Management Journal for Advanced Research
ISSN (Online): 2583-1747
Volume-3 Issue-1 || February 2023 || PP. 21-25 DOI: 10.54741/mjar.3.1.4

The E-Payment Trajectory during the Pandemic – The Case of India

Subhajit Bhadra[1], Saba Naaz[2] and Dr. Raktim Ghosh[3]
[1]*State Aided College Teacher, Department of Commerce, Maharaja Srischandra College, 20, Ramkanto Bose Street, Kolkata, West Bengal, India*
[2]*Assistant Professor, Maharaja Srischandra College, 20, Ramkanto Bose Street, Kolkata, West Bengal, India*
[3]*State Aided College Teacher, Department of Commerce, Maharaja Srischandra College, 20, Ramkanto Bose Street, Kolkata, West Bengal, India*

[3]*Corresponding Author: raktimghosh19@gmail.com*

Received: 19-01-2023	Revised: 03-02-2023	Accepted: 23-02-2023

ABSTRACT
This study empirically investigates how the different e-payment methods performed during the pandemic as an alternative medium to the traditional mode of payment. E-payment methods namely Real Time Gross Settlement (RTGS), National Electronic Fund Transfer (NEFT), Aadhaar Enabled Payment System (AEPS), Unified Payments Interface (UPI), and Immediate Payment Service (IMPS) are considered from June 1, 2020, to November 30, 2021, when the global pandemic was at its peak. Secondary daily data are considered in this study collected from the RBI database which was converted into corresponding log natural returns. GARCH (1,1) model was applied as the tool for analysis. It was noted that RTGS, AEPS, and UPI undergo positive volatility whereas NEFT and IMPS undergo negative volatility which enables us to conclude that RTGS, AEPS, and UPI are much more acceptable mediums of payments during the pandemic than the others.

Keywords: *e-payment, pandemic, garch, india*

I. INTRODUCTION

Digitization within the latest years has facilitated the payment scenario in India to develop in leaps and bounds. E-payment is clothed to be the best tool for the transaction following the outbreak of the worldwide pandemic, COVID-19. During the lockdown days and even within the scenario of the latest normal, it's playing an interesting role considering the security and security anxiety of COVID-19 though the digital sort of payment is yet to be accepted by large sections of society. Consistent with the report by PWC, almost 2.2 billion UPI transactions were evidenced within the months of November and December 2020. Electronic payment (e-payment) is additionally referred to as digital payment where physical cash remains absent **(Vinitha and Vasantha, 2017)** that has appeared and is extensively used together with payment solutions for people to implement various transactions. The various e-payment method includes Real Time Gross Settlement (RTGS), National Electronic Funds Transfer (NEFT), Aadhar Enabled Payment System (AEPS), Unified Payments Interface (UPI), and cash Service (IMPS). E-payment methods like RTGS and NEFT are operated by the Federal Reserve Bank of India (RBI) and AEPS, UPI, and IMPS are operated by the National Payments Corporation of India (NPCI). We glance forward to inspecting the performance of various e-payment methods during the presence of a worldwide pandemic within the Indian context in terms of volatility.

II. CONCEPTUAL FRAMEWORK

Real Time Gross Settlement (RTGS) is a fund transfer procedure that makes money instantly available to the receiver within half an hour of the request being made. RTGS is a method of transferring funds consisting of money and securities with a minimum value of Rs.2 lakhs and no maximum value by the remitter/payer to the beneficiary/payee as soon as the request is received. Because it is a real-time basis transfer, the beneficiary receives it within 30 minutes of requesting it. It is the continuous process of settling payments on an individual's order without netting debits and credits across a central bank's books. There are no such inward transaction fees on the transfer value. NEFT is an acronym for national electronic funds transfer, which was developed by the Reserve Bank of India in 2019. At any point in time, a minimum value of Rs. 1 to Rs. 50,000 per transaction, subject to a maximum of Rs.25 lakhs per day, can be transferred to expedite funds transfers by customers from one bank to another in India. The request is routed to the queue and cleared once every hour. There are no inward transaction fees for the beneficiaries, but outward transaction fees range from Rs. 2.5 to Rs. 25 depending on the amount of transfer. UPI refers to a unified payments interface system that enables multiple bank accounts into a single mobile application of any participating bank on and from August 25, 2016, that merges all banking features, seamless fund routing, and so on under one roof. Following payment, the initiating customer's request is pushing

funds to the beneficiary after including the mobile number, MMID, account number, IFSC Code, and virtual id. In contrast, when collecting transaction value, the customer pulls funds request and after it is scheduled, it is finally paid according to requirement and convenience. IMPS stands for immediate payment service, which is a real-time payment service that is always available for instant money transfers through banks and RBI-authorized Prepaid Payment Instrument Issuers (PPI) across India, with a maximum transaction limit of Rs.5 lakhs per transaction after mobile number registered for transactions through the mobile channel but not through the internet, ATM, and bank branch channels. AEPS refers to Aadhar enabled payment system led by banks that permits online financial transactions of Rs.10000 per transaction for the purpose of sale or micro ATM through the business correspondent or Bank Mitra of any of the banks having Aadhar authentication after providing KYC to the bank.

Cash transaction has been preferred for an extended period of time as a medium of transaction for settlement of small transaction value. During that point, period banking penetration was very low but after the worldwide pandemic, significant changes in customers' attitude towards cash transaction has been experienced globally for hygienic and convenience reasons. a number of the opposite reasons for choosing digital payment during the pandemic time are saving of cost, time, and lower risk of the web gateway, contactless transaction, and tracing of the transaction in the future. There are different modes of digital payment systems supported by RBI, the Indian Bank Association, and NPCI like RTGS, NEFT, IMPS, UPI, BHIM, AEPS, Bharat Billpay, NFS, NACH, CTS, IMPS to facilitate safe and guarded digital payments.

III. PAST STUDIES

Acopiado et al. (2022) conducted an online survey of 433 samples, all of which included participants in supervisory positions or higher, to better understand the variables impacting the adoption of digital payment in Philippine businesses. The analysis shows that businesses with strong preceding pandemic growth have taken use of the digital payment system more than businesses with dormant growth. In addition, companies that are modest in size, poor in technical infrastructure, experiencing slow growth, and being sole proprietorial, are the areas that require attention if a digital payment system is to be established with strong cyber security. Likewise, **Lakhwani, R. (2022)** based on secondary data gathered from various sources, discuss the role that digital payment systems played during the COVID-19 pandemic. The results of their study show that artificial intelligence has proven to be a lifesaver during times of crisis by influencing the way that banking and electronic systems are provided with services. The study also shows factors like weak financial infrastructure, poor network access inadequate technologies, and lack of financial education, etc. Are making the adoption of the digital payment system difficult. This is in addition to the rapid development and expansion of digital platforms and payments, which have helped to improve financial inclusion by providing rapidity, safety accountability, and cost-effectiveness. Similarly, **Srouji and Torre (2022)** present the digital payment and cashless agenda before and after the COVID-19 pandemic, concentrating on how the shifting payments landscape has influenced the priorities of financial intermediaries regarding the future design of payment systems internationally. This study uses a database of 48 nations from the Worldwide Payment Report (GPR) for the years 2020 to 2022 to examine global payment trends. It emphasizes that the cashless economy is about more than just transaction costs and payment innovation. While the pandemic showed the advantages of constructing a competitive, integrated, and advanced digital payments ecosystem, it also brought more fragmentation than convergence between payment systems in various parts of the world to the fore. On the other hand, **Ahmad et al. (2021)** studied the impact of the COVID-19 outbreak on the different modes of payment before and during the lockdown. They conducted a primary study in Malaysia with 400 samples that portrayed a significant reduction in the forms of payments like cash and cheque and a significant increase in digital payment platforms. **Isa et al. (2021)** empirically studied the acceptance of E-wallets among residents from Penang during the COVID-19 pandemic. The study applies the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) theory. It was found that apparent usefulness, the apparent ease of use, and security factors have a remarkable association with the adoption of e-wallets. In the context of Thailand, **Sagarik, D. (2021)** studied the future of Thailand's national e-payment system by applying a strength, weakness, opportunity, and threat (SWOT) analysis. A significant number of literature were surveyed that exhibit negligible studies in the Indian context during the global pandemic and even before it. However, **Saroy et al. (2021)** studied the possibility of a change to digital is most strongly influenced by the first two factors: digital literacy and awareness. To achieve the vision of Digital India, sustained investment is required in higher education, financial literacy, and digital hygiene. The future of digitalization may lie in advertisements, demonstrations, word-of-mouth promotion, and inclusion into conventional financial literacy programs. The widespread use of mobile devices does not preclude the growth of the banking industry. As of right present, the penetration of digital payments in India seems to be complemented by banks and banking professionals. Those that are tech-savvy and exude confidence could also fill this position. It is still up to these new, potentially vulnerable users to decide if they think digital payments are valuable enough to permanently alter their payment routines. Additional problems include overspending, fraud, inadequate merchant acceptance, etc., which still need to be addressed. Additionally, **Chugh et al. (2020)** studied the advent of authorities' rules for the growth of digital bills or E-Payments structures in India, "Digital India" and "Skill India", India out of each four, 3 are without get admission to virtual bills or E-Payments. The penetration stage of credit score playing cards and debit playing cards are very much less compared with overseas. Both number one and secondary

supply of statistics series are being used, via way of means of protecting the region wherein population length changed into of now no longer greater than 3000 people and random sampling is performed from people who are having their financial institution account and take a pattern length of a hundred and sixty people, at the side of the extent of accuracy is defined via way of means of making use of correlation and Z-test. Furthermore, **Panwar et al. (2020)** in their study highlight how the COVID-19 pandemic has affected the digital payment system during the lockdown and the problems faced by the people opting for the same. The study briefly explains the impact, on different sectors in India (based on the survey report of PWC) and, on the digital payment mode that has gained huge popularity in order to maintain social distancing. The pandemic has accelerated India's digitalization but barriers including lack of awareness, inadequate infrastructure, and the cost, keep the country's traditional payment system in place to some extent. **Toh et al. (2020)** studied the obstacles confronted by consumers in adopting online payment modes and the initiatives taken by the legislative and industries for the same. It highlights constraints like monetary exclusion, digital exclusion, and the absence of digital pay test machines in small and medium enterprises. Digital transaction via online or different dependable cell app has reaped a great deal of reputation throughout COVID-19 to keep social distancing. In April, PayPal's account witnessed a 135 per cent boom which is an amplify of 7.4 million with the aid of launching a speedy response (QR) code app for easy cellular payment. It states that the initiative taken has no longer totally addressed the challenges in the way of digitalization so it proposes the adoption of real-time payment infrastructure in the larger possible way. **Zokaee et al. (2012)** in this study, the Iranian e-fee frameworks are inspected as an unusual case. The factor is to study and check the modern-day e-payment frameworks and rank them primarily based totally on the professional's conclusions. Considering the character of the assembled data, the explanatory development handle (AHP), as a decision-making strategy, is applied to evaluate the information. The findings of this inquiry approximately are aiming to be precious for each scholastic analyst and group arranging to embody or to make strides in a digital instalment system.

IV. OBJECTIVES OF THE STUDY

On the basis of the existing research gap, the following objectives were finalized:

- To study the performance of select e-payment methods during the global pandemic in terms of volatility
- To study the variance in the volatility of the select e-payment methods
- To study the different e-payment methods

V. RATIONALE OF THE STUDY

Due to the advent of the global pandemic COVID-19, a reduction is noted in cash transactions. Hence, e-payment methods turn out to be some noteworthy mediums of transactions. This induces the authors to carry out an in-depth analysis of how the e-payment tools perform during the presence of pandemic.

VI. RESEARCH METHODOLOGY

Daily data on different e-payment techniques namely, Real Time Gross Settlement (RTGS), National Electronic Fund Transfer (NEFT), Aadhaar Enabled Payment System (AEPS), Unified Payments Interface (UPI), and Immediate Payment Service (IMPS) are collected from the RBI database. The period of the study is from June 1, 2020, to November 30, 2021. All the data are converted into corresponding log natural returns to remove the innate shortcomings connected with time series data. The GARCH (1,1) model is applied within the study.

Empirical Evidence

GARCH (1,1)					
	Variable	Coefficient	Std. Error	z-Statistic	Prob.
RTGS	Constant	0.02	0.0025	8.0207	0.00*
	ARCH (α)	0.0128	0.0009	13.0792	0.00*
	GARCH (β)	0.9868	0.0018	535.5521	0.00*
NEFT	Constant	1.2589	0.1327	9.4865	0.00*
	ARCH (α)	-0.1704	0.0123	-13.7989	0.00*
	GARCH (β)	0.6705	0.0359	18.6539	0.00*
AEPS	Constant	0.0373	0.0022	16.7167	0.00*
	ARCH (α)	0.676	0.1178	5.7376	0.00*
	GARCH (β)	-0.0585	0.0115	-5.0872	0.00*
UPI	Constant	0.0323	0.0027	11.8122	0.00*
	ARCH (α)	0.5457	0.1075	5.0748	0.00*
	GARCH (β)	-0.1075	0.029	-3.7065	0.0002*
IMPS	Constant	0.046	0.0139	3.2934	0.001*
	ARCH (α)	-0.1162	0.006	-19.0912	0.00*
	GARCH (β)	0.592	0.147	4.025	0.0001*

(* indicates significance at 1 per cent level)

The above table represents the performance of the select variables of e-payment methods namely Real Time Gross Settlement (RTGS), National Electronic Fund Transfer (NEFT), Aadhaar Enabled Payment System (AEPS), Unified Payments Interface (UPI), and Immediate Payment Service (IMPS) during the presence of the global pandemic, COVID-19 in terms of volatility and variance in volatility. The volatility is explained by the ARCH term and the variance in volatility is explained by the GARCH term. It can be observed that all the variables are significant at a 1 per cent level with a 99 per cent confidence interval. The ARCH term is positive for RTGS, AEPS, and UPI indicating that due to any shock (COVID-19 in our study) a day before, there will be a positive effect on the values of the e-payment the next day in terms of volatility. The ARCH term is negative for NEFT and IMPS indicating that due to any shock (COVID-19 in our study) a day before, there will be a negative effect on the values of the e-payment the next day in terms of volatility. The GARCH term indicates variance in the volatility of the select variables.

VII. CONCLUDING REMARKS AND RECOMMENDATIONS

Hence, it can be concluded that though there should be positive volatility on the select variables due to the global pandemic theoretically, empirically it can be observed that RTGS, AEPS, and UPI suffer from positive volatility but NEFT and IMPS suffer from negative volatility. Hence, it can be concluded that RTGS, AEPS, and UPI are much more acceptable to users when compared to NEFT and IMPS during the worldwide pandemic.
Moreover, it is recommended that necessary measures should be adopted at the government level to ensure ease of access to the different e-payment tools like NEFT and IMPS.

Acknowledgments
The authors make an honest effort to express their deep sense of gratitude towards the esteemed editors and the anonymous referees for their valuable suggestions that have helped to complete this study. Moreover, the authors also remain indebted to Prof. Jadab Krishna Das, Dean (Acting), Faculty Council for Post Graduate Studies in Commerce, Social Welfare and Business Management, University of Calcutta for his kind patronage throughout.

Conflict of Interests
The authors declare that there is no conflict of interest that are directly or indirectly related to this research work.

Funding
We have not received any financial support from any organization to undertake this study.

REFERENCES

1. Acopiado, M. A., Sarmiento, J. M. P., Romo, G, D. A. Acuna, T. R., Traje, Adonis M. W., & Geraliza, D. (2022). Digital payment adoption during the COVID-19 pandemic in the Philippines, *Phillipines Journal of Science, 151*(3), 1185-1196.
2. Chugh, S., Vibhu, G., Kanojia, S., Kumar, V., & Pal, S. K. (2020). To study the impact of advancement in e-payment technology used in India. *PalArch's Journal of Archaeology of Egypt/Egyptology, 17*(6), 1617-1635.
3. Isa, S. M., Wei, I. M. C., & Santoso, S. (2021). Adoption of e-wallet among penang residents during the covid-19 pandemic: The moderating roles of rewards. *1*(14), 1.
4. Lakhwani, R. (2022). Effect of covid-19 pandemic on digital payment ecosystem. *International Journal of Engineering Research and Technology (IJERT), 11*(3), 358-362.
5. Panwar, M., Chowdhury, R., & Vashishtha, A. (2020). Impact of covid-19 pandemic on digital payment. *World of innovative research (WIJR), 9*(4), 77-81.
6. Sagarik, D. (2021). Rethinking and reshaping Thailand's national e-payment in the post-covid era. *International Journal of e-Business and e-Government Studies*, *13*(1), 240-262.
7. Saroy, R., Awasthy, S., Singh, N. K., Admi, S. M., & Dhal, S. (2021). The impact of covid-19 on digital payment habits of indian households. *Bulletin of Monetary Economics and Banking, 25*(15), 19-42. https://doi.org/10.21098/bemp.v25i0.1823.
8. Srouji, J., & Torre, D. (2022). The global pandemic, laboratory of the cashless economy?. *International Journal of Financial Studies, 10*(109), 1-13.
9. Toh, Y., & Tran, T. (2020). How the COVID 19 Pandemic May Reshape the Digital Payments Landscape, Payments System Research Briefing, *Federal Reserve Bank of Kansas City*, pp. 1-10.
10. Vinitha, K., & Vasantha, S. (2017). Factors influencing consumer's intention to adopt digital payment - conceptual model. *Indian Journal of Public Health Research and Development, 8*(3), 170–175. https://doi.org/10.5958/0976-5506.2017.00181.4.
11. Zokaee, S., & Ghazizadeh, M. (2012). Electronic payment systems evaluation: a case study in Iran. *Information Management and Business Review, 4*(3), 120-127.
12. https://rbi.org.in/Scripts/Statistics.aspx.