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Demonetisation and its Impact on Digitisation in India

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DEMONETISATION AND ITS IMPACT ON DIGITISATION IN INDIA

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ABSTRACT

The purpose of the study is to explore the impact of demonetization on digitization in India. On 8th Nov. 2016, Indian Government announced Demonetization by abolishing INR.500 and INR.1000 currency notes in the country with an objective to move towards a cashless economy besides check on black money and other corrective measures. In the short run, it led to temporary derailment of economy and inconvenience to general public. After initial teething problems like severe cash shortage, there was a steady growth in digital transactions when people have adopted to different digital payment modes like Online / Internet banking, ATM facilities, mobile wallets, usage of debit/credit cards and mobile banking, etc. The authors have taken secondary data from the RBI website from March 2015 to July 2018 to analyze the impact of demonetization on digitization. An event window of 20 months pre-demonetization and 20 months post-demonetization was taken for analysis. The month the event took place i.e., November 2016 was taken as month '0'. Descriptive Statistics, Correlation, t-test, and Trend Analysis were carried out to analyze the data. Based on the results extracted, the authors have concluded that there is a significant increase in the usage of various digital payment methods like RTGS, Retail Electronic Clearing, Prepaid instruments in the post demonetization period with a few exceptions like Paper Clearing, Mobile Banking and Debit cards.

Keywords: *Demonetization, Indian Banks, Cashless Economy, Digitization*

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INTRODUCTION

Indian economy went in for Demonetization on 8th November, 2016 for the third time. The first one was in Jan. 1946 by abolishing INR.500, INR.1000 and INR.10000 notes. Next time, it was in Jan. 1978 by abolishing INR.1000, INR.5000 and INR.10000 notes and the third on 8th Nov, 2016 by abolishing INR.500 and INR.1000 notes. The Government of India has initiated demonetization with the objective to curtail black money and to stop the use of counterfeit cash to fund illegal activities and terrorism. Although India is traditionally a cash based economy, this move forced people to move towards digitization and slowly adopting technology for payments and settlement as demonetization resulted in 86% of cash out of circulation. This reform announcement took the country by shock initially. Mr. Nandan Nilekani, former Chairman of the Unique Identification Authority of India (UIDAI), said that the shock given to the system would accelerate digitization of the financial economy (The Times of India, 2016). According to statistics demonetization led to reduction of INR 2.8 lakh crores cash (1.8 percent of GDP) and Rs.3.8 lakh crores high denomination notes (2.5 percent of GDP) in the Indian economy. Demonetization has driven the country towards a cashless society. People even in the remote rural areas have started resorting to use of technology and small transactions and small savings are done through banking channels which is a big asset. The focus of banks post demonetization changed from primarily accepting deposits and lending money to playing a facilitating role to customers in moving towards cashless transactions. Rise in prices and inflationary trend in economy has taken a downturn with the reduction in cash in the economy.

According to Price Waterhouse Coopers (2015), India had high cash transactions compared to other countries accounting for 68 percent of total transactions by value and 98 percent by volume. As per Ratan Watal Committee Report on Digital Payments (2016), 78 percent of payments in India are made in cash. Though mobile and ATM technologies have penetrated in India in the last over one decade, usage of currency is still a predominant factor. RBI Annual Report (2017-18) found that 90 percent of all monetary transactions in Indian economy are made in cash. The reasons for usage of cash are due to the predominant role played by informal and agriculture sector in India, convenience of use and involves no cost. India being a developing country, more than 65% of its population is below the age of 35 years are tech-savvy (Ministry of Statistics and Programme Implementation, Government of India). Indian literacy rate is 74.4 percent and has 287 million non-literate adults, according to a UN Report (UNESCO, 2014). This is an important prerequisite to help India to move towards digitization. Digital literacy is another important prerequisite for Digitization which is a challenge in Indian economy. Digital literacy is defined as the ability of individuals and communities to understand and use digital technologies in their day to day life, both in running their businesses as well as for any other meaningful actions within life situations as also to be tax-compliant.

LITERATURE REVIEW

Several studies have been carried out by researchers, consulting firms, RBI and others on this topic to understand the impact of demonetization on digitization in India and moving towards cashless economy. As per Ganesh Kawadia and Neha Gupta (2017), one of the objectives of demonetization was moving towards cashless economy and digitization. This was not possible for a long time because many people were not accessible to the formal financial mechanism or excluded from formal banking system because of umpteen reasons. Immediately after demonetization, there was a cash shortage and the currency with public declined sharply by 46 percent. Due to paucity of cash in the economy the transactions through Mobile Banking increased by 48 percent and debit and credit cards by 9 percent in the first month of demonetization. RBI announced limits on withdrawals and deposits from bank accounts which affected confidence of people on the Indian banking system. The ease of converting deposits in banks into cash decreased because of the restrictions that were imposed on over-the-counter cash withdrawals from accounts at banks and post offices and daily withdrawals from Automated Teller Machines (ATMs).

Masiero (2017) argued in the research that technologies such as India's biometric identification system (Aadhaar) helped people who are excluded from formal banking system to obtain digital identity that is needed to transact in a cashless economy. However, half the country's population is offline and do not have access to internet or online services. Several gaps exist in reality between complex financial technologies and the needs of uneducated common man like street sellers. The digital tools help them insignificantly to operate and integrate in the new cashless system. (Sen, 2017) termed demonetization as a gigantic mistake in terms of its objective of one rapid jump into a cashless economy.

Economic Times (2017) published results of a survey conducted by State Bank of India (SBI) among small businesses in India. It was observed that because of demonetization, more than two-thirds of them have seen a drop in business by 50 percent because of severe liquidity crunch. The retail segment was affected the most than those in the wholesale segment. The survey also showed that 15% of cash based transactions moved to digital system in the weeks subsequent to demonetization. This is supported by the findings of Koshy (2017). In demonetization the most affected are MSME and 5.77 crore small business units who lacked the ability to transact by digital means. A lot of help was provided by the Confederation of Indian Industry (CII) which was involved in training the small traders about digital payment options. Alliance for Digital Bharat (ADB) is an initiative by Associations and Chambers of MSMEs and small businesses to conduct studies, promote and create awareness drives across India, for helping small business entrepreneurs to adopt digital payment technologies (Alliance for Digital Bharat, 2016). Reserve Bank of India (2016) brought out guidelines called Vision 2018 on systematic implementation of digital payment and settlement system which to some extent also helped in the smooth transition to cashless economy.

Santhosh Kumar Das and Pradyuman Shankar Rawat (2017) attempted to explore the macro-economic implications of demonetization exercise announced for the Indian economy on three broad parameters of growth, distributional consequences, and the challenges it brought in for the Indian Banking System. It was found that it is beyond dispute as far as the immediate impact on growth is concerned. Given the size of the Indian Economy, contraction in output during the fiscal was inevitable. Other than growth challenge, demonetization exercise throws a far more important challenge bearing distributional consequences. The new interest rate regime that emerged during the post-demonetization period is likely to benefit some, while leaving a large chunk of population worse-off. Finally, the banks find it very difficult to manage the liquidity surge in the system,

Chowdari Prasad and Srinivasa Rao (2016) observed that Banking today, has taken a paradigm shift in India even though it has a historical legacy for over two centuries. The definition of banking has taken a different meaning with technology becoming a cutting edge in business. A major revolution is taking place in the banking sector due to the economic and banking sector reforms going on since 1991. Stand-alone branches have taken a new avatar due to core banking facilities. Computerization and Automatic Teller Machines (ATMs) have made the life of customers easy for processing of their cash transactions and retail banking needs. Online banking has made the job further simplified in all kinds of transactions. With the advent of mobile technology and smartphones, M-banking is now the order of the day, making the traditional banks as 'virtual'. Digital marketing became a strategy to attract Gen-Y customers even in the banking sector.

The biggest challenge in Indian economy is small businesses and low income household who are excluded from traditional banking which is a bane to digitisation. This problem was solved in the form of giving in-principle approval by RBI to set up Payment Banks in India in August 2015. Payment Banks are a new model of banks developed by RBI to cater to those categories of people not covered by the traditional banking system. They are mainly run on digital platforms which helped in boosting digitisation. "With the demonetisation effort that started in Q4 of 2016 in India, there has been a big increase in the number of transactions managed by both payments banks/companies and wallet providers," said Neha Punater, Head of Fintech at KPMG in India. Payments banks can enable transfers and remittances from mobile phones which enabled many small business and low income individuals to use electronic payment media for daily and financial transactions (Brian, 2017).

OBJECTIVES

The objective of this study is to find out the impact of sudden decision taken by the Government of India or RBI to demonetize the two high value currency in a disruptive manner and the resultant increase in digitization of all transactions and payment settlements by comparing the pre and post event in November 2016.

METHODOLOGY

The data was collected from Secondary sources i.e., RBI website https://dbie.rbi.org.in/DBIE/dbie.rbi?site=home. Event Study Methodology was adopted. The researchers have taken the monthly data from March 2015 to July 2018. The event window of 20 months, pre-demonetization (March 2015 to October 2016) and 20 months post-demonetization (December 2016 to July 2018) to explore whether demonetization impacted digitization in any way. The event month i.e., e Nov 2016 was considered as 'zero' as the GOI / RBI were making policy announcements on daily basis. The transactions held both in terms of volume and value through different digital payment modes like RTGS – Real Time Gross Settlement, Paper Clearing including cheque truncation, Retail Electronic Transactions NEFT – National Electronic Funds Transfer, CTS – Cheque Truncation System, IMPS – Immediate Payment Service, NACH – National Automated Clearing House, Debit and Credit Cards At ATM's and POS – Point Of Sale, Prepaid Payment Instruments like m-wallets and Mobile Banking. Descriptive Statistics, Correlations, t-test and Trend Analysis have been done. Time series forecast was done till December 2018, as short-term projections.

ANALYSIS & RESULTS

RTGS: Real Time Gross Settlement is real-time settlement of funds for large value transactions that require and receive immediate clearing. In some countries the RTGS systems may be the only way to get same day cleared funds and so may be used when payments need to be settled urgently. RTGS payments typically incur higher transaction costs and usually operated by a country's central bank (Wikipedia).

Table 1: Descriptive Statistics of RTGS in Pre and Post Demonetisation Period

RTGS	**Pre Demonetisation March 2015 to October 2016**		**Post Demonetisation December 2016 to July 2018**	
	Volume (Million)	Value (Rupees Billion)	Volume (Million)	Value (Rupees Billion)
Minimum	7.60	68045.93	8.84	95266.75
Maximum	9.87	122783.80	12.69	158779.65
Mean	8.41	91653.84	10.44	123132.93

Figure 1: RTGS in Pre and Post Demonetisation Period

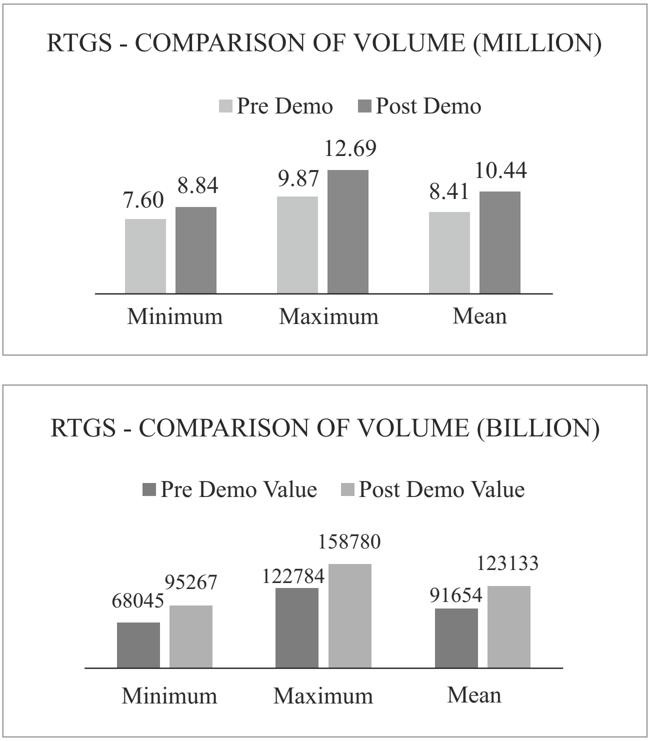


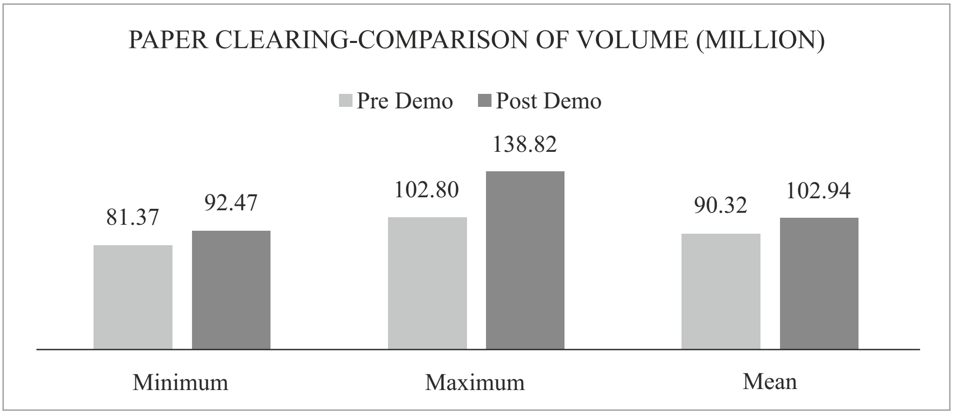
Table 1 shows the descriptive statistics of RTGS transactions which took place in 20 month window pre demonetisation and 20 month post demonetisation in terms of volume and value of transactions. The minimum RTGS in terms of volume of transactions ranges from 7.60 – 8.84 million transactions in the post demonetisation. The maximum RTGS in terms of volume ranges from 9.87 - 12.69 million transactions in the post demonetisation period. The minimum RTGS in terms of value of transactions ranges from INR 68045.93 – INR 95266.75 billion in the post demonetisation. The maximum RTGS in terms of value ranges from INR 122783.80 – INR 158779.65 billion in the post demonetisation period. There has been an increase of 24.09 percent in value of RTGS transactions in the post demonetisation period. There is a positive correlation between value and volume of RTGS transactions at 5 percent level of significance in both the pre and the post scenario. t-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation transactions of RTGS. The trend analysis is done for volume as well as value of RTGS in the post demonetisation period from August 2018 to December 2018. The average predicted volume of mean is 11.81 million (with a standard deviation of 0.17) and the average predicted value of mean is INR 142993.57 billion (with a standard deviation of 2512.19).

Paper Clearing includes Cheque Truncation System & MICR Clearing: Cheque Truncation System or online image-based cheque clearing system is a system undertaken by the Reserve Bank of India (RBI) for faster clearing of cheques by transmission of images of cheques. The Non-MICR clearing is where the cheque is physically moved between the banks for clearing whereas MICR clearing is where the MICR Code on the cheques is scanned and the transaction is done.

Table 2: Descriptive Statistics of Paper Clearing in Pre and Post Demonetisation Period

Paper Clearing	Pre Demonetisation March 2015 to October 2016		Post Demonetisation December 2016 to July 2018	
	Volume (Million)	Value (Rupees Billion)	Volume (Million)	Value (Rupees Billion)
Minimum	81.37	6178.45	92.47	6403.59
Maximum	102.80	8027.11	138.82	8654.94
Mean	90.32	6768.43	102.94	7005.58

Figure 2: Paper Clearing in Pre and Post Demonetisation Period



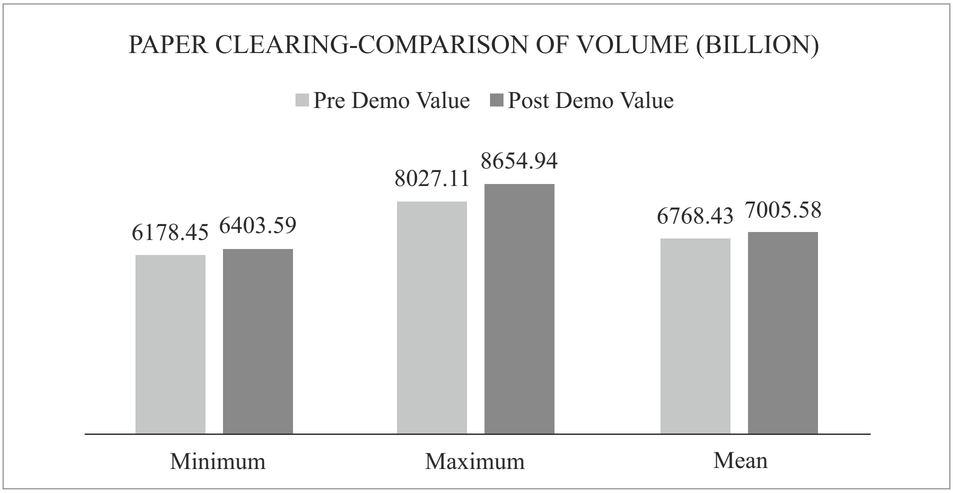


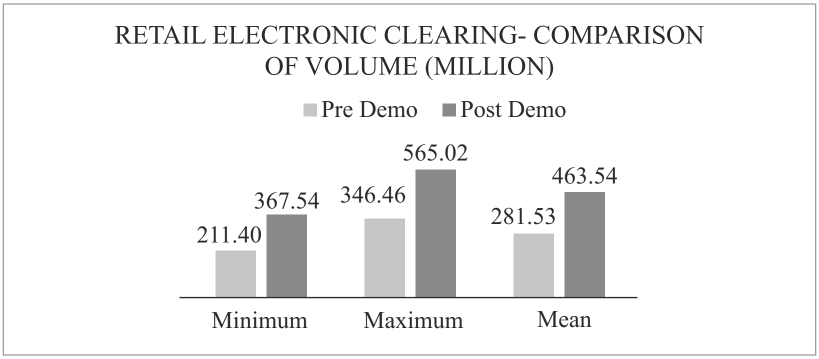
Table 2 shows the descriptive statistics of Paper Clearing i.e., usage of cheque transactions which took place in 20 month window pre-demonetisation and 20 month post-demonetisation in terms of volume and value of transactions. The minimum Cheque Clearing in terms of volume of transactions ranges from 81.37 to 92.47 million transactions in the post-demonetisation. The maximum Cheque Clearing transactions in terms of volume ranges from 102.80 to 138.82 million transactions in the post-demonetisation period. The minimum Cheque Clearing transactions in terms of value ranges from INR 6178.45 to INR 6403.59 billion transactions in the post-demonetisation. The maximum Cheque Clearing transactions in terms of value ranges from INR 8027.11 to INR 8654.94 billion in the post-demonetisation period. It is interesting to note that there is a decrease of 31.54 percent in volume and decrease of 5.88 percent in value in Cheque Clearing transactions in the post demonetisation scenario. The probable reason could be that other digital payment options have taken predominance compared to the age old negotiable instrument - cheque. There is a positive correlation between value and volume of Cheque Clearing transactions at 5 percent level of significance in the pre scenario but not in the post-demonetisation scenario. T test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation transactions of Cheque clearing transactions. Trend analysis is done for volume as well as value of Cheque Clearing transactions in the post demonetisation period from August 2018 to December 2018 (projected). The average predicted volume of mean is 84.10 million (with a standard deviation of 2.38) and the average predicted value of mean is INR 6906.53 billion (with a standard deviation of 12.53).

Retail Electronic Clearing includes ECS, NEFT, IMPS and NACH: Electronic Clearing System (ECS) & National Electronic Funds Transfer (NEFT) facilitate bulk transfer from one bank account to many bank accounts or vice versa. Immediate Payment Service (IMPS) offers an instant 24X7 interbank electronic fund transfer service. “National Automated Clearing House (NACH)” is a service offered by NPCI to banks which aims at facilitating interbank high volume, low value debit/credit transactions.

Table 3: Descriptive Statistics of Retail Electronic Clearing in Pre and Post Demonetisation Period

Retail Electronic Clearing	**Pre Demonetisation March 2015 to October 2016**		**Post Demonetisation December 2016 to July 2018**	
	Volume (Million)	Value (Rupees Billion)	Volume (Million)	Value (Rupees Billion)
Minimum	211.40	6144.27	367.54	12023.05
Maximum	346.46	11136.33	565.02	24901.84
Mean	281.53	8331.19	463.54	16282.03

Figure 3: Retail Electronic Clearing in Pre and Post Demonetisation Period



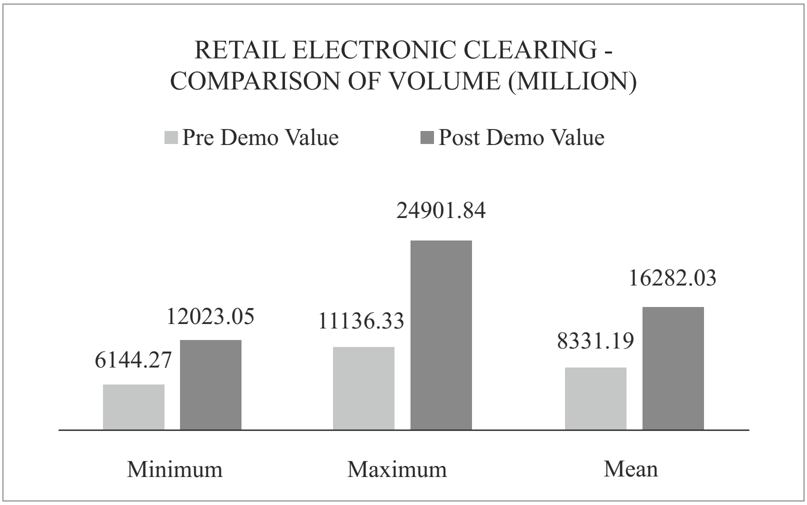
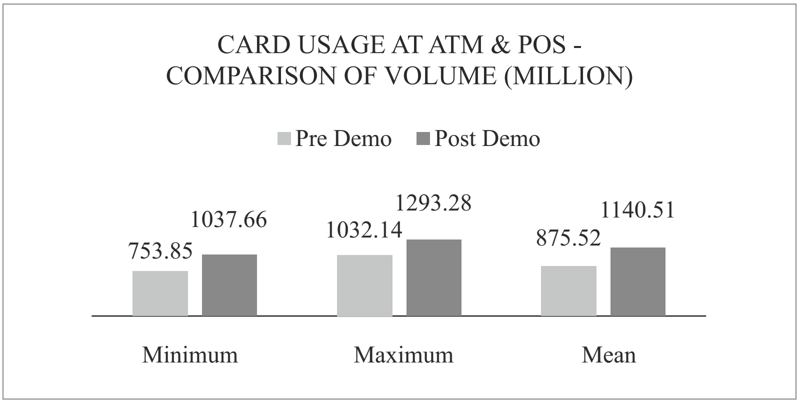


Table 3 shows the descriptive statistics. Retail Electronic Clearing which took place in 20 month window of pre-demonetisation and 20 month post-demonetisation in terms of volume and value of transactions. The minimum Retail Electronic Clearing in terms of volume of transactions ranges from 211.40 – 367.54 million transactions in the post demonetisation. The maximum Retail Electronic Clearing in terms of volume ranges from 346.46 – 565.02 million transactions in the post demonetisation period. The minimum Retail Electronic Clearing in terms of value of transactions ranges from INR 6144.27 – INR 12023.05 billion in the post demonetisation. The maximum Retail Electronic Clearing in terms of value of transactions ranges from INR 11136.33 – INR 24901.84 billion in the post demonetisation period. There has been an increase of 31.91 percent in volume and 54.70 percent in value of Retail Electronic Clearing transactions. There is a positive correlation between value and volume of Retail Electronic Clearing at 5 percent level of significance in both the pre and the post scenario. t-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation transactions. Trend analysis is done for volume as well as value of Retail Electronic Clearing transactions in the post demonetisation period from August 2018 to December 2018 (projected). The average predicted volume of mean is 566.14 million (with a standard deviation of 12.98) and the average predicted value of mean is INR 21874.67 billion (with a standard deviation of 707.42).

Table 4: Descriptive Statistics of Credit & Debit Cards (ATMs & POS) in Pre and Post Demonetisation Period

Cards	Pre Demonetisation March 2015 to October 2016		Post Demonetisation December 2016 to July 2018	
	Volume (Million)	Value (Rupees Billion)	Volume (Million)	Value (Rupees Billion)
Minimum	753.85	2266.52	1037.66	1742.03
Maximum	1032.14	3069.65	1293.28	3645.58
Mean	875.52	2523.00	1140.51	3111.80

Figure 4: Credit & Debit Cards in Pre and Post Demonetisation Period



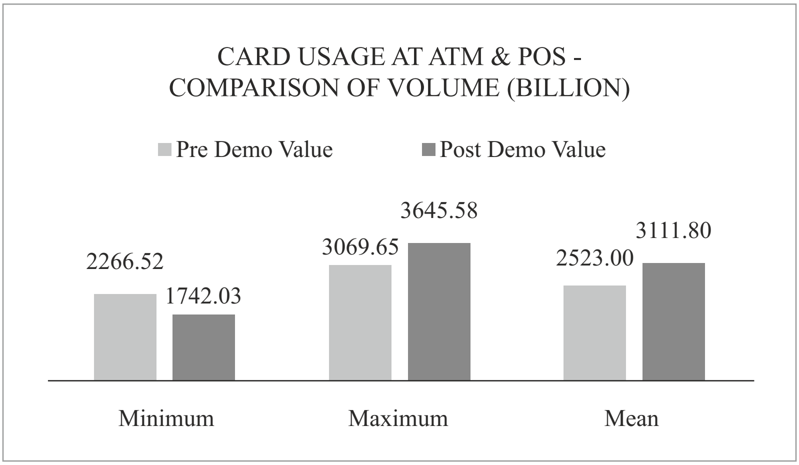


Table 4 shows the descriptive statistics usage of Credit / Debit Cards which took place in 20 month window pre demonetisation and 20 month post demonetisation in terms of volume and value of transactions. The minimum usage of Credit / Debit Cards in terms of volume of transactions ranges from 753.85 – 1037.66 million transactions in the post demonetisation. The maximum usage of Credit / Debit Cards in terms of volume ranges from 1032.14 – 1293.28 million transactions in the post demonetisation period. The minimum usage of Credit / Debit Cards in terms of value of transactions ranges from INR 2266.52 – INR 1742.03 billion in the post demonetisation. The maximum usage of Credit / Debit Cards in terms of value ranges from INR 3069.65 – INR 3645.58 billion transactions in the post demonetisation period. There has been an overall increase of 11.26 percent in volume and 109.27 percent in value of usage of both Credit and Debit Cards. When we look into the usage of debit cards and credit cards, the usage of debit cards have fallen drastically compared to the usage of credit cards. As a result of this, there is a positive correlation between value and volume of usage of Credit / Debit Cards in the pre demonetisation period but not in post demonetisation scenario at 5 percent level of significance. This could be because of the daily and weekly restrictions on withdrawals in ATM /

over the bank counters imposed by RBI and also probably because of lack of cash in many ATM's especially in the initial months of demonetisation. T-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation transactions of usage of Credit / Debit Cards in volume but not in value of transactions (p-value=0.11). Trend analysis is done for volume as well as value of usage of Credit / Debit Cards transactions in the post demonetisation period from August 2018 to December 2018 (projected). The average predicted volume of mean is 1263.30 million (with a standard deviation of 15.53) and the average predicted value of mean is INR 502.67 billion (with a standard deviation of 14.47).

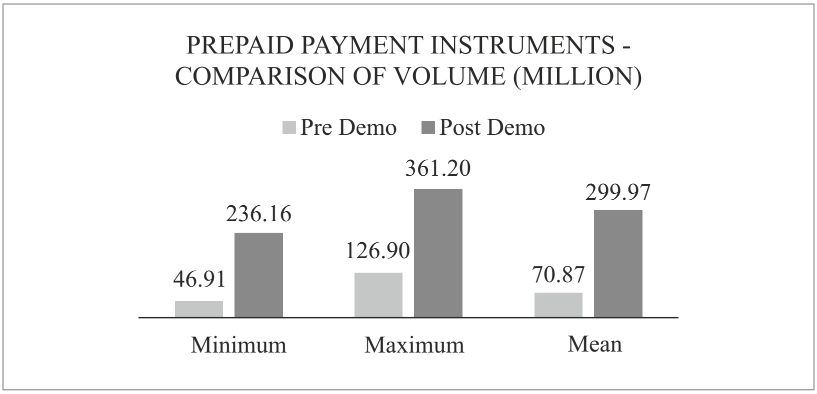
Prepaid Instruments include e-wallets, PPI cards & Paper Vouchers: Prepaid Payment Instruments (PPIs) are payment instruments that facilitate purchase of goods and services against the value stored on such instruments. An electronic wallet or a digital wallet refers to an electronic device or online service that allows an individual to make electronic transactions. This can include purchasing items on-line with a computer or using a smartphone to purchase something at a store.

An E-wallet or m-wallet needs to be linked with the individual's bank account to make payments. Examples of e-wallets in India are PayTm, Oxigen, Mobikwik, PayUMoney, Vodafone MPesa, Freecharge, JioMoney, State Bank Buddy, Chillr, ICICI Pockets, etc., which are emerging on the digital scene in a big way catering to faster and simpler way of settlement of huge volume of small value transactions.

Table 5: Descriptive Statistics of Prepaid instruments in Pre and Post Demonetisation Period

Prepaid Payment Instruments (PPIs)	**Pre Demonetisation March 2015 to October 2016**		**Post Demonetisation December 2016 to July 2018**	
	Volume (Million)	Value (Rupees Billion)	Volume (Million)	Value (Rupees Billion)
Minimum	753.85	2266.52	1037.66	1742.03
Maximum	1032.14	3069.65	1293.28	3645.58
Mean	875.52	2523.00	1140.51	3111.80

Figure 5: Prepaid instruments in Pre and Post Demonetisation Period



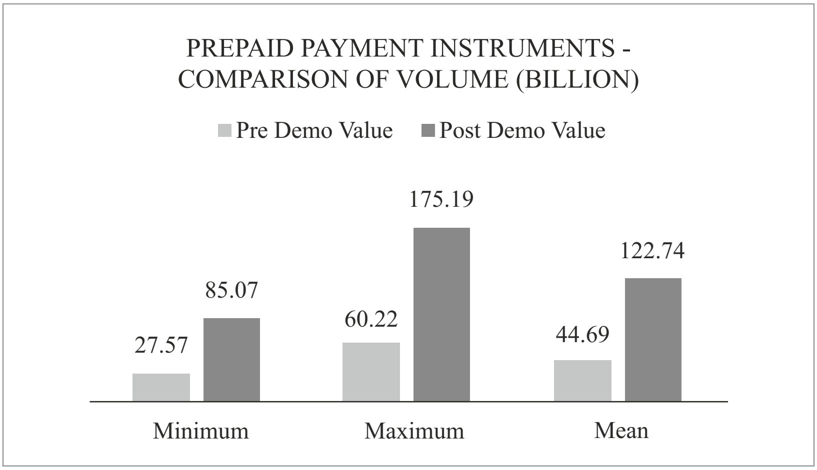
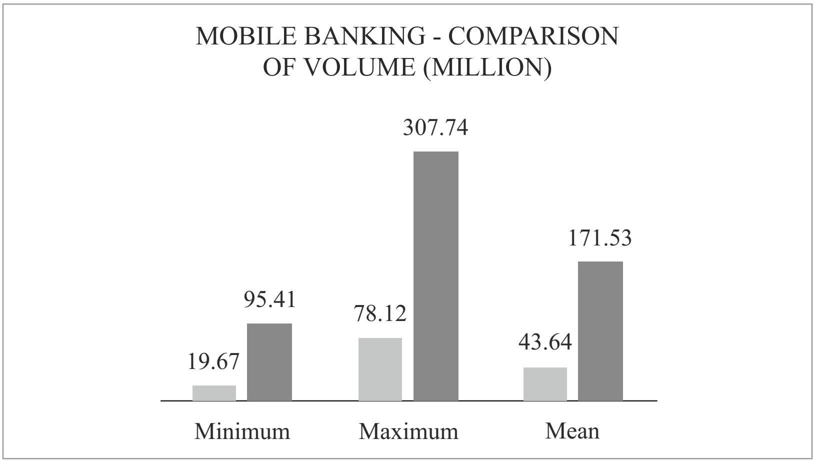


Table 5 shows the descriptive statistics of transactions through Prepaid Instruments include e-wallets, PPI cards & Paper Vouchers which took place in pre and post demonetisation in terms of volume and value. The minimum value of Prepaid Instruments in terms of volume of transactions ranges from 46.91 to 236.16 million transactions in the post demonetisation. The maximum Prepaid Instruments in terms of volume ranges from 126.90 to 361.20 million transactions in the post demonetisation period. The minimum Prepaid Instruments in terms of value of transactions ranges from INR 27.57 – INR 85.07 billion in the post demonetisation. The maximum transactions in Prepaid Instruments in terms of value ranges from INR 60.22 – INR 175.19 billion in the post demonetisation period. There has been an increase of 34.74 percent in volume and 79.31 percent in value of transactions in Prepaid Instruments. There is a positive correlation between value and volume of transactions of Prepaid Instruments at 5 percent level of significance in both the pre and the post scenario. t-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation transactions of Prepaid Instruments. Trend analysis is done for volume as well as value of Prepaid Instruments transactions in the post demonetisation period from August 2018 to December 2018. The average predicted volume of mean is 338.33 million (with a standard deviation of 4.85) and the average predicted value of mean is INR 169.06 billion (with a standard deviation of 5.86).

Table 6: Descriptive Statistics of Mobile Banking in Pre and Post Demonetisation Period

Mobile Banking	Pre Demonetisation March 2015 to October 2016		Post Demonetisation December 2016 to July 2018	
	Volume (Million)	Value (Rupees Billion)	Volume (Million)	Value (Rupees Billion)
Minimum	19.67	168.85	95.41	805.06
Maximum	78.12	1139.41	307.74	2134.20
Mean	43.64	502.84	171.53	1367.31

Figure 6: Mobile Banking in Pre and Post Demonetisation Period



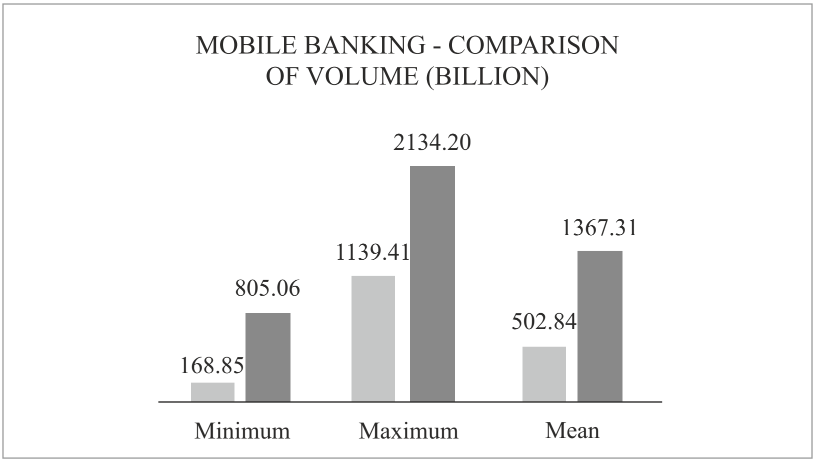


Table 6 shows the descriptive statistics of Mobile Banking which has taken place in pre and post demonetisation in terms of volume and value of transactions. The minimum value of Mobile Banking in terms of volume of transactions ranges from 19.67 – 95.41 million transactions in the post demonetisation. The maximum Mobile Banking in terms of volume ranges from 78.12 – 307.74 million transactions in the post demonetisation period. The minimum Mobile Banking in terms of value of transactions ranges from INR 168.85 – INR 805.06 billion in the post demonetisation. The maximum transactions in Mobile Banking in terms of value ranges from INR 1139.41 – INR 2134.20 billion in the post demonetisation period. It is interesting to observe that there has been an increase of 178.15 percent in volume and a meagre 13.34 percent in value of transactions in Mobile Banking. There is a positive correlation between value and volume of transactions of Mobile Banking at 5 percent level of significance in pre and but is insignificant in the post demonetisation scenario. t-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation transactions of Mobile Banking. The difference is only in volume but not in value of transactions. Trend analysis is done for volume as well as value of Mobile Banking transactions in the post demonetisation period from August 2018 to December 2018. The average predicted volume of mean is

316.96 million (with a standard deviation of 18.40) and the average predicted value of mean is INR 1376.68 billion (with a standard deviation of 1.18).

Table 7: Descriptive Statistics of Number of ATMs in Pre and Post Demonetisation Period

(in actuals) Number of ATMs	Pre Demonetisation March 2015 to October 2016	Post Demonetisation December 2016 to July 2018
Minimum	189279	219793
Maximum	219578	227758
Mean	205928	2226131

Figure 7: Number of ATMs in Pre and Post Demonetisation Period

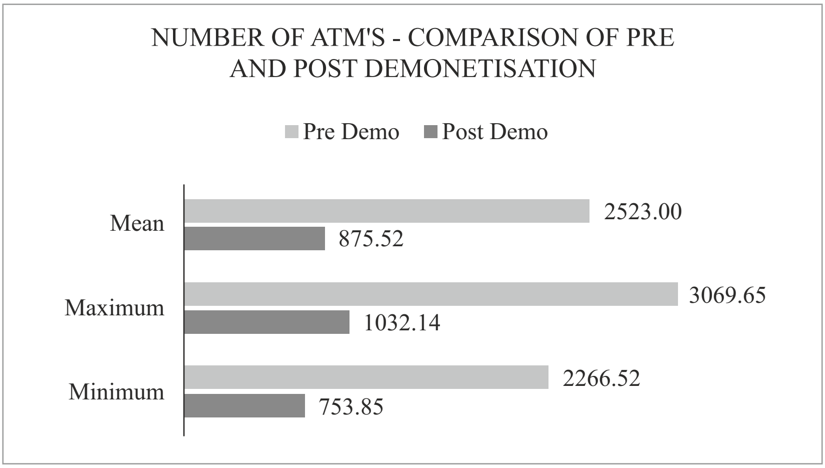


Table 7 shows the descriptive statistics of Number of ATMs in pre and post demonetisation scenario. During Post-demonetisation, the issues were in the form of long queues before ATMs because of insufficient number of ATMs and lack of sufficient amount of cash in the ATMs. It was a herculean task and a major challenge for the Indian Banking system to cope with this situation. One of the coping mechanisms was in the form of increasing the number of ATMs which was impossible overnight. Moreover, the existing ATMs were also required to be recalibrated to accommodate the size of newly printed currency notes. The minimum number of ATMs ranged from 189279 in pre demonetisation to 219793 (in actuals) in post demonetisation. The maximum number of ATMs ranged from 219578 in the pre demonetisation period to 227758 (in actuals) in the post demonetisation period. There has been an increase of 3.62 percent number of ATMs in the post demonetisation period. However, a large number of ATMs were not functional due to shortage of cash and non-supply or replenishment of cash to meet the pressing demand. t-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation in the Number of ATMs. Trend analysis is done to number of ATM's from August 2018 to December 2018. The average predicted mean is 225553 (in actuals) with a standard deviation of 371.80.

Table 8: Descriptive Statistics of Number of POS in Pre and Post Demonetisation Period (in actuals)

Number of POS	Pre Demonetisation March 2015 to October 2016	Post Demonetisation December 2016 to July 2018
Minimum	1125952	1767733
Maximum	1512068	3340029
Mean	1304153	2827262

Figure 8: Number of POS in Pre and Post Demonetisation Period

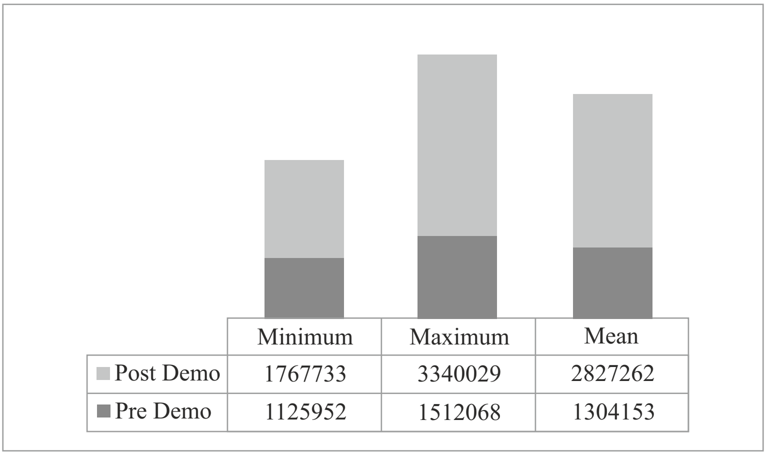


Table 8 shows the descriptive statistics of number of Point Of Sales (POS) in pre and post demonetisation scenario. The minimum number of POS ranges from 1125952 in pre demonetisation to 1767733 (in actuals) in post demonetisation. The maximum number of POS ranges from 1512068 in the pre demonetisation period to 3340029 (in actuals) in post demonetisation period. There has been an increase of 88.94 percent in number of POS in the post demonetisation period. t-test confirms that there is a significant difference (p-value = 0.00) between pre and post demonetisation in the number of POS. Trend analysis is done to number of POS from August 2018 to December 2018. The average predicted mean is 3652736 (in actuals) with a standard deviation of 104415.02.

PRACTICAL IMPLICATIONS AND FUTURE DIRECTIONS

Indian economy has been passing through growth path ever since planned development was introduced way back in 1950. Economic / Financial Sector including Banking, Social, Taxation, Legal and Technological changes were being brought in a conscientious manner through reforms by successive governments at Centre and States since 1991. In consonance with the evolution of technological advancements world over, India has been embracing the innovations in every field to sustain and deliver the promises made to the ever increasing population. Banking sector, both in public and private sector, being the backbone of the economy, has been undergoing the necessary changes to serve their customers among the large size of the population. The outcome is to go modern, offer a huge range of products and services and turn to be totally automated in order to serve maximum percentage of population, initiated during the mid-eighties. However, the ill-effects of growth and modernisation was found to be increase in corruption at all levels, accumulation of ill-gotten wealth, circulation of fake or forged currency, evasion of taxes and low productivity on account of manual operations.

Government of India, in consultation with RBI, undertook a sudden and surprise decision on November 8, 2016 by disrupting the system to overcome the above chronic problems and resorted to demonetisation of two high value currencies i.e., INR 500 and INR 1000, declaring them to be out of legal tender system. This move was taken to curtail black money and stop the use of counterfeit cash to fund illegal activities and terrorism. The currency in circulation has declined by 86 percent which forced people not only in big cities but even in rural areas towards digitisation. Though demonetisation was successful in some areas but there are some grey areas to it. The cost to RBI to remonetise the Indian market is Rs. 13000 crore. This includes printing of new notes both old and new denominations. Post demonetisation RBI profits have been affected. As per RBI report post demonetisation the fake currency decreased by 59.6% (2017-2018). Over Rs. 3 lakh crore which remained out of banking system as black money was deposited in banks post demonetisation. According to the Center for Monitoring Indian Economy demonetisation caused loss of 15 lakh jobs as of 2017. The real estate and agricultural sector was badly hit as an aftermath of demonetisation. According to RBI the currency in the system post demonetisation reduced to 87-88 percent (i.e, Rs.3-4 lakh crore less currency) post demonetisation. Banks in India have been issued necessary guidelines to deal with all issues connected with accepting of deposits of cash, restrict limits of withdrawals or transactions. While the Banking system was moving towards total computerisation, all the supporting systems developed and a host of products and services emerged. Demonetisation gave a Big Push to the already in process of automation in banks. In addition to Internet / Online banking in vogue, it activated all schemes like RTGS, ECS, EFT, NEFT, IMPS, NACH, Credit / Debit Cards, ATMs and POS. Alongside, facilities like Prepaid Instruments, electronic wallets, Payments Banks, Payments Settlement Institutions, Paper Vouchers, Mobile Banking etc., have moved in a big way to facilitate cash-less transactions, while the economy itself was experiencing boom in retail markets and e-commerce, thanks to technology. Digital literacy, connectivity issues via broadband and Wi-Fi issues prevent a vast majority to rapidly shift to digital options. Research is being carried out by all the agencies concerned to off-set the obstacles and move faster ahead towards digitisation and cash-less economy. The authors studied the value and volume of all digital transactions 20 months prior to and 20 months after the demonetisation and found that there have significant and substantial gains to all concerned in smooth transition to the new India – Digital India through Digital Banking.

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