

Digital Payment System In The Times Of COVID-19: A Journey Towards 'Less- Cash' Economy During Pandemic

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ABSTRACT

A COVID-19 crisis was one of the biggest threats for the entire nation as well as for the whole financial sector. But at the same time, it creates the potential to accelerate the world's transition towards digital payment system. Coronavirus is the great accelerator for boosting the corny worldwide trend towards adoption of digital payment methods, steering the cashless transactions and converting India into less-cash economy. Therefore, this paper focuses on studying the importance of digital payment method during and post COVID-19 pandemic and discusses different modes of digital payment system. Further, it analyses the growth of digital payments in last 3 years, which is the COVID era. The findings of the study reveals that the social distancing is the best preventive measure to protect each other from the spread of deadly virus and digital payments helped us to maintain social distancing while making digital transactions. However, it is critical for the digital payment ecosystem to grow quickly and assist to design the post COVID future in order to boost recovery & lead the transition into this new normal. So, it is suggested to provide proper digital payment infrastructure, education & awareness programs to users and also ensure their digital security & privacy for expanding digital payment system usage.

Keywords: Cashless Transaction, COVID-19, Digital Payments, Social Distancing, Technological Innovation, Financial Technology.

I. INTRODUCTION

COVID-19 crisis has proven to be the biggest threat for the entire world as well as for the financial sector. The pandemic has barred the freedom of moving all individuals, and decreased the transaction of goods, services & capital globally. Major alterations in payment behaviour were reinforced, like decreased use of paper money, shift from physical market to e-commerce, and switching to quick payments. This has led to exploration or increased usage of innovative online solutions to mitigate the problems faced due to pandemic. As a result, there was tremendous increase in the usage of digital technology, due to complete lockdown & social distancing restrictions in the country. And consumers have started switching from offline mode to online mode of payments, which is new normal for them. But it is still unpredictable that whether this change is permanent or will revert to previous path, at least to some extent, once everything gets normal and nations reopen. As per the 2021 McKinsey Global Payments Report, the effect of both the coronavirus spread as well as the following economic conditions, as predicted, resulted in substantial shift in spending habits. From 2019 to 2020, the total number of non-cash transactions appreciated by 6% at global level. During and after the coronavirus, the usage and adoption of technology has been improved and this enhanced the services provided by digital payment sector. Now, contactless transaction or digital payment services like mobile wallet & digital currency have evolved as a substitute to conventional currencies. Hence, COVID-19 has turned out to be impetus for the increased usage and adoption of digital payments in the world. Therefore, this paper aims at studying the effect of coronavirus crises on digital payment system, by examining the development in usage and adoption of digital payment system from 2019 to 2021. Further, it answers the question regarding the online payment response to COVID-19 crises, where it analyses the impact of social distancing (i.e., COVID-19) on digital payments.

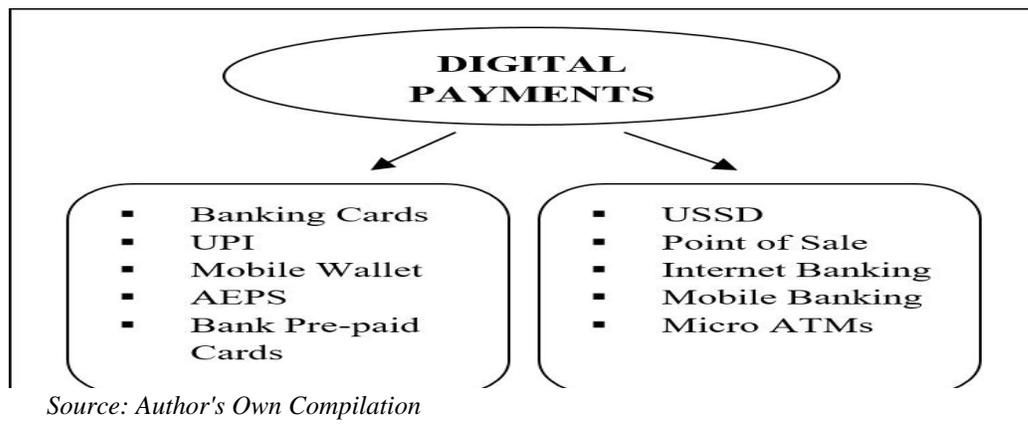
II. DIGITAL PAYMENTS-

With the advancement in technologies, all payments are made with mobile phones, digital cards, and by other online modes in these futuristic times, with paper money & coins being phased out. Digital Payments are forming the outlines of the new India by allowing individuals to use electronic payment modes and become less reliant on cash. For a technologically proficient India, it is critical to progress towards universal adoption of Digital Payments as India enter on the path to Digital India.

Any transaction in which value (e.g., money) is digitally transferred from one account to another is considered an online or digital payment. A digital payment ecosystem has three basic elements such as, firstly, providers of the essential software, hardware & network infrastructure for online payment consisting PoS terminals, Smartphone's with payment applications, internet access. Secondly, system operators who guide and regulate access & protocols for payments, and thirdly, banking institutions & service providers who undertakes payment processing. Hence, the Digital payments can be defined as the transactions made using digital or online methods, with no physical exchange of cash or coins involved. So it can be said that both parties, the payer and the payee, use online modes to exchange money. As per **Cashless India by Ministry of Electronics and Information Technology**, these are various methods of digital payment present for fostering cashless transactions and transforming India into cash-less nation. The numerous modes of digital payment system are as follows:

- Banking cards- Credit cards, debit cards, prepaid cards, etc. are available and offers extensive options. Users have more safety & freedom with banking cards than conventional payment methods. For safe transactions, these cards include two-factor authorisation in the form of security PIN and One Time Password. RuPay, Visa and Master Cards, etc. are the types of banking cards.
- Unstructured Supplementary Service Data (USSD) - It allows mobile banking transactions on a basic feature mobile phone, and no internet data is required for using USSD based mobile banking. The main goal of this service was to provide accessible banking services to unserved or underserved section of society.
- Aadhaar Enabled Payment System (AEPs) - It offers digital interoperable financial transactions at Point of Sale using Aadhaar verification through any Business Correspondent or Bank Mitra of any banking institutions. It offers wide variety of services like enquiry of balance, cash withdrawal, cash deposit, payment transaction and Aadhaar to Aadhaar money transfer.
- Unified Payment System (UPI) - It authorises various bank accounts consolidated in a single mobile application, providing various banking services, seamless cash routing & merchant payments. It also handles 'Peer to Peer' collection requests that can be availed according to need and requirements of the user. It offers services like send and collect money, account management, transaction history & balance enquiry, etc.
- Mobile Wallet- It allow users to carry cash in digital form and using mobile phones for attaching credit & debit card information to a mobile wallet application. It enables users to transfer funds from one's bank account to a mobile wallet digitally and make purchases on smart phones or tablets. Paytm, Freecharge, MobiKwik, SBI Buddy, etc. are the ones who have their own digital wallets.
- Bank Prepaid cards- For getting banking prepaid cards, users need to provide full KYC (Know Your Customer) details for opening new account; then apply for wallet or prepaid card and get MPin (Mobile Banking Personal Identification Number). It offers services like adding money, pay money, manage banking profile on mobile, accept money, passbook & transaction history, balance enquiry, etc.
- Point of Sale (PoS)- It is a location were people sale and purchase things. It will be a market, a mall, or a city. As per retailer, it is the location where a consumer completes a transaction, and is also termed as a Point of Purchase. It can be of three types that are physical PoS, mobile PoS & virtual PoS
- Internet Banking- It is often termed as online banking, e-banking or virtual banking. It is basically based on electronic payment system that allows banking as well as other financial institutions customers to execute variety of financial transactions via financial institution's website.
 - a. Net Electronic Fund Transfer (NEFT) - It is widely used payment system that allows one to one transfer of funds. Individuals, firms & corporations can digitally transfer funds from any bank branch in the nation participating in the scheme and users having accounts with a bank branch can transfer cash availing NEFT.
 - b. Real Time Gross Settlement (RTGS) - A perpetual settlement of funds transfers on an order-by-order basis is termed as RTGS. Here, Real Time refers to the processing of instructions as soon as they are received rather than later. Whereas Gross Settlement means individual settlement of funds transfer instructions.
 - c. Electronic Clearing System (ECS)- It is an alternative method for effecting payments in respect of utility bill payments such as telephone bills, electricity bills, etc. that eliminate the need for issuing & handling paper instruments, thus allowing banks, companies & government department for providing enhanced customer service.
 - d. Immediate Payment Service (IMPS)- It is a mobile based interbank digital fund transfer facility that works for 24 hours. It is a powerful tool for transferring money rapidly between banks in India via mobile, internet or ATM, which is secure as well as cost effective, from both financial as well as non-financial point of view.
 - e. Mobile Banking- Banking and financial institution offers mobile banking that enables users to use various types of financial transactions remotely via mobile phones. It basically uses software, which is often termed as an app, provided by the banking as well as financial institution for various purposes.
 - f. Micro ATM- It is a device that a million Business Correspondents (BC) use to provide basic financial services. The micro platform will be powered by low-cost devices (micro-ATMs) that will be linked to banks all around the country. This would allow a person to deposit or withdraw money instantaneously, regardless of which bank is associated with a certain BC.

FIGURE I: Types of Digital Payment System



III. COVID-19 IN INDIA

COVID-19 is a pandemic that has affected each & every country on the planet. The virus began in Wuhan city of China and then spread throughout the globe. The SARS- CoV-2 virus causes COVID-19, also known as Coronavirus, is a highly contagious disease. When an infected person coughs, breathes or sneezes, the virus spreads in microscopic liquid form from their mouth or nose and spread infection to others. COVID-19 & its seven mutant forms have infected India in three waves, with many of them proving deadly. The Indian SARS- CoV-2 Genomics Consortium INSACOG reports that seven viral variants have been found in India in the previous two years: Alpha, Beta, Gamma, Delta, B.1.617.1, and.1.617.3, AY series, & Omicron. However, social distancing is the best way to avoid infection & decrease coronavirus spread among people.

IV. LITERATURE REVIEW-

(Kaur & Kushwaha, 2021) studied how the digital payments systems restricted the spread of deadly Coronavirus. The study used secondary data sources based on literature findings and statements of doctors, experts & scientists collected from articles, websites, etc. It was found that using cash and ATMs can lead to the spread of the virus, so it was suggested to adopt digital payment methods.

(Bukvic, 2021) examined the shifts in the pattern of adoption & usage of electronic payment systems to determine the differences in the adoption of digital payment services in various geographical regions. Further, it identified the factors that affect the adoption of digital payments. The secondary data sources were used from various reports & surveys. The study identified that the risk of coronavirus spread through cash transactions, along with perceived benefit & security is one of the major reasons that should be analyzed shortly, regarding the adoption & usage of digital payments.

(Pambudi & Rahadi, 2021) analyzed the demand for e-money due to Coronavirus crises and framed the conceptual model for the demand for electronic money due to pandemic in Indonesia. The secondary data sources were used in the study, for which 12 works of literature were used in the paper. It was found that the use of digital money can be influenced by the money supply, internet data, other non-cash payment modes & user income. But during COVID-19 people avoided physical contact with cash & ATMs, and adopted e-money for reducing virus spread.

(Saravanan & Mariyappan, 2021) studied the impact of COVID-19 on the digital payment sector and compared the users who are availing online payment methods before lockdown & during the lockdown. Further, they found the problems faced by users while making digital payments. Both primary and secondary data sources were used in the study. The questionnaire method was adopted for data collection and analysis was done on SPSS 20. Statistical tools like Chi-square & correlation tests were used. The study found that technological challenges, lack of knowledge about e-services, cybercrime & fraud are the major problems in the adoption of digital payments.

(Alber & Dabour, 2020) examined the opportunities available for growth & development of FinTech, under restrictions of coronavirus crises. Community Mobility Report was used for secondary data sources. They analysed the digital payments volumes & values growth in 10 countries including India, from March to June 2020. They found that social distancing influenced the usage of digital payment, but it was recommended that regulatory authorities need to respond quickly for maintaining a stable financial system, by assuring the growth of digital payment systems.

V. OBJECTIVES OF THE STUDY-

- To study the impact of COVID-19 Pandemic on Digital Payment System in India.
- To examine the trends in the usage of digital payment before & after the pandemic.
- To analyse the complications confronted by users while making the digital payment transaction.
- To give suggestive measures for enhancing the digital payment system in India.

VI. METHODOLOGY-

The current paper is descriptive in nature and is purely based on secondary data sources. The secondary data has been taken from various published reports and issues of governmental & non-governmental organizations. Mainly Reserve Bank of India reports have been used in this study and certain journals, articles, websites, etc were also used for enhancing the work. Various literature used, are correlated with the study, and then collected data was analysed, interpreted and drawn meaningful conclusion.

VII. SCOPE OF THE STUDY-

In the present study, the concentration is made upon the impact of the COVID-19 crises on the Digital Payment System in India. Here digital payment system includes various modes of digital payment like UPI, AEPS, Mobile Wallets, etc. It has been noticed that there is very less number of study that has covered the final status of digital payment, which is affected by the COVID-19 pandemic. Data taken for the study is for the period ranging from 2019-2021. Here, the only impact of the COVID-19 pandemic on digital payment has been taken into consideration, for further study other factors like demonization, etc can be considered. Also, future studies may focus on the impact of the COVID-19 pandemic on digital payment systems using primary data sources.

VIII. ANALYSIS & DISCUSSION-

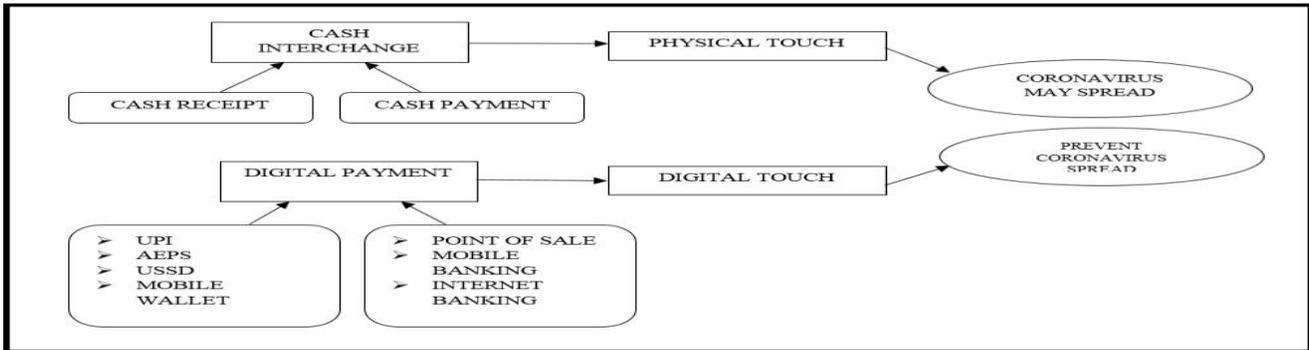
India is the world's second largest producer as well as user of currency, after China. But in 1980s, payments were characterised by having many instruments, networks, access and delivery mechanisms, that made it easier for buyers and sellers of goods & services to

exchange value. However, the concept of payments as a discrete experience is fading. The payment sector today includes the entire money transfer process, as well as the services & platforms that make it possible.

According to RBI, the digital revolution is sweeping the globe, and no other industry has seen such transformation as payment & settlement systems, resulting in plethora of digital possibilities for an average user. The Indian government has taken numerous initiatives to accelerate the use of electronic payment system. The government’s ‘Digital India’ scheme aspire to make India ‘a digitally empowered’ nation that is ‘Faceless, Paperless & Cashless’.

Digital Payments played an important role in the times of crises. In view of current situation in which the people were stucked at home due to lockdown and forced to maintain a physical distance, as there was fear of transmission of virus.

FIGURE II: Conceptual Model to prevent Coronavirus Spread



Source: Kaur & Kushwaha (2021)

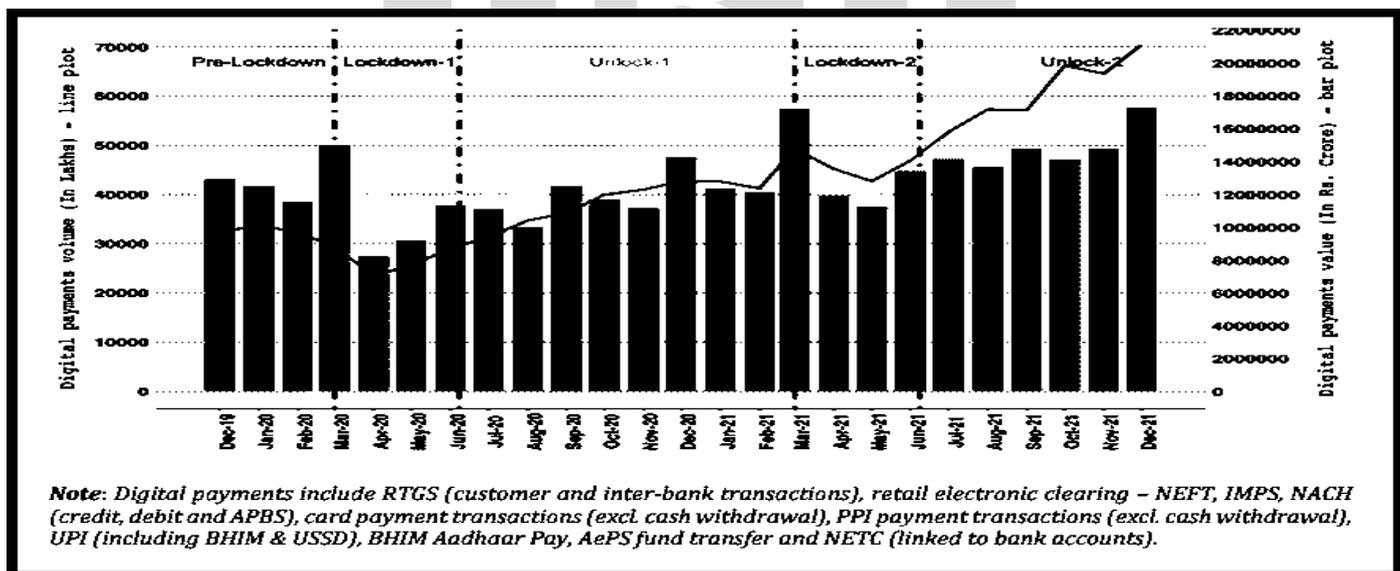
Figure II shows that while making cash transaction which requires physical touch, so there are high chances of coronavirus spread whereas using digital payment modes like UPI, AEPs, etc. which requires digital touch, so it can prevent coronavirus spread. As per healthcare professionals, using cash, coins & cards can increase the risk of virus transmission as cash are handpicked and ATMs machines are also used by different people. So, in these times of crisis, digital payment modes like UPI, mobile wallets, etc. came for rescue, which are used via mobile phones or laptops.

With fear over catching new virus infection from visiting bank branches and using currency notes, many people began to use their smartphone to make purchases & for availing smooth banking services.

Even NPCI has urged people to use digital payment methods, so that people do not step out even to go to the ATM, reduce social contact and curb the spread of COVID-19. Digital payment system has offered new opportunity to ensure business and commerce continuity. Hence, COVID-19 pandemic has result in rising demand for availing digital services by individuals, businesses & government.

FIGURE III: GROWTH OF DIGITAL PAYMENTS

Source: RBI



Note: Digital payments include RTGS (customer and inter-bank transactions), retail electronic clearing – NEFT, IMPS, NACH (credit, debit and APBS), card payment transactions (excl. cash withdrawal), PPI payment transactions (excl. cash withdrawal), UPI (including BHIM & USSD), BHIM Aadhaar Pay, AePS fund transfer and NETC (linked to bank accounts).

Figure III depicts the growth of digital payments from December, 2019 to December, 2021. Before lockdown, the digital payment value was around ₹ 12,000,000 in February, 2020 whereas just after lockdown was implemented it rose to ₹ 15,000,000 showing an appreciation of 25 percent, this was because of the fear of coronavirus spread. But in April, 2020 it has declined to ₹ 8,000,000 showing

negative growth of 46.67 percent, the reason behind this depreciation is that due to lockdown the most of the working class engaged in the unorganised & other sectors got unemployed and their earning capacity was completely hampered. But soon it has appreciated by 12.5 percent and since then digital payments has shown more or less an upward trend only, and finally in unlock-2, the digital payment value has reached around ₹ 17,000,000.

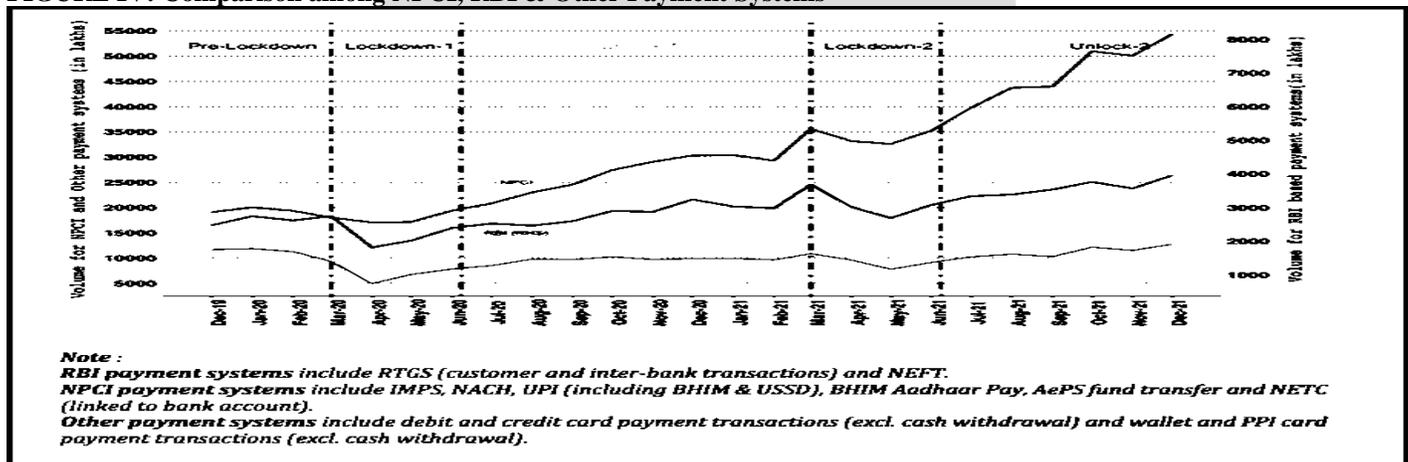
Table I shows the annual turnover of payment system from 2018-19 to 2020-21. It can be seen that paper-based instruments have shown continuous decline since 2018-19 both in terms of value as well as volume. In 2018-19 volume of paper-based instruments were 11,238 which have decreased to 6,704 in 2020-21 showing depreciation in volume by 4,534. Whereas on the other hand, digital payment modes like IMPS, NEFT, UPI, etc. have shown continuous appreciation in last 3 years. In 2018-19 volume of UPI transaction was 53,915 which gradually increased to 2,23,307 in 2020-21 reflecting an appreciation in volume by 1,69,392.

TABLE I: Payment System Indicator- Annual Turnover

Source: RBI Annual Report, 2021

Item	Volume (Lakh)			Value (₹ Crore)		
	2018-19	2019-20	2020-21	2018-19	2019-20	2020-21
1	2	3	4	5	6	7
A. Settlement Systems						
CCIL Operated Systems	36	36	28	11,65,51,038	13,41,50,192	16,19,43,141
B. Payment Systems						
1. Large Value Credit Transfers – RTGS	1,366	1,507	1,592	13,58,88,187	13,11,56,475	10,55,99,849
Retail Segment						
2. Credit Transfers	1,18,481	2,06,506	3,17,852	2,60,90,471	2,85,62,857	3,35,22,150
2.1 AePS (Fund Transfers)	11	10	11	501	469	623
2.2 APBS	14,949	16,766	14,373	86,226	99,179	1,12,747
2.3 ECS Cr	54	18	0	13,235	5,145	0
2.4 IMPS	17,529	26,792	32,783	15,90,257	23,37,541	29,41,500
2.5 NACH Cr	8,834	11,290	16,450	7,29,673	10,43,212	12,32,714
2.6 NEFT	23,189	27,445	30,928	2,27,93,608	2,29,45,580	2,51,30,910
2.7 UPI	53,915	1,26,186	2,23,307	8,76,871	21,31,730	41,03,658
3. Debit Transfers and Direct Debits	4,914	7,525	10,456	5,24,558	7,19,708	8,72,582
3.1 BHIM Aadhaar Pay	68	91	181	815	1,303	2,580
3.2 ECS Dr	9	1	0	1,260	39	0
3.3 NACH Dr	4,830	7,340	9,630	5,22,461	7,18,168	8,68,906
3.4 NETC (Linked to Bank Account)	6	93	650	20	200	913
4. Card Payments	61,789	72,384	57,841	11,96,888	14,34,814	12,93,822
4.1 Credit Cards	17,626	21,773	17,641	8,03,413	7,30,895	6,30,414
4.2 Debit Cards	44,143	50,611	40,200	5,93,475	7,03,920	6,62,667
5. Prepaid Payment Instruments	48,072	53,319	49,392	2,13,323	2,15,558	1,97,695
6. Paper-based Instruments	11,238	10,414	8,704	82,46,065	78,24,822	56,27,189
Total – Retail Payments (2+3+4+5+6)	2,42,473	3,50,147	4,42,229	3,62,71,303	3,87,57,759	4,15,12,514
Total Payments (1+2+3+4+5+6)	2,43,839	3,51,654	4,43,821	17,19,59,490	16,99,14,234	14,71,12,383
Total Digital Payments (1+2+3+4+5)	2,32,602	3,41,240	4,37,118	16,37,13,425	16,20,89,413	14,14,85,173

FIGURE IV: Comparison among NPCI, RBI & Other Payment Systems



Source: RBI

In figure IV, NPCI, RBI & other payment systems are compared together. It is found that when lockdown-1 was implemented, there was decline in all payment systems but soon after lockdown-1, unlock-1 phase came and again all payment systems have shown

tremendous growth which continued till March 2021, when lockdown-2 was implemented and again there was little downfall. But in unlock-2 phase, again all payment systems have shown positive growth which has continued till now. Further, it can also be noticed that among all payment systems, National Payments Corporation of India (NPCI) payment systems like IMPS, UPI, etc. have continuously experienced enormous growth followed by RBI payment systems and other payment systems like debit & credit card, PPI card, etc. Hence, it is identified that initially there was decline in digital payment systems because of nationwide lockdown due to COVID-19 pandemic but with the gradual relaxations in lockdowns, the digital payments system has shown rapid growth.

Moreover, RBI has designed Digital Payment Index, which is a score used for assessing the spread and adoption of digital payments all over the nation. RBI-DPI has five major parameters, each having sub-parameters and indicators. Suitable weightage is given to each parameter, which depicts their relative relevance in the digital payment framework.

TABLE II: Parameters under RBI-DPI

PARAMETERS	WEIGHT (In %)	INDICATORS
1. Payment Enablers	25	Internet users, mobile users, Aadhaar numbers, bank accounts, digital payment facilitators, and payment system members.
2. Payment Infrastructure-Demand-side Factors	10	Payment and other instruments issued, customer registrations for mobile and internet banking, and FASTags.
3. Payment Infrastructure-Supply-side Factors	15	Physical and digital payment acceptance points, and payment intermediaries.
4. Payment Performance	45	Volume and value of various payment systems, unique users in such systems, cheque transactions, cash withdrawals using cards, and cash estimates.
5. Consumer Centricity	5	Consumer awareness and education initiatives, declines, complaints, frauds, and system downtime.

Source: RBI

Table II shows all five parameters along with their weightage in RBI-DPI and various indicators of each parameter. For the calculation of RBI-DPI, March 2018 was taken as the base year considering the current significant fluctuations in the payment ecosystem like time after demonization and payment system vision, 2021. So, base RBI-DPI was taken as 100 for March, 2018. RBI-DPI score is released on a semi-annual basis with a 4-month lag.

TABLE III: Growth of RBI-DPI

PERIOD	RBI-DPI INDEX
March 2018 (Base)	100
March 2019	153.47
September 2019	173.49
March 2020	207.84
September 2020	217.74
March 2021	270.59
September 2021	304.06

Source: RBI

Table III depicts the growth of Reserve Bank of India- Digital Payment Index (RBI-DPI), it is inferred that DPI in March, 2020 was 207.84 showing a significant growth than RBI-DPI score of March, 2019 (that was 153.47). Hence, there is constant growth in RBI-DPI till the present times.

IX. FINDINGS & DISCUSSION-

Many preventive steps were suggested for coronavirus by various experts from all around the globe and adoption of digital payment system was one of them. It was found that using traditional currencies can increase the risk of virus transmission, as it requires physical touch. Further, it was also found that using cards can also spread coronavirus, as ATM machines are used by various people. Due to these reasons, various experts and governmental institutions have urged people to use digital payment methods via mobile phones or tablets, which require digital touch and also reduces risk of virus transmission.

During and post COVID-19 crises, digital payments in India have experienced a tremendous growth. It was found that due to coronavirus, many businesses and small merchants were shattered completely. Many people across the globe have lost their source of income. All these things have made the economic situation very unpredictable. However, digital wallets & digital currencies, contactless payment concepts emerged as a substitute to traditional currencies.

But it must be ascertained properly whether the consumers still continue using online payment methods at the same pace even after the coronavirus. So, for developing nation like India where still large section of the society is poor, illiterate, unskilled and have lack of knowledge on digital payments. Additionally, there are many other reasons like cyber security & privacy concerns, inadequate digital infrastructure, lack of awareness about digital payment methods, etc. behind non -usage of cashless payment system by rural & poor masses. Therefore, in order to expand digital payment adoption among common people, the main goal is to ensure users digital security regarding their private information and online transactions. Further, there is a need to provide proper digital payment infrastructure, education and awareness programs to users, for expanding digital payment usage to greater extent, as it is cheaper and convenient payment method.

X. CONCLUSION

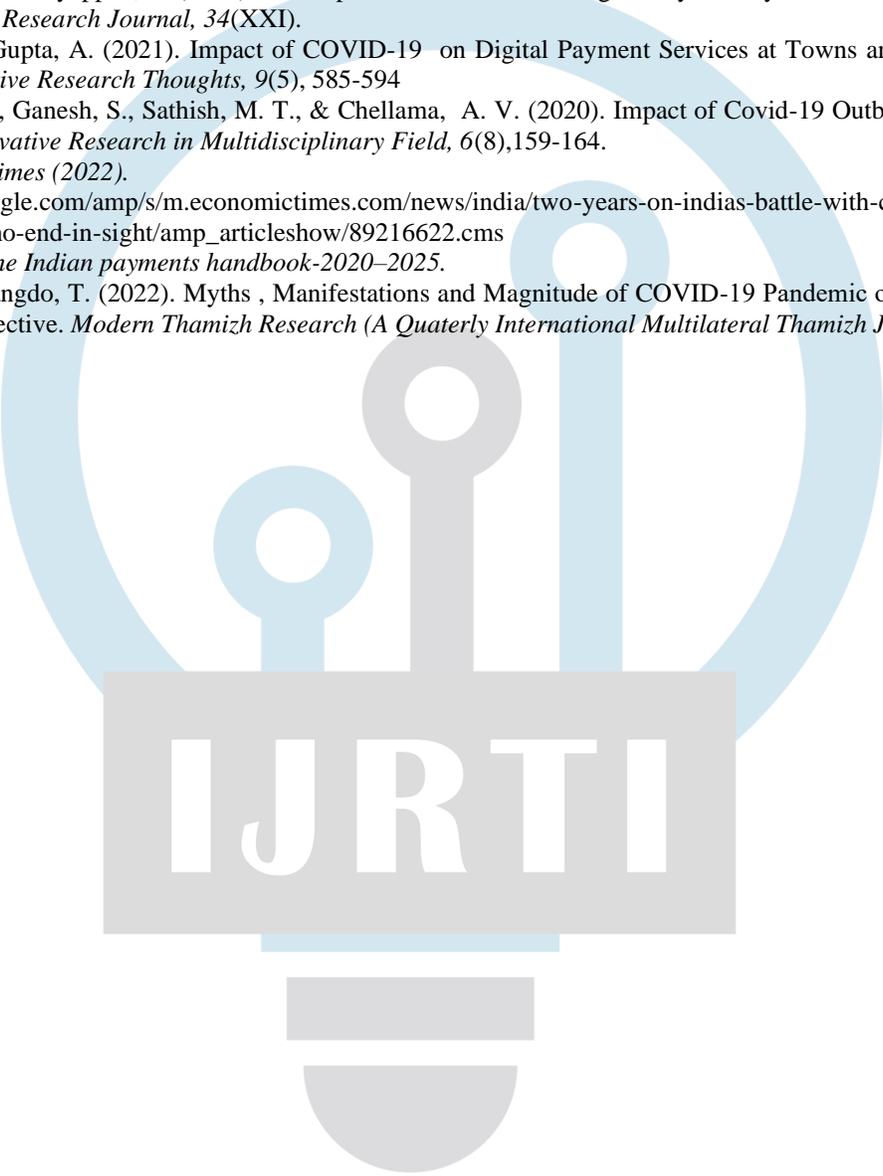
With the advancement in technology, the financial sector of the country is also changing rapidly in the recent era. Because of the widespread of COVID-19, the entire human race is going through a critical period. Since, the COVID-19 outbreak, the digital payment system has increased tremendously in India. The COVID-19 pandemic has finally done as what demonetization in India failed to achieve in four years ago by utilising digital payment methods for everything from utility bills to buying vegetables. Digital payment is one way that has potential to significantly reduce the consequences of this contagious disease. Human survival is dependent on necessities like food, shelter, etc. that can be purchased with money. The best way to protect one from coronavirus is to use online payment methods. As it will enable customers to pay via mobile phones, without using cash. With this COVID-19's impact will be mitigated to some extent by adoption of digital payment methods. However, customers' desire to undertake digital payment modes, as well as their future plans, is influenced by multiple factors like availability of proper digital payment infrastructure, digital financial literacy and proper digital security & privacy. So, for expanding digital payment usage it is suggested to provide proper digital infrastructure, digital financial education & awareness along with ensuring proper digital security & privacy.

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