) of population are using UPI. Hence it is an important to be studied the advantages and drawback of UPI services with regard to customer perception & satisfaction and challenges faced towards unified payment interface before and after pandemic period. Further, the present study would help the small merchants and proprietors to understand the UPI and its application. It is also useful to Fintech industries to know more about what customer wants and also guides the apps makers to generate more features and options in their apps and also to understand the challenges and help users to improvise the performance of UPI and finally this study also helps scholars for further deeper research in this area.

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