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From Cash to Contactless: The Evolution of Digital Payments Amidst the Pandemic

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ABSTRACT: *The aim of this paper is to examine various modes of digital payment transactions before and after Covid-19 and the effect of Covid-19 on digital wallets. Digital India program launched in 2015 with the aim to make the nation digitally empowered society. Covid-19 pandemic taught new lessons to the people of world. The user base of digital payments in India has increased tremendously during the pandemic. The study is empirical and descriptive in nature. The sampling selected on simple random basis. The study focused on five digital payment apps such as PhonePe, Google Pay, Banking apps, Amazon Pay, and Paytm. All the smartphone users who are operating digital wallets are the universe of the sample population. The sampling unit confined to the Chittoor district of Andhra Pradesh. Digital wallet app developers must keep in mind that the apps should provide safety and security for payments as well as apps must user-friendly, flexible, and easy to operate. There is an improvement in digital transactions on account of Covid-19 outbreak. BHIM-UPI positioned as the most used mode of digital payments. PhonePe takes the lead in digital wallet usage followed by Google Pay, Banking apps, Paytm, and Amazon Pay. The usage of digital payments is high among unmarried female undergraduate students at Rs. 1-2 lakhs income segment. Digital payment app providing companies need to focus more on educating and encouraging people above the age of forty-six as if they are not tech-savvy like present generation. Digital payment app making companies must develop user-friendly apps which are flexible and easy to operate. They must ensure hassle free transactions besides safety and security. More concentration on promotional schemes like cashback, offers, coupons, are essential to enhance the customer base. There is a huge untapped potentiality of digital payments in India. Government and private companies must formulate innovative practices to tap this potential. This would certainly meet the objective of Digital India, i.e., to make India a paperless society. The present study confined to the Chittoor district of Andhra Pradesh. The same research extended to the other areas of the state as well as other states of the country. Only few digital wallets selected for the study whereas there are other digital payment apps on which research can done.*

KEY WORD*: Covid-19, demonetization, digital transactions, mobile wallet, online payment*

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I. INTRODUCTION AND LITERATURE REVIEW

Digital payment is a payment transaction done through online mode without any involvement of hard cash. Government of India has initiated Digital India concept in 2015 with the aim to improve digital literacy and connect all gram panchayats with highspeed internet networks. There are three components involved in this initiative. They are digital infrastructure creation, digital literacy, and digital delivery of services. The vision of this initiative is to convert India into cashless, paperless, and faceless. Several types of digital payments are prompted to make India a cashless society viz., Banking cards like debit, credit, and prepaid cards, AEPS, USSD, UPI, mobile wallets, internet banking, PoS, mobile banking, and micro-ATMs.

Banking cards are secure, flexible, user-friendly, and convenient for payments. Aadhaar Enabled Payment System facilitates basic payment operations through a business correspondent for the digital interoperable financial transactions at PoS or micro-ATMs with an Aadhaar authentication. Unstructured Supplementary Service Data do not need any internet facility for mobile banking transactions. Every person taking banking services can use *99# provision for transferring funds from one bank account to another bank

account, balance inquiry, and mini statement. Unified Payments Interface, the brainchild of National Corporation of India, allows transfer of funds between two bank accounts instantly through mobile operations. One can connect to multiple bank accounts in a single mobile application with an UPI platform. The cash will be in digital format in case of mobile wallet. One can feed money to a digital wallet for future payments through smartphones instead of carrying plastic cards and cash. Banks offer mobile wallet apps such as YONO by SBI, ICICI Pockets, Axis Bank Lime, so on. Furthermore, private companies are offering e-wallet facilities like PhonePe, Google Pay, Paytm, Citrus Pay. Internet banking is a virtual banking that helps customers of banks or other business establishments to operate various economic operations to make an online payment through the bank's website. The PoS is a digital place where the sales transactions made. It exhibits at two levels. One is at macrolevel in a market/city/mall and the other is at micro level in checkout counters. Mobile banking is a software, usually called an app, used by customers for various financial transactions done through tablets or smartphones. As the information from the website digipay.gov.in, the Point-of-Sale deployment up to 31st January 2022 in terms of physical pay PoS or mobile pay PoS is 52,06,559. Similarly, the deployment in BHIM Aadhaar pay PoS is 12,47,335. Business correspondents are using micro-ATMs for instant payment transactions. A micro-ATM is a low-cost device connected to the banks across the nation.

The usage of digital payments has skyrocketed from 5 percent to 30 percent after announcement of demonetization on 8th November 2016. Later, the prolonged Covid-19 pandemic has set a smooth passage of growth in digital payments in India. As per the data presented on the website digipay.gov.in, the total digital payments transactions are recorded at 8,705 crores during the fiscal year 2021-22. According to a published report of Statista research department, four percent of the people are using more cash payments and less digital payments, nine percent using only digital payments and no cash, 33 percent using more online payments and less cash, 53 percent using the same method of payments as before Covid-19, and one percent of the people are not clear about the usage of payment.

The outbreak of Covid-19 taught new lessons to the people of world. Digital payment is one among them. The concept of digital payment became prominent at the helm of Covid-19. Research studies conducted to comprehend developments in digital payments after demonetization and during Covid-19 in India. One among them is a study on the mode of digital payment before and during the lockdown and the effect of Covid-19 on digital payment system in Chennai (Sridevi and Mariyappan, 2021). They found that the people are preferring digital payments owing to inconvenience in the lockdown and not safe to visit the bank during Covid time. Other reasons such as fear of infection, rush in the bank, and distance also made them to run behind digital payments. They have suggested that the roadblocks in digital payments such as technological challenges, cybercrimes, lack of knowledge in e-payments. must turned into opportunities for future development of digital payments. Further, in their study on consumer perception towards the usage of e-payments and the importance of digital payments in Covid-19, Rashmi and Kapdi (2021) revealed that the impact of the Covid-19 outbreak on economy and society is temporary on purchase patterns. They have stated that 60 percent of the people depend upon digital payments during Covid-19 pandemic. Despite a small size of nine percent population who are unsatisfied majority of 58 percent population satisfied with digital wallet services. In another research done by Rashi and Abhilash (2021) said that the usage of digital payments has tremendously increased in towns and villages among businesspeople and households during the pandemic. They have suggested that instead of physical exchange of money people can adopt emerging concept of digital payment system for exchanging money between the persons.

Manoharan et al. (2021) have conducted research on behaviour intentions of the consumers regarding the use of digital wallets and described that the usage of physical currency reduced on account of demonetization while the exchange of currency dropped down during Covid-19 due to the fear of transmission of the virus. Consumers are accustomed to use digital payments in place of cash. They have concluded that the consumers felt safe and convenient about digital payments during the pandemic. In their article on impact of Covid-19 and other related issues in digital transactions Sandeep and Nidhi (2021) specified that the respondents faced certain problems like network issues, low financial inclusion, internet issues, and vendor preference for cash while operating digital transactions during Covid times. Nirmala and Parvati (2021) have done a comparative study on usage of digital payments in 2020 and previous years and found that the number of transactions increased on month-by-month basis from 436.43 in January 2020 to 4,764.28 in December 2020. The top three states which registered highest digital transactions on per capita basis are Chattisgarh, Andhra Pradesh, and Haryana. Further, the usage of BHIM–UPI transactions increased from 7,817 (April 2019) to 12,468 (March 2020) and from 9,995 (April 2020) to 22,341 (December 2020) during 2019-20 and 2020-21 respectively. Therefore, it shows apparently that the usage of digital payments improved significantly during Covid-19.

Jasmin and Ashok (2018) have conducted research on consumer perception and adoption of e-wallets in Ahmedabad city. They have stated that one of the aims of demonetization is to make India a cashless society. In this process Rs. 500 and Rs. 1000 currency notes were cancelled on 8th November 2016. The study

concluded that about 51 percent of the people are using e-wallets for the purpose of mobile recharge and bills payment after demonetization. The respondents got awareness about digital transactions only after demonetization. In a later study, Sahayaselvi (2017) asserted that people forced by the government to do transactions digitally during demonetization period. Cashless transaction is not only safe but also consumes less time. Therefore, government must conduct continuous awareness programs among the people about the advantages of digital payments through media coverage like radio, television, newspaper, magazines.

The acceptance level of Paytm in India and the role Paytm in making digital India studied by Nazim and Rajeswari (2017). They have concluded that Paytm is most used UPI payment mode of digital transactions. The services offered by Paytm are flexible in supporting the cashless economy. Paytm plays a prominent role in making India digital. Furthermore, Shailendra Singh (2017) has conducted a study on usage, factors influencing and refraining mobile wallets and the impact of various demographic variables among university students in Lucknow city and stated that one must install an application called digital wallet on smartphone to make online payment transactions. The study concluded that Paytm, Mobikwik, ICICI Pockets, Oxygen, and Free Charge are leading mobile wallet players and most respondents prefer to use wallets for bills payment and money transfer.

After going through an extensive literature review it is obvious that very few research studies are available on the topic digital payments before and during Covid-19. These studies done at Northern India and Tamil Nadu. There is no research conducted in Andhra Pradesh on the topic chosen. Therefore, a gap identified, and a modest attempt made in this paper to reach out genuine results over the emerging concept of digital payments and their developments in the light of demonetization and Covid-19 outbreak.

1.2 Research Objectives

1. to examine various modes of digital payment transactions in India;
2. to analyse digital payment transactions before and during Covid-19; and
3. to assess the impact of Covid-19 on digital wallet usage in Chittoor district.

1.3 Research Methodology and Data Analysis

The study is empirical and descriptive in nature. The sampling selected upon simple random basis. The study focused on five digital payment apps such as PhonePe, Google Pay, Banking apps, Amazon Pay, and Paytm. All the smartphone users who are operating digital wallets are the universe of the sample population. The sampling unit confined to the Chittoor district of Andhra Pradesh. The primary data collected from one hundred respondents by administering a structured questionnaire through personal interview method. The reliability of the scale evaluated by using Cronbach Alpha. The alpha found at 0.8756 which ensures good reliability of the scale. The data analysis done with SPSS. Statistical tools such as one-way ANOVA and correlation used in the study. Appropriate government websites approached for collecting secondary data.

BHIM transactions:

H0: There is no relationship between the values of digital transactions before and after Covid-19.

H1: There is relationship between the values of digital transactions before and after Covid-19.

The month-on-month basis volume and percentage change in BHIM digital payment transactions before and after Covid-19 pandemic presented in Table 1.

Table 1: BHIM transactions before and after Covid-19 pandemic

BEFORE COVID			AFTER COVID		
DATE	TRANSACTION VALUE (IN LAKHS)	CHANGE %	DATE	TRANSACTION VALUE (IN LAKHS)	CHANGE %
January 2020	13049	-0.26	December 2021	45662	10.51
December 2019	13083	7.35	November 2021	41864	-0.76
November 2019	12187	6.13	October 2021	42185	15.44
October 2019	11483	20.25	September 2021	36542	2.78
September 2019	9549	3.99	August 2021	35554	9.47
August 2019	9183	11.69	July 2021	32477	15.68
July 2019	8222	8.99	June 2021	28074	10.55
June 2019	7544	2.86	May 2021	25395	-3.84
May 2019	7334	-6.18	April 2021	26410	-3.12
April 2019	7817	-2.21	March 2021	27316	19.13
March 2019	7994	18.59	February 2021	22929	-0.42
February 2019	6741	0.22	January 2021	23026	3.07
January 2019	6726	8.48	December 2020	22341	1.09
December 2018	6200	18.14	November 2020	22101	6.69
November 2018	5248	8.83	October 2020	20715	15.08

October 2018	4822	18.86	September 2020	18001	11.21
September 2018	4057	30.07	August 2020	16187	8.11
August 2018	3119	32.44	July 2020	14973	12.01
July 2018	2355	-4.35	June 2020	13368	8.30
June 2018	2462	30.06	May 2020	12344	23.50
May 2018	1893	-0.32	April 2020	9995	-19.83
April 2018	1899	6.75	March 2020	12468	-6.32
March 2018	1779	3.91	February 2020	13256	1.59
Mean	6728.087	9.7517		24486.22	6.0835
Standard Deviation	3615.39	11.11812		10450.86	9.57912
Correlation Coefficient	0.979				

Source: http://digipay.gov.in/dashboard/default.aspx#

Despite little variations in the percentage change on month-on-month basis data in Table 1 the value of digital transactions increased from 177.9 crores in March 2018 to 1304.9 crores in January 2020, a seven-fold improvement achieved before Covid-19. Whereas the scenario after Covid-19 is different. The total value digital transactions have reached to 4566.2 crores in December 2021 from 1325.6 crores in February 2020, three-fold development achieved after Covid-19. The correlation calculated based on the transaction values before Covid-19 and after Covid-19. The coefficient 0.979 depicts that there is a positive and average correlation between the variables because they are moving in the same direction but comparatively low. Hence, the null hypothesis H0 rejected. Thus, there is a relation between the values of digital payment transactions before and after Covid-19. It means there is an improvement in digital transactions on account of Covid-19 outbreak.

Modes of digital transaction: The digital payment modes operated by three different institutions in India. They are Reserve Bank of India, National Payments Corporation of India, and Banks. The payment modes offered by RBI are NEFT, RTGS, PPI, Debit card, and Credit Card. The payment modes of NPCI are BHIM Aadhaar, BHIM-UPI, USSD, IMPS, AEPS, and NACH. Mobile Banking, Internet Banking, and Others are Banks payment modes. The volume of transactions across these three modes shown in Table 2.

Table 2: Payment mode wise volume of digital transactions

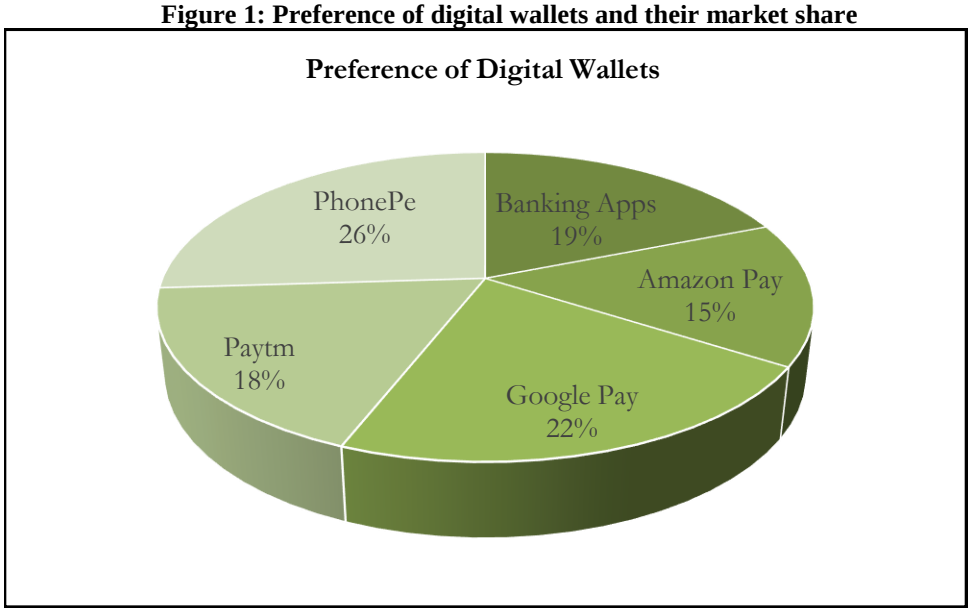
FINANCIAL YEAR	PAYMENT MODE (IN CRORES)															
	AEPS	BHIM AADHAAR	BHIM UPI	CLOSED LOOP WALLET	CREDIT CARD	DEBIT CARD	IMPS	INTERNET BANKING	MOBILE BANKING	NACH	NEFT	NETC	PPI	RTGS	USSD	OTHERS
2017-18	98.25	0.20	91.30	115.09	140.51	334.34	101.29	149.35	66.21	237.49	194.64	12.68	345.91	12.44	0.22	171.04
2018-19	169.41	0.68	535.19	137.75	176.20	441.78	175.29	151.75	112.82	286.14	231.89	25.40	460.43	13.66	0.15	215.82
2019-20	88.61	0.91	1251.76	149.85	217.73	512.39	257.91	189.42	126.39	340.10	274.45	58.26	533.18	15.07	0.10	555.64
2020-21	132.81	1.61	2232.96	22.63	176.47	411.49	327.83	203.93	99.41	362.62	309.28	132.73	493.90	15.92	0.10	630.39
2021-22	107.59	2.27	4560.78	0.55	226.06	410.35	458.76	379.62	136.27	368.67	395.63	244.13	668.43	20.36	0.12	725.14

Source: https://bi.etaal.nic.in/Reports/powerbi/ModeWiseAnalysis(WL)?rs:Embed=true

PPI, debit card, NACH, and NEFT are popular payment modes during 2017-18. BHIM-UPI took the lead in 2018-19 followed by PPI, debit card, NACH, NEFT. The same leader board continued in 2019-20, and 2020-21. A notable performance of IMPS reported in 2020-21 and occupied third position in 2021-22. BHIM-UPI positioned as the most used mode of digital payments across the years. The usage of BHIM Aadhaar, RTGS, and USSD is scanty.

Preference of digital wallets: The preference of digital wallets and their market share in India demonstrated in Figure 1.

Figure 1: Preference of digital wallets and their market share



As far as preference of digital wallets and their market share is concerned, PhonePe takes the lead with 26 percent followed by Google Pay, Banking apps, Paytm, and Amazon Pay.

Impact of Covid-19 on the usage of digital wallets:

H0: There is no significant impact of Covid-19 on the usage of e-wallets

H1: There is significant impact of Covid-19 on the usage of e-wallets

The Covid-19 impact on digital wallet usage studied with select variables presented in Table 3.

Table 3: The effect of Covid-19 on digital wallet usage

ANOVA						
		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG./P-VALUE
Usage of digital wallets due to social distancing	Between Groups	6.631	4	1.658	1.896	.118
	Within Groups	83.079	95	.875		
	Total	89.710	99			
Digital Payments helps to reduce transmission of the virus	Between Groups	2.212	4	.553	2.598	.041
	Within Groups	20.228	95	.213		
	Total	22.440	99			
Preferring online POS than offline POS in Covid-19	Between Groups	10.243	4	2.561	3.072	.020
	Within Groups	79.197	95	.834		
	Total	89.440	99			
Transfer money through digital payment apps rather than going to ATMs	Between Groups	17.056	4	4.264	3.236	.016
	Within Groups	125.184	95	1.318		
	Total	142.240	99			
Usage of digital payment apps for online purchases	Between Groups	7.153	4	1.788	1.335	.263
	Within Groups	127.287	95	1.340		
	Total	134.440	99			
No transaction issues were faced in Covid-19	Between Groups	28.066	4	7.017	4.327	.003
	Within Groups	154.044	95	1.622		
	Total	182.110	99			
Paying various bills through digital wallets in Covid-19	Between Groups	11.776	4	2.944	3.779	.007
	Within Groups	74.014	95	.779		
	Total	85.790	99			
I prefer digital wallets rather than plastic cards in Covid-19	Between Groups	11.540	4	2.885	3.142	.018
	Within Groups	87.220	95	.918		
	Total	98.760	99			
I prefer digital wallet for every payment in Covid-19	Between Groups	1.282	4	.321	.854	.495
	Within Groups	35.678	95	.376		
	Total	36.960	99			

Source: Primary data

The variables taken for the study of Covid-19 effect on digital wallet usage are social distancing, transmission of virus, preference of online POS, transfer of money, digital payment apps safer than ATMs, online purchase, transactional issues, various bill payments, and preferring digital wallets over debit/credit cards, and overall payments in Covid-19. The p-value is less than the standard alpha level 0.05 across all variables except three. Hence, there is impact of Covid-19 on the operation of digital wallets. However, of p value is greater than the standard alpha 0.05 for the variables of usage of digital wallets due to social distancing, usage of digital payment apps for online purchases, and preference of digital wallet for every payment in Covid-19. This shows there is no significant impact of Covid-19 on these three variables. The Covid-19 impacted certain elements in the society and few elements not affected.

Demographic profile: The demographic segmentation of the sample population on selected variables such as age, gender, income, marital status, occupation, and educational status and their cumulative frequency given in Table 4.

Table 4: Demographic segmentation of the respondents

DEMOGRAPHIC ELEMENT	FREQUENCY	CUMULATIVE FREQUENCY
Age		
15-25	22	22
26-35	31	53
36-45	27	80
Above 45	20	100
Gender		
Male	43	43
Female	57	100
Income		
0 – Rs.1 Lakh	12	12
Rs.1–2 Lakhs	30	42
Rs.2–3 Lakhs	29	71
Rs.3–4 Lakhs	23	94
Above Rs. 4 Lakhs	6	100
Marital Status		
Unmarried	55	55
Married	45	100
Occupation		
Student	48	48
Employee	14	62
Professional	13	75
Business	11	86
Home Maker	14	100
Educational Qualification		
SSC	14	14
Intermediate	12	26
Undergraduate	34	60
Postgraduate	31	91
Doctorate	9	100

Source: Primary data

The demographic classification is a classic example to understand the user base of digital payments. It is evident from the study that the most used population of digital payments in Chittoor district of Andhra Pradesh are younger generation between the age group of 26-35 years, unmarried, female, students, in undergraduate segment, at Rs. 1-2 lakhs income level.

1.4 Findings and Interpretation

It is quite evident that the value of digital payments transactions has increased enormously after pandemic as against before Covid-19. The relation between before and after Covid-19 in terms of value of transactions is positive and average. It means there is an improvement in digital transactions on account of Covid-19 outbreak. BHIM-UPI positioned as the most used mode of digital payments across the years from 2017 to 2021. As far as preference of digital wallets and their market share is concerned, PhonePe takes the lead with 26 percent followed by Google Pay, Banking apps, Paytm, and Amazon Pay. The usage of digital payments is high among unmarried, female, undergraduate, students, between the age of 26-35 years, and having Rs. 1-2 lakhs income. The practice of digital payments usage has increased drastically during Covid-19 owing to factors like social distancing, transmission of the virus. The respondents preferred to use digital wallets for purchases through digital apps instead of debit cards or credit cards during pandemic. Respondents are using digital apps for online purchases before and after the Covid-19 pandemic. The average respondents not only using digital

wallets for payment transactions but also going for physical payments in incidents because of reasons like network issues,

The benchmarks of NPCI operated BHIM-UPI must consider by RBI and other banks to increase their customer base in the digital payment mode. Despite huge devastation Covid-19 has setup a strong positive platform for digital payments and that tempo will continue with diverse ways and means of inventions and innovations in digital transactions. Digital payment app providing companies need to focus more on educating and encouraging people above the age of forty-six as if they are not tech-savvy like present generation. The success stories of PhonePe and Google Pay are benchmarks for rest of the digital wallets which would act in a dynamic environment to sustain in competition. They must develop user-friendly apps which are flexible and easy to operate. They should set up a platform to demonstrate advantages and disseminate information among the users. They must ensure hassle free transactions besides safety and security. More concentration on promotional schemes like cashback, offers, coupons. essential to enhance the customer base.

The concept of digital payments is an emerging topic in India. There is a steep increase in digital payments since the inception of Digital India program in 2015. The cash crunch during demonetization led improvement e-wallet transactions. Later, the prolonged Covid-19 pandemic set a sturdy platform for digital payments. RBI, NCPI, and Banks offer a variety of payment modes in India. BHIM-UPI is leading online payment mode. The average users feel convenient to use digital wallets for payment transactions. PhonePe and Google Pay are important wallets for users. However, alternative apps are available to a typical smartphone user. Digital wallet app developers must keep in mind that the apps should provide safety and security for payments as well as apps must user-friendly, flexible, and easy to operate. Besides present tech-savvy generation, more focus needed on the age group of above 45 years and provide cashbacks, offers, coupons, and other promotional schemes to improve the digital payment user base. On an average 23.84 crores of digital transactions recorded per day during the fiscal year 2021-22. There is a huge untapped potentiality of digital payments in India. Government and private companies must formulate innovative practices to tap this potential. This would certainly meet the objective of Digital India.

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