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A Study on the Adoption of Digital Payments in Postcovid-19 Era with Reference to Telangana State

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Abstract:- Digital payments are also known as electronic payments. They are conducted through online without involvement of hard cash i.e., like Unified Payments Interface (UPI), Internet Banking, Cards etc; The beginning of Digital payments can be seen with the introduction of Debit and Credit cards in 1980's. Later in 2005 digital transactions made easier with introduction of National Electronic Funds Transfer (NEFT) and establishment of National Payments Corporation of India (NPCI) in 2008 gave major boost to Digital Payments. Since then, there has been many innovations like Unified Payments Interface (UPI), RuPay card, Bharat Bill Payments System (BBPS) etc., An attempt is made in this paper to find out Adaptability of Digital Payments in Post Covid period in Telangana State. The Sample for the study is selected from the Telangana State and Convenience sampling Method was used for the study. The period of the study is from October 2022 to January 2023.The major Findings of the study is that there is a significant impact of Covid-19 on the adoption of Digital Payments in Telangana State, Technical glitches and server issues are some of the problems faced by respondents while using Digital Payments.

Keywords*: Digital payments, Adoption, Covid-19, Usage, Convenience, Ease of use, Rural areas, Telangana state.*

JEL Code: *G00, G53, O18.*

1. Introduction

Digital payments refer to transactions that are done using electronic medium without the involvement of hard cash. They are more convenient than cash as they save time, labour and other resources. Government of India has accorded highest priority to the promotion of digital payments with the launching of several measures and programmes like PRADHAN MANTRI JAN DHAN YOJANA, establishment of NPCI, introduction of UPI etc there has been renewed push to transform India into a Digital economy. Although adoption of Digital payments before 2020 was on the rising side, Covid 19 pandemic has further accelerated this process. Fears concerning transmission of virus through physical transactions, restrictions of social distancing are some of the factors for this push.

In a globalised world with integrated economies, rapid technological advancements in the financial domain, rise of non-state actors and activities like Terrorism, drug trafficking etc; it became imperative for Governments to keep track on the financial transactions. A recent report by Phonepe and BCG said India's Digital Payments markets will be more than triple from $3trillion to $10trillion. Digital payments will constitute nearly 60% of all payments by 2026 (BCG report on Digital Payments in India,2022)[13]. The progress made in innovations, policy making, expansion and augmenting supply-side infrastructure and ever strengthening adoption by population on the demand side have made this possible. The JAM (Jan Dhan Yojana, Aadhar and Mobile Number) trinity has been instrumental in the adoption of digital payments in the country. First major boost to digitization came on

November 8, 2016 when Government of India has demonetized the Rupees 500 and Rupees 1000 denominations of currency notes and introduction of UPI payment system which has pushed the digital adoption (National Informatics centre Blog)[14]. According to estimates, Digital payments transactions in India to reach $10 trillion by 2026. This itself signifies the central role that digital payments play in making India next economic powerhouse by 2047. Creating integrated and holistic Digital Public Infrastructure (DPI) is very much essential going forward. For a country to be economic power it needs to have smart villages besides smart cities and Digital Payments becomes crucial in deepening financial inclusion and formalising the economy.

Digital payments adoption has been on the rise before the onset of pandemic. However, on set of pandemic coupled with steps taken by RBI and Government of India has provided further thrust for acceleration of dramatic increase in contactless online payments. According to a report by RBI, total digital payment has increased by 216% and 10% in terms of volume and value for the month of March, 2022 when compared with March 2019(RBI publications)[15]. The contactless nature of the digital modes has allowed crores of Indians to perform financial transactions while adhering to social distancing norms. There is a growth in adoption of digital payment methods by small businesses in September 2021 compared to March 2019 which is largely induced due to pandemic and distancing norms.

2. Types of Digital Payments

- **Payment cards**

Payment cards are linked to bank accounts which are either deposit accounts or credit accounts. There are varieties of cards like Debit cards, Credit cards, Fleet card, Gift card, Store card etc;

- **Unstructured Supplementary Service Data (USSD)**

USSD is a mode of digital payment which allows customer to access banking services simply by dialling *99#. It includes fund transfer, balance query etc. This service allows banking services on a basic feature mobile phone without internet connectivity.

- **Aadhaar Enabled Payment Service (AEPS**)

This service is used to withdraw amount from bank account without going to bank and neither requires signature nor debit card. NPCI maintains this system. Information required:

a) Aadhaar number

b) Bank Issuer Identification Number (IIN) or Name

c) Finger Print

- **Unified Payments Interface (UPI)**

It’s a real time payment system which enables you to transfer funds instantly and quickly between two bank accounts. The transactions are conducted through a single mobile application. using UPI app for sending and receiving funds is akin to using your mobile for text messages.

- **Digital Wallets**

They are also known as e wallets. They are online service or software-based system that allows customer to perform various activities like transferring funds, bill payments including booking tickets, mobile recharges, utility bill payments etc., They are known for their ease of use and security. these wallets are further categorised into closed wallet, semi closed wallet and open wallet.

- **Point of Sale machines**

These are the machines which are made up of hardware and software components. they allow the orders to be processed, generates the bill and enables payments. They can be found in hotels, restaurants. fuel stations etc., They make the sales management efficient and convenient.

- **Mobile Banking**

Mobile banking involves performing financial transactions using a mobile. financial institutions like banks offers this service to their customers. It provides a wide range of activities like funds transfer, balance enquiry, bill payments, investments etc.,

- **Internet Banking**

It is also known as online banking and web banking. It is a financial service provided by banks that allows a customer to access his account and perform various financial transactions like amount transfer, balance enquiry etc., using that bank's website.

3. Review of Literature

Ravikumar et al., (2022)[1] studied the performance of Digital Payments in Pre and during Covid 19 period and examined RBI-DPI which is introduced to measure Digital payments penetration and deepening in India. It has been found that volume of Digital Payments transactions increased during Pandemic than pre pandemic but the value of transactions has declined when compared to pre pandemic, this decline may be attributed to low business activities and low consumption demand during pandemic. It has also suggested that to make RBI-DPI inclusive, regional and gender disparities may be included while measuring it.

Sam et al., (2022)[2] Consumer behaviour change has been the main topic of discussion when it comes to the rise in digital payments during COVID-19. Documents how supply-side actors (political, economic, financial, and technological) leveraged the pandemic to create a new public consensus around digital payments using India as a case study. The article makes the case that these actors set the agenda to focus attention on cash and digital payments during the COVID-19 pandemic, that this new consensus extended and diverged from narratives developed during the Digital India (2015) and demonetisation (2016) debates, and that trade associations and businesses unrelated to banking, finance, and technology were actively involved in setting this new agenda. The agenda-setting of the epidemic era is still influencing the trajectory of payments in India and elsewhere.

Banerjee & Pradhan, (2022)[3] A survey with 386 respondents was conducted to study key determinants of Digital payments adoption. It was found that Trust, Ease of Use, Usefulness are key determinants. It also provides evidence of non-variance when segregated by education and Gender. The insights found in the study can be useful for policy makers for planning strategies to increase adoption of Digital Payments.

Kurian, (2021)[4] study has analyzed Perceived risk, perceived vulnerability, perceived usefulness, Perceived Ease of use, Perceived Usefulness and Trust that affects Digital Payments adoption and found that Perceived risk, perceived vulnerability, perceived usefulness, Perceived Ease of use, Perceived Usefulness has impact on adoption of Digital Payments among millennial. It also suggests people should take care by maintaining social distancing norms, avoiding physical contact and using Digital Payments for transactions.

Ghosh, (2021)[5] Study is based on review of literature of different authors which explains about various Digital Payments method, why they are used, how frequently they are used etc., The paper suggests that people are using Digital Payments due to Convenience, rewards, cashbacks, speed etc.,

Nandurkar, (2019)[6] found that Digital Payment system is growing exponentially in India as people are using them for online shopping, money transfer etc., Ease of use, economical and safe to operate are the main driving features of adoption. The Government of India also with its policies playing important role in increasing the Digital Payments usage. The UPI's success has been driven by free usage and convenience.

Sivathanu, (2019)[7] The purpose of the study is to investigate how consumers actually used digital payment methods during the time of demonetization (AU). The findings of this study give economist's important information to carefully construct a transition matrix for a seamless transition from cash-based systems to cashless digital payment systems because demonetization is an uncommon phenomenon that can happen in any economy. Stickiness must be taken into account because it is essential for the long-term, sustained adoption of digital payment systems. It implies that the government plays a key role in fostering higher digital literacy and awareness

among the populace, accelerating adoption through increased capacity building, and providing necessary infrastructure. This will make it possible for traditional cash-based payment systems to smoothly transition to digital payment systems.

(*Committee Reports*, n.d.)[8] The Committee emphasized the nation's expanding use of digital payments. Digital payments per person have increased ten-fold, from 2.4 in March 2014 to 22.4 in March 2019. India still lags many other countries in terms of digital payments made per person, though (96.7 for China and 148.5 for Brazil). The Committee proposed that in order to encourage digital payments, the government should subsidize the MDR (Merchant Discount Rate) and cut the interchange fee on card payments by 15 basis points. It further suggested that RBI form a committee to routinely evaluate the MDR. Furthermore, it made notice of the need to address the fact that high value payment systems are not currently available 24/7. To make the KYC process simpler, the Committee proposed that existing standards be changed to recognize legitimate documents that are digitally signed by the customer. Users ought to be able to make inexpensive, ad valorem cash withdrawals from POS devices.

Baghla, (2018)[9] attempted to find out the reasons for Digital Payments adoption and problems faced by people while using Digital Payments. The idea of moving towards Digital Payments is good one and both the Government and private sector are playing their part. However, the biggest challenge for the Government is the lack of awareness among people regarding Digital Payments and Fear of loss of money while making Digital Payments.

Vally & Divya, (2018)[10] The study looks at how consumers in India's banking industry would be affected by the adoption of digital payments. Together, the results provide us with a crucial policy compass that can help the nation enhance its use of cashless transactions. The findings show that the adoption of digital payment technology has enhanced banking sector performance and made it possible to realise the goal of a cashless society. The survey places attention on the proportion of people who are conscious of making the most of technology. Banks need to do a better job of educating people about how to use technology and security effectively**.**

Franciska, (2017)[11] Studied different types of digital payment transactions that are used by citizens in their everyday lives today. Agreed it will be a necessity in the future to make payments online, and so change of habits is also required for those that want to accept such payments. Cashless transfers are safer than the cash transactions, but they are less time consuming. It's also a record of all transactions that have taken place. Internet, electricity, mobile network reach are also helping in expanding the Digital Payments.

4. Objectives of the Paper

a. To understand overview of digital payments and various methods available in the financial system.

b. To assess the adaptability of Digital payments in Rural Telangana State Pre and post COVID period

c. To assess the impact of financial and operational aspects on the usage of Digital Payments in the Pre and post COVID period.

5. Research Methodology

In this study following methodology is used: -

Period of the study: - Pre COVID period is considered for a period of 2 years i.e., 2017-18, 2018-19 and post-COVID period is considered from 2020-21 onwards.

Sources of data: - The study is prepared based on the Primary data which was collected from respondents through Schedule method. As per the census 2011, Urban areas means where minimum 5000 people are living together and Rural areas means where less than 5000 people are living. The population of Telangana state is 3.49 crores. Out of it 1.36 crores (39%) are living in Urban areas and remaining 2.13 crores (61%) living in Rural areas. The schedule was circulated among the Rural customer who are using Digital Payments at different Point of Sales and trading village centres from Mirzapally (Medak), Parigi (Ranga Reddy), Utnoor (Adilabad), Julapally (Peddapally) were considered and collected the primary data.

Sample: - A total of 137 samples have been chosen. The same 137 customers were asked to elicit their opinion on Digital payments during Pre and Post COVID period.

Sampling method: -Purposive sampling method has been used to collect the data from the respondents.

Statistical tools: -Since 137 samples are being asked twice regarding adaptability of Digital Payments during Pre COVID period and Post COVID period. Therefore paired 't' test has been used.

Analytical tools: - SPSS software has been used for the analysis of the data.

6. Limitations of the Study

1. The study is confined to find out the adaptability of Digital Payments at Rural Telangana.
2. Though population is 3.69 crores in Telangana, 2.13 crores (61%) of the population is in Rural areas but who are volunteered to share their financial and Digital Payments information are considered for this study. Hence, this study is confined to 137 customers. The study period is from Oct 2022 to Feb 2023. The results may be inferred for entire Rural areas of Telangana and the results cannot be generalized.

7. Evolution of Online Payment Methods

From Barter system to wiring money via Mobile, India adopted Online payment system in 1996 when Industrial Credit and Investment Corporation of India (ICICI) began to offer their clients online banking services in their Retail Branches. National Payment Corporation of India (NPCI) started in 2008 to create more established payment and settlement infrastructure in India. The birth of Digital Payments started in 2010 with Unique Digital Identity systems which is linked to Aadhar number. Subsequently, many online platforms were introduced and presented in Table 1.

Table 1: Different Online payments Systems in India:

Features	UPI	USSD	Cards (Debit and Credit cards)	Digital wallets	Internet banking
Year of establishment	2016	2014	1987	2004	1998
Time taken to complete transaction	Instant	Instant	Instant	Instant	Instant
Smartphone	Required	Optional	Not required	Required	Required
Formal employment	Not Required	Not Required	Not Required	Not Required	Not Required
Banking Access	Yes	Yes	Yes	No	Yes
Internet Connectivity	Required	Not Required	Required for PoS transactions	Required	Required
Transaction limit (amount)	₹ 1 lakh per day	₹5000 per day	Depends on the card and issuing bank	₹ 1 lakh per month	Depends on the bank
Number of transactions in Volume (FY2022)	84 billion	1.72 million	6.4 billion	6 billion	4 billion
Value of transactions in Amount (FY2022)	₹139 trillion	₹2 billion	22 trillion	₹2 trillion	₹915 trillion

Source: - Compiled from various Reports

It is observed from Table 1, The Debit and Credit card system was introduced in 1987, then internet Banking in 1998, Digital Wallet in 2004, Unstructured supplementary Service Data (USSD) in 2014 and Unified Payment Interface (UPI) was started in 2016.

All the online platform payment systems are instantly completing their transactions and for online payment, smart phone is required except in the case of Debit, Credit cards and USSD. Further, internet connection is required for all online payment platforms except USSD transactions.

During the Financial Year 2022, ₹915 trillion transactions have taken place through Internet Banking platform followed by UPI, Debit and credit cards, Digital Wallets and USSD. Further it is noticed that for each transaction, banks access is required except for Digital wallet. However, no formal employee is required where Customer himself to operate the Digital payment transactions.

Covid 19 Pandemic has necessitated the need to adopt digital modes due to Lockdown restrictions and social distancing norms. The motivation for this study stems from the inclination to traverse the perception of the people regarding digital payments and their adoption.

8. Analysis

Adaptability of the Digital Payments

Companies like Visa, Mastercard etc., have launched contact less cards to avoid physical cash payments. Because of advancement of mobile technology and availability of online platforms for Digital payments, majority of merchants are accepting Digital Payments. The customers also showing lot of interest and adopting the Digital Payments through the mobiles (or) cards.

In the background a question was asked to the respondents about the adaptability of the Digital Payments during Pre and Post COVID. The results are presented in Table 2.

Table 2: Adaptability of Digital Payments during Pre and Post COVID period.

Particulars	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	Sig. (2-tailed)
Usage Pre COVID	3.69	0.998	0.085	-0.823	-0.476	-7.411	0.000
Usage Post COVID	4.34	0.656	0.056				

Source: Computed with the help of SPSS software

From Table 2, it is observed that the Mean of Post Covid period (4.34) is more than that of Pre Covid period (3.69). The variability is more in Pre Covid usage but consistency results are identified during Post Covid period. Therefore, it can be concluded that the adaptability of the Digital Payments has been increased during post-COVID period. It indicates that there is a greater impact of COVID to adapt the Digital payments. From the above table it is observed that the p value is 0.000 which is less than selected significant level i.e., α=0.05. Therefore, there is a significant effect of COVID-19 pandemic on the usage of Digital payments.

9. Financial Aspects on the Usage of Digital Payments During Pre and Post Covid Period

To find out financial aspects, Researcher has considered How much Amount preferred by the customer (up to₹10,000) by using digital payments and promotional offers, discounts etc. Amount preferred, offers and discounts are considered to access the impact of financial aspects on the usage of digital payments during pre and post covid period. The results are presented in Table 3.

Table 3: Financial aspects on the usage of Digital Payments during Pre and Post Covid period.

Particulars	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	Sig. (2-tailed)
Amount preferred pre covid	3.1	1.462	0.125	-1.197	-0.73	-8.144	0
Amount preferred post covid	4.07	1.226	0.105				
Offers and discount pre covid	2.99	1.534	0.131	-0.688	-0.101	-2.655	0.009
Offers and discount post covid	3.38	1.41	0.12				

Source: Computed with the help of SPSS software

From Table 3, it is observed that Mean value of amount preferred during POST COVID (4.07) is greater than Mean value of amount preferred PRE COVID (3.10). Similarly Mean value of Offers and Discounts during POST COVID (3.38) is greater than Mean value of Offers and Discounts of PRE COVID (2.99). For both the aspects p value is less than selected significance level i.e., α=0.05. It reveals there is a significant impact of financial factors on the usage of Digital payments.

10. Operational Aspects on the Usage of Digital Payments During Pre and Post Covid Period

To find out the operational aspects on usage of digital payments during the pre and post covid period, a) Ease of use, b) Security/ privacy, c) Convenience were considered to assess the impact of these operational aspects on the usage of digital payments during pre and post covid period. The results are presented in Table 4.

Table 4: Sample Respondents responses on the a) Ease of use b) Security and c) Convenience on Digital Payments during Pre and Post COVID period.

Scale	a) Ease of use			b) Security			c) Convenience		
	Pre Covid	Post Covid	Difference	Pre Covid	Post Covid	Difference	Pre Covid	Post Covid	Difference
Very high (1)	28	39	11	37	30	-7	19	8	-11
High (2)	26	21	-5	26	32	6	29	32	3
Average (3)	19	27	8	34	32	-2	20	42	22
Low (4)	30	17	-13	24	27	3	36	36	0
Very Low (5)	34	33	-1	16	16	0	33	19	-14
Total	137	137	0	137	137	0	137	137	0

Source: - Compiled from Primary Data

By observing Table 4, a mixed responses were noticed in terms of Adaptability of Digital Payments during Pre and Post Covid period in case of a) Ease of use, b) Security and c) Convenience. Therefore, standard Paired 't' test was applied to study the impact of Covid on Adaptability of Digital Payments and results are presented in Table 5.

Table 5: Operational aspects on the usage of digital payments during pre and post covid period

Particulars	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	t	Sig. (2-tailed)

a) Pre (Ease of use)	3.12	1.49	0.127	-0.066	0.533	1.544	0.125
a) Post (Ease of use)	2.88	1.544	0.132				
b) Pre (Security)	2.68	1.35	0.115	-0.363	0.202	-0.562	0.575
b) Post (Security)	2.76	1.315	0.112				
c) Pre (Convenience)	3.26	1.393	0.119	-0.207	0.338	0.467	0.635
c) Post (Convenience)	3.19	1.122	0.096				

Source: Computed with the help of SPSS software

From above table, Mean value of Ease of use during PRE COVID (3.12) is greater than Ease of use during POST COVID (2.88), Mean value of Security during POST COVID (2.76) is greater than Mean value of Security during PRE COVID (2.68) and Mean value of Convenience during PRE COVID (3.26) is greater than Mean value of Convenience during POST COVID (3.19).It is observed that the value of p for ease of use is 0.125, for Security it is 0.575 and for Convenience it is 0.635 which is higher than the selected significance level i.e., α=0.05.Therefore, we accept the null hypothesis and can infer that there is no significant impact of Operational factors on the usage of digital payments.

To find out the adaptability of Digital payments pre and post COVID period, same respondents were asked with structured schedule by asking him were you used Digital payments before COVID and after COVID. The results are presented below and presented in Table 6.

Table 6: - Usage of Digital Payments Pre and Post Covid

Scale (1-low: 5- high)	Pre COVID	Post COVID
Never-1	3	0
Rarely-2	19	2
Sometimes-3	21	8
Often-4	69	69
Always-5	25	58

Source: - Primary Data

The above Table 6 shows that the customers who were using Digital Payments Rarely Pre Covid dropped from 19 persons to 2 persons Post Covid. Similarly, sometimes users dropped from 21 to 8 persons. However, Always Digital Payments users increased from 25 to 58 persons Post Covid. Hence, it can be concluded that the usage of Digital Payments has increased due to Covid.

11. Problems of Digital Payments

The study has also revealed that consumers face problems like server down, technical glitches and internet connectivity issues. It has been found that 62% of the respondents faced Internet issues and ATMs without cash etc., 65% of the respondents experienced technical glitches and 81% of the respondents faced Server down issues while using Digital Payments. With regard to the security related issues, 55% of the respondents felt that there has been increase in the cyber/privacy related issues. Taking into view the aforementioned problems some measures can be taken in improvement of Quality of services like Fraud prevention, preventing transaction failures and grievance redressal. Particularly grievance redressal mechanism should be available in Vernacular languages.

12. Conclusions and Policy Implications

The study examined the adoption of digital payments through various parameters using 5-pointLikert scale to assess the adoption and perception levels. 49% of the respondents stated that Per day transactions has increased in Post Covid. 48% of respondents strongly agreed acceptance of Digital payments by vendors, Peers etc has increased in Post Covid and 40% has agreed to it. It has also been found that consumers feel that services offered

by digital payments have increased in Post Covid (46% strongly agree and 29% agree) and related to security issues 40% of the respondents agree that Cyber threats have increased post covid. similarly, 56% of the respondents think that the Security levels provided by digital payments against such security threats has increased post covid. Further it has been found that 57% of the respondents strongly agree and 30 % of them agree that Digital Payments would increase after Post Covid period.

The results of Paired t-test indicate that there is a significant impact of Covid on the adoption of Digital payments whereas there is no significant impact of operational aspects on the adoption levels. The study has found that most of the transactions are done through UPI method followed by Debit/Credit cards and Net banking. It has been revealed that Digital payments are used for a range of activities like Peer-to-Peer transactions, online purchases, Utility bill payments etc. RRB's can be roped up to further digital payments in rural areas. Network issues are one of the prime challenges for smooth conduct of digital payments and measures must be taken to widen the network coverage, primarily in the backward areas. As most of the businesses in rural areas are in informal sector, incentivizing them in using digital payments furthers the adoption. Government should ensure that all the departments' payments are done by using digital payments like Direct Benefit Transfer, payment to goods and services etc.,

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