European Economic Letters
ISSN 2323-5233
Vol 14, Issue 1 (2024)
https://doi.org/10.52783/eel.v14i1.1005
http://eelet.org.uk

Comparative Analyses of Digital Payment Methods from the Pre and Post COVID-19 Perspective

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Abstract

Now-a-days world is becoming digitalized in every field and one of the best example of this is various countries in the world are moving towards becoming a cashless society. A cashless society is the one which doesn't use cash for any of its transaction instead all the transactions are done digitally. There are various countries in the world which have more than 50% of their transactions through cashless methods. This paper is all about the digital payment applications in India with special reference to COVID-19. It entails the perception of customers towards digital payment applications in India. This paper also shows the comparison of pre-covid period and covid affected period growth of digital payments. This study also attempted to identify the major problems faced by the customers while using digital payment applications. Primary & Secondary data was used in this study and the survey was collected through a structured questionnaire. Various tools and techniques were used for analysis of data i.e. Mann-Whitney U test, Kruskal-Wallis test and Mean analysis. SPSS 25 and MS Excel were used for investigation of data. APA (7th Edition) reference styling was used for references with the help of Zotero software. The study found that COVID-19 has a positive impact on the digital payment system. COVID-19 plays a vital role in transforming the Indian cash economy into cashless economy and also contributes in the financial inclusion initiative.

Keyword: Digital Payment, COVID-19, E-Payments, Digital Banking, Indian Economy.

1. INTRODUCTION

India is one of the growing countries in terms of mobile phone users. Today, mobile phones are not just a means of talking, but mobile services are also used by it. Covid-19 has led people towards cashless and contactless transactions. The use of digital payments has increased tremendously during the pandemic. There are more than 900 million mobile users in India but out of them only 40 million mobile users use digital payments. There are many reasons behind the increase in digital payments transactions during the pandemic. There are many ways to make digital payment such as card payment (Debit/Credit Cards), UPI (Google Pay, Phone Pe, Paytm etc), NEFT, IMPS, banking apps, internet banking and many more. The perception towards digital transactions and financial literacy in rural India forces one to think whether we are really moving towards a cashless economy.

Digital Payment Application

Payment Application is a mobile application that allows you to store card details that are used to pay for goods and services with digital money instead of using physical cards or cash and in an instant, you can also send money online to friends, family & the merchant. It's like having a digital wallet on your phone.

Digital payments is a booming industry in India. More than 50 third party applications in India are operational which are based on the UPI system. To ensure parity among players, the National Payments Corporation of India (NPCI) capped the market share to 30%, limiting their share in the total volume of transactions on the Unified Payments Interface.

Here, is the best digital payment applications in India are:

- PhonePe
- Google Pay
- PayTM
- Amazon Pay
- FreeCharge
- JioMoney
- BHIM

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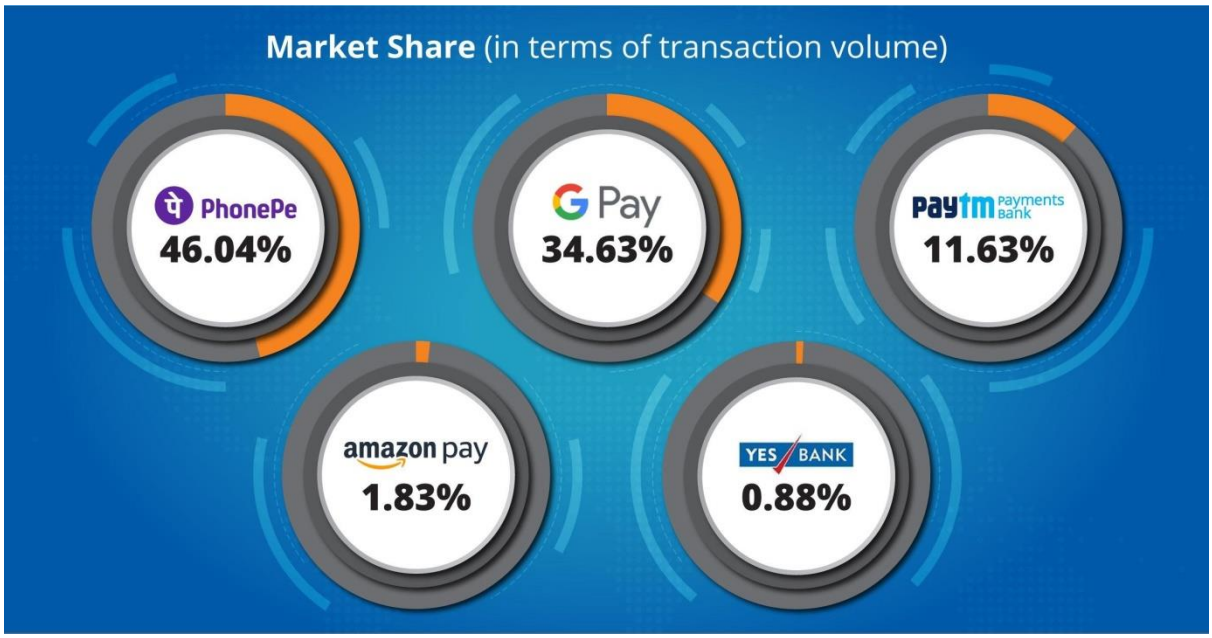
- Mobikwik
- Airtel Money
- Pockets by ICICI
- SBI Yono

Most Preferred Digital Payment Application

Online payment apps are mobile applications that enable users to conduct digital transactions, eliminating the need for physical cash. These digital tools support swift payments through the Unified Payment Interface (UPI), involving the transfer of funds, QR code scanning for payments to individuals or businesses, and more. In this study, a compilation of the most preferred payment applications available in India. Our selection criteria encompass factors such as security, user-friendly interfaces, user ratings, and additional features.



Source: NPCI, June 2021
Figure 1: Market Share of Digital Payment Applications

Figure 1 indicates that PhonePe is the most preferable digital payment application with approx. 46% of market share followed by the Google Pay which captured approx. 35% of the market share. Further, approx. 12% of the market share covers by PayTM and 2% by Amazon Pay. Digital payment application of YES bank taken 1% of market share and remained market share is shared by the other third party digital payment applications.

2. LITERATURE REVIEW

The relevant literature relating to the topic is reviewed as under:

Vinitha & Vasantha (2020) explored the determinants of customer intension to use digital payment applications. For this purpose, data was taken from 323 respondents through a structured questionnaire. The study revealed that perceived enjoyment, perceived credibility, perceived benefits influenced the customer perception towards electronic payments. Digital payment system is adopted by huge number of people, not only in metro cities but all around the country.

Sethi & Bohra (2020) tried to understand the trends of digital payments in India during COVID-19. There was many sources for doing a digital payment i.e. NEFT, RTGS, IMPS, UPI, BHIM and Cards payments. This study analysed the adoption & usage level of these digital payment platform during the COVID-19. Data was collected from various reports published by financial institutions i.e. Reserve Bank of India, National Payments Corporation of India. The study found that the pandemic increased the adoption of digital payment modes in India. UPI, mobile wallets helps the government norms of social distancing and also assisted in maintaining safety during financial transactions. During COVID-19, volume of RTGS & NEFT transactions were declined but total volume of digital transactions was recorded with a hike of 26.2% in 2020-21.

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Revathy & Balaji (2020) investigated the predictors of behavioural intention on electronic wallets usages during COVID-19 lockdown period. The study used the survey method for collection of the perception of electronic wallet users. The predictors used in the study were social influence, security, performance expectancy & effort expectancy. The study found that the social influence, security, performance expectancy were the significant and positive predictors of electronic wallet usages whereas effort expectancy was the insignificant influence on electronic wallet users. Electronic wallets helped the people in maintaining social distancing, avoiding visit in the bank branch and removing physical touching during exchange of currency. It also created a positive attitude among people regarding cashless economy.

Kavitha & Kannan (2020) identify the factors which influenced the consumer attitude towards mobile payment applications. A survey was conducted for collection of data and the data was gathered from 200 respondents. The study observed that the security, risk, easy to use and usefulness have a direct impact on consumer's attitude towards the mobile payment applications. The mobile payment applications provide a new way to do payments quickly, easily and safely. The study also suggested some other factors which influenced the consumer's attitude for future analysis.

Indoria & Devi (2021) analysed the consumer perception towards UPI. UPI provides a single platform which merges many banking facilities and features under one umbrella. You can send money with the help of UPI ID and PIN. Real time bank to bank money transfer can be done using mobile number. UPI is an initiative taken by National Payments Corporation of India (NPCI) together with the RBI & IBA. The data was collected from 151 respondents through a structured questionnaire. The study found that mostly people used UPI for fund transfer, mobile recharge and cash backs purpose. Age group of 20-50 year people used the UPI most. The study also told that the females are more technological rigid as comparison to males.

Chaudhari & Kumar (2021) studied the impact of COVID-19 on digital payments in India. The data was collected from National Payments Corporation of India (NPCI) website for the study. The study showed the percentage change in the volume of transaction from pre-covid period to covid affected period. The study found that COVID-19 has a positive impact on digital payments in India. There was an increase in volume and value of transactions both. Another factor behind this positive change was Demonetization in 2016 which prepared a base for digital payments in India.

Vishal (2021) studied the digital payment gateways and checked the customer's perception towards Unified Payment Interface (UPI). The study found that the customers basically used UPI for bill payments, online food order, train booking, bus booking and movie tickets. The study found no relationship between gender and awareness of using UPI. Also, no relationship found between gender & purpose of using the UPI. The study states that more than 90% of UPI transactions are done peer to peer. In 2021, 29 major banks provide the UPI facility to its customers.

Anisha et al (2022) focused on the consumer perception towards adoption of mobile payment system during COVID-19 crises. For this purpose, the data was collected with the help of a structured questionnaire or interview method. The study found that education has a significant effect on awareness of various mobile payment systems. The users found the applications user friendly and easy to access. Most of the people used Google Pay & Phone Pe for digital payments. The study also found that all income groups' people are adopted and satisfied about the mobile payment system.

Achutamba & Hymavathi (2022) highlighted the changes comes in the payment system in India. The study studied the awareness, perception and consumer behaviour of people towards digital payments. Data was collected from 100 respondents with the help of Google forms. The study concluded that the COVID-19 switched the traditional payment method to digital payment method. The digital payment users are faced many problems during digital payments but still they used the digital payment applications. This step takes the economy to digitalization and it was a positive sign to become a cashless economy.

Need of the Study

After reviewing many studies, it was found that Covid-19 has had a positive impact on the Indian economy. Due to Covid-19, India is moving very fast from cash economy to cashless economy. Many companies have taken initiatives to promote cashless economy and today many digital payment applications are working in the Indian economy. Digital applications have worked to make payments transparent and accessible. Therefore, it is important to find out how much difference there has been in online transactions due to Covid-19. Due to a lot of Digital illiteracy in India, it is important to study the factors that customer has to endure while using the application and the attitude of peoples towards these digital applications.

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3. RESEARCH OBJECTIVES OF THE STUDY

The objectives of the present study are as follows:-

- To compare the growth of digital payments Pre-Covid period and Covid affected period.
- To study the customers perception towards digital payment applications.
- To find out the major problems faced by the customers while using digital payment applications.

4. HYPOTHESIS OF THE STUDY

In the pursuance of the above objectives, the following hypotheses were formulated for testing:

H_{01}: There is no significant difference is perceived by respondents for various attributes of digital payment applications on the basis of gender of the respondent.

H_{02}: There is no significant difference is perceived by respondents for various attributes of digital payment applications on the basis of age of the respondent.

H_{03}: There is no significant difference is perceived by respondents for various attributes of digital payment applications on the basis of marital status of the respondent.

H_{04}: There is no significant difference is perceived by respondents for various attributes of digital payment applications on the basis of education of the respondent.

H_{05}: There is no significant difference is perceived by respondents for various attributes of digital payment applications on the basis of occupation of the respondent.

H_{06}: There is no significant difference is perceived by respondents for various attributes of digital payment applications on the basis of income of the respondent.

5. RESEARCH METHODOLOGY

Research Design & Study Period: The present study adopted the empirical research design to compare the growth of digital payments before Covid and Covid affected period. The study period covers data of 2019-20 to 2021-2022 only.

Sampling Method & Technique: The non-probability convenience sampling method was used for collection of primary respondent's data through online survey. The sample size of 343 respondents was finalized after the elimination of incomplete responses and responses not suitable for empirical investigation.

Questionnaire Design, Scaling Pattern & Pre-Testing: The questionnaire with three sections was confirmed for the collection of data after a pilot study with 50 samples. Cornbach's Alpha method was adopted for measuring the reliability of data and the value found .90 which was greater than the desirable benchmark (.60). First section of questionnaire comprises of demographic variables i.e. gender, age, marital status, education, occupation and monthly income of the respondent. Further, section second & third covers the perception of customers towards DPA and problem faced by the customer while using DPA respectively with the help of five point likert scale which ranges from strongly agree to strongly disagree.

Application of Statistical Software & Tools: The primary data collected was analysed using SPSS 25 (Statistical Package for Social Sciences) software & Microsoft Excel. The statistical tools, i.e., frequency distribution, Mann-Whitney U Test, Kruskal-Wallis Test, and Mean analysis have been applied to explore the unidentified research phenomenon in the present study. APA reference style (7^{th} edition) was adopted for reference styling using Zotero software.

6. RESULTS & DISCUSSION

The analysis of this data was divided into following section:

(i) Comparative data of digital payments: Table 1
(ii) Respondents Profile: Table 2
(iii) Perception of customers towards Digital Payment Applications: Table 3

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(iv) Problem faced by customers while using DPA: Tables 4

Growth of Digital Payments

As per the data accessed from National Payments Corporation of India (NPCI) website, following comparative position of Pre-Covid period and the Covid affected period:

Table 1: Comparative data of digital payments (retail) for FY 2019/20 & FY 2021/22

Sr. No.	NPCI Operated Systems	F.Y-2019-20		F.Y-2021-22		% Change	
	Financial Txns:	**Volume (in Mn)**	**Value (in Bn)**	**Volume (in Mn)**	**Value (in Bn)**	**Volume**	**Value**
1	NFS Inter Bank ATM Cash Withdrawal	4,311.59	16,150.98	3,791.86	15,753.94	(12)	(2)
2	NACH-National Automated Clearing House	**3,401.77**	**17,629.99**	**3,821.96**	**21,724.55**	12	23
2.1	APBS Credit (Disbursement based on UIDAI No.)	1,675.12	990.73	1,246.93	1,318.89	(26)	33
2.2	ACH Debit	610.95	6,253.26	732.95	7,713.39	20	23
2.3	ACH Credit	1,114.96	10,380.40	1,841.97	12,687.52	65	22
2.4	NACH Credit	0.01	0.72	0.11	4.74	1000	558
2.5	NACH Debit	0.72	4.87	-	-	-	-
3	CTS Cheque Clearing (Processed Volume)	1,035.89	79,174.61	698.24	64,210.34	(33)	(19)
4	IMPS	2,579.17	23,375.41	4,659.70	41,686.46	81	78
5	RuPay Card usage at (POS)	822.59	1,146.81	843.90	1,487.12	3	30

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6	RuPay Card usage at (eCom)	658.13	610.40	672.46	965.92	2	58
7	AEPS (Inter Bank) Txn over Micro ATM (e.g. Cash withdrawal/ Cash Deposit)	437.19	1,188.58	1,136.45	3,065.01	160	158
8	BBPS (Bill Payment passing through BBPCU)	145.69	216.62	668.13	1,139.70	359	426
9	UPI - Unified Payments Interface	**12,518.62**	**21,317.30**	**45,967.52**	**84,175.72**	267	295
9.1	BHIM	201.03	752.85	293.94	938.88	46	25
9.2	USSD 2.0	1.01	1.79	1.20	1.77	19	(1)
9.3	UPI excluding BHIM & USSD	12,316.58	20,562.66	45,672.38	83,235.08	271	305
10	USSD 1.0	-	-	-	-	-	-
11	NETC	582.59	112.94	2,441.31	380.84	319	237
Total Financial Txn		**26,493.26**	**1,60,924.07**	**64,703.18**	**2,34,607.21**	**144**	**46**

Table 1 show that there was a 144% increase in digital payments (retail) volumes and 46% increase in digital payments (retail) value as recorded by the NPCI. ATM cash withdrawal transaction volume declined by 12% and CTS cheque clearing comes down by 33% in 2021-22. If we talk about IMPS, it increased by 81% in volume and value increased by 78%. UPI transaction has a major rise of 267% in terms of volume and 295% rise in the value of transactions. NETC, BBPS & AEPS transaction also has shown a surge in the pandemic period. From the table, it clearly found that digital payments has recorded a significant rise during the covid-19 affected period of 2020-21 & 2021-22.

DEMOGRAPHIC PROFILE OF THE RESPONDENTS

The primary data collected in nominal scale i.e. gender, age, marital status, educational qualification, occupation and income level are subjected percentage analysis and results are presented and discussed in Table 2.

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http://eelet.org.uk

Table 2: Demographic Profile of the Respondents

Variable	Characteristics	Frequency	Percentage
Gender	Male	130	38
	Female	213	62
Age	Below 20	9	3
	21-30	270	78
	31-40	58	17
	Above 40	6	2
Marital Status	Married	121	35
	Unmarried	222	65
Educational Qualification	Senior Secondary	9	3
	Under Graduate	46	13
	Post Graduate	243	71
	Doctorate	45	13
Occupation	Student	216	63
	Employee	73	21
	Businessman	9	3
	Professional	30	8
	Research Scholar	9	3
	Housewife	3	1
	Freelancer	3	1
Income Level	Below ₹15000	201	59
	₹15001-₹30000	45	13
	₹30001-₹45000	42	12
	Above ₹45000	55	16

CUSTOMERS PERCEPTION TOWARDS DIGITAL PAYMENT APPLICATIONS

The Mann-Whitney U test and Kruskal –Wallis test has been applied for testing of hypothesis. The results were tabulated and presented in the Table 3.

Table 3: Test Statistics of Customer Perception towards Digital Payment Applications

Statement	Mann-Whitney U Test		Kruskal-Wallis Test			
	Gender	**Marital Status**	**Age**	**Educational Qualification**	**Occupation**	**Income Level**
	Asymp. Sig.(2-tailed)	**Asymp. Sig.(2-tailed)**	**Asymp. Sig.**	**Asymp. Sig.**	**Asymp. Sig.**	**Asymp. Sig.**

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Digital Payment Applications enhancing effectiveness and performance in making payments.	.174	.086	.889	.160	.003	.008
Digital Payment Applications saves time, money and energy.	.002	.780	.664	.005	.031	.0147
Digital Payment Applications are easier to manage and make payments.	.054	.143	.967	.377	.003	.017
Digital Payment Applications are useful for day-to-day activities.	.127	.788	.912	.172	.074	.258
Discounts, rewards and cashbacks offers received on Digital Payment Applications are appreciable.	.001	.929	.023	.003	.011	.167
Users can do various payments digitally anytime and anywhere.	.000	.161	.127	.182	.000	.036
Restrictions on the number of transactions and value of transactions are beneficial.	.427	.135	.000	.117	.000	.143

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Digital Payment Applications require digital experience for performing secured transfer.	.180	.048	.693	.542	.006	0.307
The services are easily accessible and portable.	.064	.587	.605	.240	.010	.172
Digital Payment Applications are safer than cash payments especially for high value transactions.	.0409	.016	.070	.607	.002	.036

The result shows that no significant differences are perceived by male and female respondents for majority of attributes of digital payment applications. Hence, we accept the H_{01}. This indicates that both male and female customer perceive digital payment applications in a similar way. Similarly, we find that no significant differences are perceived by the respondents on the basis of age, marital status, educational qualification and income level. This leads to acceptance of H_{02}, H_{03}, H_{04} and H_{06}. However, significant differences are perceived by respondents for majority of attributes of digital payment applications on the basis of their occupation. Hence, we reject the H_{05}. This indicted that occupation plays a significant role in acceptance of digital payment applications.

PROBLEMS FACED BY THE CUSTOMER WHILE USING DIGITAL PAYMENT APPLICATIONS

Mean analysis has been adopted for determining and ranking of various problems faced by the customers while using digital payment applications. The results were tabulated and presented in the Table 4.

Table 4: Problem faced by the Customers

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Rank
Server Problem	73	147	93	18	12	2.27	VIII
Lack of Knowledge	57	130	90	33	33	2.58	V
Technical Error	67	144	78	36	18	2.40	VI
Fear of Fraud	99	121	66	33	30	2.38	VII
Hidden Charges	45	127	93	57	21	2.66	IV
Lack of Security	34	114	108	48	39	2.84	II

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Complicated Instructions	36	108	109	45	45	2.87	I
Lack of up-to-date Information	42	106	99	60	36	2.83	III

The table 4 shows that most of the people facing problem of complicated instruction while use the digital payment applications which are followed by the lack of security issue. Many customers also feel that they have lack of knowledge about the updates in the payment applications. Customers also reveal that payment applications charge hidden charges and customer have no idea about these charges when they started using them because of lack of knowledge. Server problem and technical error is the least considered attribute by the customer which means that customer looks it effective and efficient in use.

7. CONCLUSION

Present study tried to compare the Pre-Covid and Covid affected period growth of digital payments in India. It was found that the digital transactions increased overall by 144% which means pandemic have a positive impact on the digital payment system of India. A major change has addressed in the usages of digital payment applications. The study also attempted to study the perception and problems of the customers towards digital payment applications. It was found that demographic factor except occupation does not have much impact on the adoption of the digital payment applications. Mann-Whitney U Test and Kruskal-Wallis test computation supported this finding as there was no signification difference is perceived by the respondents on the basis of gender, age, marital status, educational qualification and income level. It was only occupation of the respondents where signification difference is perceived by the respondents. Mean analysis has been used for determine the major problem faced by the customers. It was found that complicated instructions, lack of security & up-to-date information has the most common problem faced by the users. The growth of users of Smartphone and internet penetration in also facilitated the adoption of digital payment applications.

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