



EFFECTS OF DEMONETISATION ON DIGITAL PAYMENTS AND SETTLEMENTS IN INDIA

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ABSTRACT

Reserve Bank of India, in line with its vision of encouraging electronic payments, achieving a less-cash society, providing safe and secure payment systems safer and secure, has geared its policies relating to the payment systems accordingly. The demonetisation in November 2016 aims to curtail the shadow economy and indirectly motivates the objective of “Digital India” i.e to increase the access of digital payments and settlements. Hence, this paper is an attempt to evaluate the effect of demonetisation on the usage of digital payments in India. The Compounded Annual Growth Rate is 79 and 69 per cent for RTGS and REC respectively. Both the systems are growing over 10 years period with a mean value of 60.54 million and 1265.37 millions. It was also found out through paired sample t-test that the usage of RTGS and Retail Electronic Clearance systems differ significantly before and after demonetisation in India.

Key words: Demonetisation, RTGS, Retail Electronic Clearance, Growth , Effect

Introduction

For greater acceptance of electronic payments, apart from speed, efficiency and security, creating trust and safety of operations in the psyches of the users are imperative. Reserve Bank of India, in line with its vision of encouraging electronic payments in the country, achieving a less-cash society, making the payment systems more safer and secured has geared its policies relating to the payment systems accordingly. Several initiatives for infrastructure enhancement have been taken by the country. They are white label ATMs, card less cash withdrawal facility for unbanked persons, next generation RTGS and NEFT system

for larger volumes etc. The trend for greater acceptance of electronic payments over paper cheques by the general public is further boosting every year. The demonetisation, announced on 8th November 2016, by Government of India, also insisted the importance of the Cash surrendering process through direct and indirect modes of payment systems. Besides this, the Reserve Bank has also announced regulations for cash inflow and outflow check for the banks. The public are emphasized on utilisation of electronic modes of payment and settlement for the prolonged queue in the bank premises both by the Central Bank and the Government of India. Further, the aim of Digital India by the central government is gaining its importance indirectly through demonetisation. This paper is an attempt to analyse whether the Electronic Payment and Settlement System in India has shown any significant difference after demonetisation.

Payment & Settlement Systems and Information Technology

Payment and Settlement Systems are a vital component of the economic and financial base leading to the overall economic performance and financial stability by facilitating the effective financial intermediation. With a horizon to further leveraging the use of Information Technology (IT) in enhancing the efficient operation of the financial arrangement, the Reserve Bank has also undertaken steps to put in place a theoretical account for off-site and on-site surveillance of payment arrangements. Recognizing the significance of getting along the payment and settlement systems and expansion of financial inclusion in India the Reserve Bank works with a clear mission to learn whether the payment and settlement systems are safe, sound, efficient, accessible and authorized.

Currently, seven forms of payments and settlement system are under legitimate operation by RBI in India. They are Real Time Gross Settlements, Clearing Corporation of India Limited (CCIL) operated system, Paper Clearances, Retail Electronic Clearing, Smart card payments, Prepaid Payment Instruments and Mobile Banking systems. RBI's thrust on technology in payment systems have resulted in visible improvements in the settlement processes in the Systematically Important Payment System (SIPS), where over 70 per cent of transactions are handled electronically. (Rajinder Kaur & Rupinder Kaur, 2015).

The payment and settlement arrangements in India functions in a non-disruptive manner during the financial stress in the global financial markets and thereby did not play as a channel of transmission. Hence, payment and settlement systems have been functioning smoothly and efficiently since 2009-10, ensuring the timely liquidation of both systematically important high value transactions and retail transactions of the public at large. This was

possible by several technical advancements that were initiated in payment and resolution systems by the Reserve Bank.

Demonetisation in India

The French were the first to use the word Demonetize, in the years between 1850 - 1855. Since then, many countries have used this policy with immense restriction and discomfort, for its disrupt economics. India has demonetized for the first time on **12th January 1946**, second time on **16th January 1978** and Third time on **8th November 2016**.

In the first time, banknotes of 1000 and 10000 rupee were withdrawn and new notes of 1000, 5000 and 10000 rupee were introduced in 1954. The measure did not succeed, as by the end of 1947, out of a total issue of Rs. 143.97 crores of the high denomination notes, notes of the value of Rs. 134.9 crores were exchanged. Thus, notes worth only Rs. 9.07 crores were probably 'demonetized', not having been presented. . It was more of "conversion", at varying rates of profits and losses than "demonetization". The Janata Party coalition government had again demonetized banknotes of 1000, 5000 and 10000 rupee on 16 January 1978 as a means to curb counterfeit money and black money. In 2012, the Central Board of Direct Taxes had recommended against demonetization, saying in a report that "demonetization may not be a solution for tackling black money or economy, which is largely held in the form of Benami properties, bullion and jewellery" (The Hindu,Narasaiah,2017) . On 8th November 2016, the Government of India announced the demonetisation of all ₹500 (US\$7.80) and ₹1,000 (US\$16) banknotes. The government claimed that the action would curtail the shadow economy and crack down on the use of illicit and counterfeit cash to fund illegal activity and terrorism.

Review of literature

Saba Abid (2016) explained the efforts made by the Reserve Bank for migration to electronic payments in Table IX.1. Correspondingly, transactions processed by the paper-based clearing systems have shown a continuous decline both in volume and value terms. Significant growth in e-payments is evident from the study both in terms of diversification and innovation. Development of information and technology has been an important driver in the growth of e-payments. Though the value and volume of these e-payments have increased significantly still its reach is not at much great level in rural areas primarily due to lack of Internet connectivity and other infrastructural facilities.

Graham Wright & Anil Gupta (2016) analysed the three years' trends for the period 2012 to 2015 showing the direction of the market — less and less paper, and more and more electronic payments — with all electronic categories growing both in volume and value terms. The electronic clearing comprising of ECS, NEFT and IMPS are growing at the highest rate. The new Payment Banks will be ever-increasing focus on electronic payments. These will be accessible to a large section of society at remarkably low cost. Since June 2015, electronic transactions of EFT/NEFT have surpassed paper-based transactions in terms of volume. Even in value terms a clear trend prevails towards adoption of electronic payments, over paper-based payments.

Statement of the Problem

Demonetisation in 2016 aims to curtail the shadow economy and indirectly motivates the objective of “Digital India” i.e. to increase the access of digital payments and settlements. Further, this economic policy will increase the dependence on bank credit, which will help reducing the scope for generating black money and over dependence on paper currency at the end, increases the scope for usage of digital payment systems. Besides this, the government also put efforts to educate and prompt people to reduce their existing, over dependence on currency notes in payment systems. In lieu of that, they may choose settlement transfers etc. Hence, this paper is an attempt to evaluate the effect of demonetisation in usage of digital payments in India.

Objectives and Methodology

The primary objective is to analyse the level of operation of payment and settlements through Information and Communication Technology methods before and after November, 2016 i.e the demonetisation in India. The modes selected for the analyses are RTGS and Retail Electronic Payments. The analysis is purely based on secondary data published by RBI in the form of Annual Reports, Bulletins and other reports. The statistical tools used for the data analysis are Descriptive statistics, Compounded Annual Growth Rate Analysis and paired sample t-test. The period of analysis is from the month of January 2016 to August 2017, 10 months before and after Demonetisation.

RTGS

The settlement of both large-value and retail interbank payments in India was predominantly cheque-base until RTGS was implemented in March 2004 and the subsequent issuance of instructions on the mandatory use of electronic payments for transactions between RBI regulated entities and markets in March 2008. Since the introduction of the RTGS

system, operated by the RBI, large-value and interbank transactions have progressively migrated to the RTGS system on "real time" and "gross" basis. "Gross settlement" means the transaction is settled on one to one basis without bundling or netting with any other transaction. Once processed, payments are final and irrevocable.

Retail Electronic Clearing (REC)

Retail payment systems in India include both paper-based and electronic (NEFT and ECS/NECS/RECS) funds transfer systems. Cards are another popular option for retail payments.

- **Electronic Clearing Service (ECS) Cr:** ECS Credit ECS Credit is used for the payment of salaries, pensions, dividends, interest etc. Payers submit credit instructions through their banks (sponsor banks). On the settlement date, the account of each sponsor bank is debited and the accounts of beneficiary banks are credited.
- **Electronic Clearing Service (ECS) Dr:** This system is used for multiple debits culminating in a single credit. A utility company gives the debit instructions (based on mandates given by its customers) to the sponsor bank, which in turn presents them to the clearing house for further processing. On the settlement date, the customers' accounts are debited and the sponsor banks' accounts are credited.
- **EFT/ NEFT:** The Electronic Funds Transfer (EFT) system implemented in the mid 1990s and the National EFT (NEFT) implemented in November 2005 are deferred net settlement (DNS) systems that process credit transfers. With the implementation of NEFT, the EFT system has been discontinued. The NEFT system uses the Structured Financial Messaging Solution (SFMS) for EFT message creation and transmission from a branch to the bank's gateway and to the NEFT centre, using the tools available from the SFMS
- **Immediate Payment Service (IMPS):** It is an instant interbank electronic fund transfer service through mobile phones. It is also being extended through other channels such as ATM, Internet Banking etc.

Growth of RTGS and REC Transactions

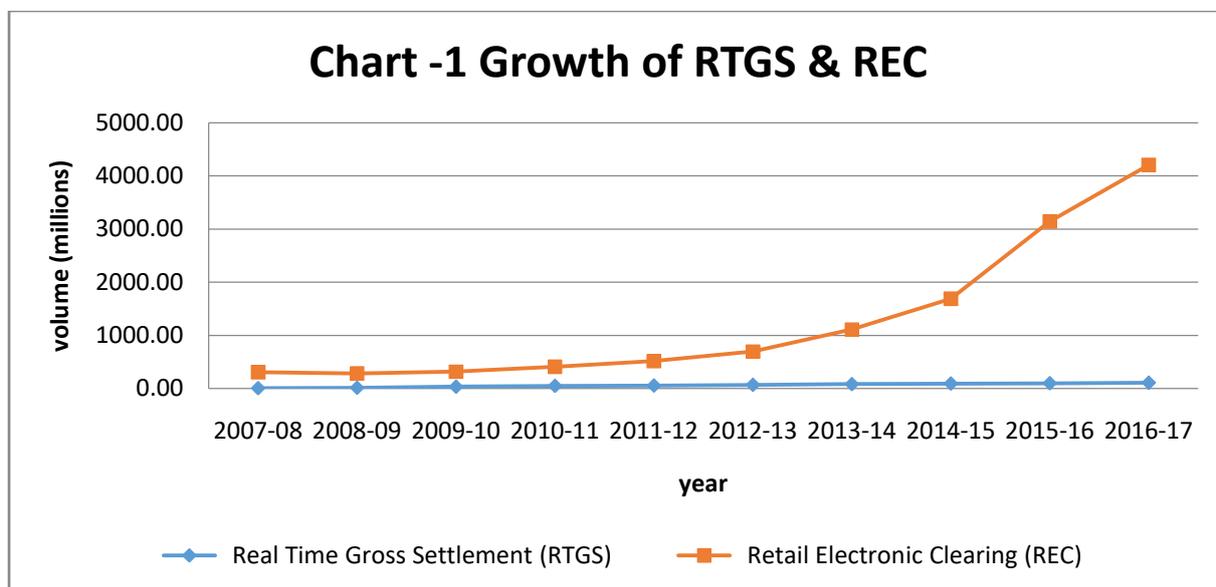
The Table-1 shows the volume and value wise data and descriptive statistics of RTGS and REC from 2007-08 to 2016-17. The volume of RTGS is 5.86 million in 2007-08 and it has reached 107.86 million in 2016-17 and similarly the REC volume is 304.25 million and touched 4204.96 million in 2016-17. This implies that both the Electronic payment and settlement systems are growing over 10 years period with a mean value of 60.54 million and 1265.37 million. The CV represents clearly that the growth of RTGS is consistent and steady

whereas REC is near to 1 revealing inconsistency. The CAGR of RTGS is reporting the highest growth of 79 per cent by volume and 21 per cent in terms of its value. The REC growth is 69 per cent in terms of volume and 54.68 per cent growth in terms of value. Thus, the table shows growth of RTGS and REC is positive and uptrending over the past 10 years.

Table-1 Descriptive Statistics of RTGS and REC transactions from 2007-08 to 2016-17

Year	Real Time Gross Settlement (RTGS)		Retail Electronic Clearing (REC)	
	Volume (Million)	Value (Rupees in Billion)	Volume (Million)	Value (Rupees in Billion)
2007-08	5.86	482945.59	304.25	14933.69
2008-09	13.38	611399.12	280.61	4164.18
2009-10	33.27	1011699.31	313.75	5966.44
2010-11	49.28	941039.33	406.38	11944.80
2011-12	55.05	1079790.58	512.44	20575.60
2012-13	68.52	1026350.05	694.07	31881.14
2013-14	81.11	904968.04	1108.32	47856.29
2014-15	92.78	929332.89	1687.44	65365.51
2015-16	98.34	1035551.64	3141.53	91408.14
2016-17	107.86	1253652.08	4204.96	132250.12
Mean	60.54	927672.86	1265.37	42634.59
SD	35.45	225177.97	1366.02	42281.76
CV	0.59	0.24	1.08	0.99
CAGR	79.06	21.02	69.09	54.68

Source: RBI statistics



The chart 1 shows that the both the payment and settlement system are growing whereas the growth rate of RTGS is slow and steady, but in case of REC it is showing an increasing trend as the graph is moving upward.

Effect of Demonetisation on RTGS

The comparative analysis on utilisation of various payment and settlement systems in India before and after demonitisation (i.e. January 2016 to October 2016 as before and November 2016 to August 2017 as after demonitisation) reveals the effect of demonitisation. The systems selected for analysis are RTGS and Retail Electronic Clearing modes. The analysis is based on the null hypothesis (H_{01}) that, “There is no significant difference in the utilisation of RTGS payment and settlement before and after demonetisation”

Table 2 Paired Samples Test for RTGS

	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
RTGS-BEF RTGS AFT	-.9873	1.2566	.3973	-1.8863	-.0884	-2.485	9	.035

Source : computed

Table 2 shows the result of the paired sample t test of RTGS utilisation before and after demonetisation. The value is significant at 0.05 per cent, hence the null hypothesis is rejected and concluded that there is significant difference between the volume of utilisation of RTGS before and after demonetisation.

Effect of Demonetisation on REC

Table 3 Paired Samples Test for Retail Electronic Clearance(REC)

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
REC BEF – REC AFT	- 95.4042	35.7010	11.2896	-120.9432	- 69.8652	-8.451	9	.000

Source : Computed

Table-3 shows the paired t test analysis of volume of utilisation of Retail Electronic Clearing payment modes before and after demonetisation. The value is significant at .000. Hence, the null hypothesis of (H₀₂) “There is a no significant difference in Retail Electronic Clearing payment and settlement before and after demonetisation” is rejected and concluded that there is a significant difference in the volume of transactions done through REC before and after demonetisation. In other words, the demonetisation has created an impact on Retail Electronic Clearance.

Effect of Demonetisation on the components of REC

The Retail Electronic Clearance comprises of Electronic Clearing Service Credit and Debit, National Electronic Funds Transfer (NEFT) and Immediate Payment Service(IMPS). The analysis comprises of the individual paired sample test results for each components of REC.

Table -4 Paired Samples Test for components of REC

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
ECS CR BFT – ECS CR AFT	.9331	4.9581	1.5678	.3863	7.4799	2.509	9	.033
ECS DR BFT - ECS DR AFT	.7278	.9770	.3089	.0289	1.4268	2.356	9	.043

NEFT BEF – NEFT AFT	- 34.7499	18.4681	5.8401	- 47.9612	-21.5386	-5.950	9	.000
IMPS BEF – IMPS AFT	- 32.0387	7.0497	2.2293	- 37.0818	-26.9956	- 14.371	9	.000

Source: Computed

The Table 4 explains the clearances made before and after Demonetisation using paired sample t test for REC components, revealed that ECS CR, ECS DR, NEFT and IMPS are significant at .05 per cent, Hence, it can be concluded that the usage of these modes have shown the effect before and after Demonetisation. Table 5 shows the mean scores of REC which reveal the average amount of transactions done before and after demonetisation. The mean score of ECS DR with(4.12) and CR(1.41) are high before Demonetisation they are low after demonetisation. However, it is inverse in case of NEFT and IMPS revealing that these modes are becoming popular among the public.

Table -5 Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ECS DR BEF	4.123070	10	4.9997955	1.5810742
	ECS DR AFT	.189943	10	.0536064	.0169518
Pair 1	ECS CR BEF	1.412649	10	1.0168490	.3215559
	ECS CR AFT	.684754	10	.1595763	.0504625
Pair 1	NEFT BEF	119.202710	10	7.2248020	2.2846830
	NEFT AFT	153.952632	10	16.5994589	5.2492098
Pair 1	IMPS BEF	30.051674	10	6.0317583	1.9074094
	IMPS AFT	62.090428	10	10.9026077	3.4477073

Source: Computed

Amid the ongoing intense debate on the benefits and effects of demonetisation, there has been a strong growth in digital payments and transactions in the months since the currency swap was announced on 8th November 2016, according to Reserve Bank of India statistics. There arises an anxiety and urge in knowing the effect of the demonetisation and currency regulations in connection with payment and settlement transactions. The attempt of

the researcher brings out the fact that there exists a significant difference in utilisation of electronic modes of payment namely RTGS and REC.

Conclusion

Demonetisation's real success in encouraging digital payment methods would only be known after completion of the remonetisation process. An interesting fact is that the volume of digital transactions has been picking up even before demonetisation as per RBI report. The Compound Annual Growth Rates of RTGS and Retail Electronic Clearances are increasing positively. The deployment of NEFT and IMPS have gained progress after demonetisation in retail payment. The reduction or quashing of service charges levied for these transactions will further motivate the public to move digitally. The Government of India expects people to embrace digital transactions so that the full year target could be reached in half the time stated by PMs address in "Mann ki Baat". India is mounting with the target of 2,500 crore digital transactions in 2017-18, which can be visualised in by the incessant schemes and motivations of Reserve Bank of India.

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