A Study on the Impact of Digital Transaction Revolution on the Banking Industry in India

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Abstract *The Indian Banking Industry in the age of millennials is going through a digital revolution which will have a lasting impact on the banking institutions as well as its customers. The various committees on the Payment and Settlement System has found various strategies in order to transform the industry from mechanizing the industry to learning the framework of blockchain technology. The precise step to affordable as well as universal payments plus remittances will probably be once we can discover a secure method to enable funds to be conveniently transmitted amongst bank accounts and mobile wallets. This study focuses on predicting the future growth of innovative financial payment systems in the industry thereby showcasing a remarkable growth in the non-cash-based settlement system after the advent of demonetization activity of 2016. The new-age banking industry due to introduction of payment banks and other innovative instruments will help in enhancing the age-old banking industry with the help of fintech partnership providing an efficient customer experience.*

Key Words: *Banking Industry, Payment and Settlement System, Digital.*

1. INTRODUCTION:

The committee on Mechanization in the Banking Industry (1984) chaired by Dr. C. Rangarajan introduced Magnetic Ink Character Recognition (MICR) Clearing System taking the first step towards the non-cash mode of payment system. Since then the Reserve Bank of India (RBI) as the central bank of India has played a constructive role in creating a robust infrastructure for the payment and settlement system. The vast geographical spread of the country and the interconnected network of branches of the Indian Banking Sector emphasized on developing the payment system whereby various initiatives were taken by the RBI in the mid-eighties and mid-nineties concentrated on innovation based answers for the change of the instalment and settlement framework foundation with the introduction of Electronic Clearing Service (ECS), Electronic Fund Transfer (EFT) both regional and national with debit and credit services in providing an easier and faster method of settlement process and customer satisfaction.

The roll-out of the Payment and Settlement Systems Act, 2007 has led to greater approval and penetration of modern card/ electronic settlement methods in the nation, Aadhaar Enabled Payment Systems (AEPS) has benefited towards leveraging upon biometric proof along with an indigenous card system that is, RuPay. The Reserve Bank of India in addition has a short while ago authorized licenses for establishing Payments Banks with the aim of increased financial inclusion through the Payments Banks by giving small savings accounts and payments/remittance solutions to help migrant workforce, lower income households, small business owners, various other unorganized segment organizations.

Together with their unique mandates in order to engage the unbanked, boost financial inclusion as well as digitize cash, Payments Banks (PB) thought of by Reserve Bank of India (RBI), can be found on their strategy to transform the banking industry. In India's cash-based economy, electronic settlement programs will certainly generate advancement in non-cash transaction. Yet another significantly less discussed development is the Bharat Bill Payment System, UPI and BHIM which benefit the customer as well as different utilities and small merchants for sharing the bill information. Dr. Nachiket Mor Committee suggested that the precise step to affordable as well as universal payments plus remittances will probably be once we can discover a secure method to enable funds to be conveniently transmitted amongst bank accounts and mobile wallets, in addition to cashed out of mobile wallets, via much greater and common link with business correspondents.

The rapid innovations taking place in the financial segment has resulted in RBI communicating with banking institutions to learn Blockchain technology and creating a new panel to explore blockchain technology [1]. A significant majority of the Indian population continue to fall short of the means to access the banking system and this actual fact is frequently abused by the tainted bureaucracy. All these limitations could be re-structured by way of implementing the Blockchain concept by Indian Government and Financial Institutions. Trade and supply chain finance tends to deal with large databases in banking institutions throughout the Indian subcontinent, however the procedures demand numerous documentation, manually operated application and confirmation, and therefore are most wrought with inefficiencies which makes funding very difficult and costly to acquire.

At the same time, consumers currently have little or no awareness in the status of their total requests as well as financial transactions, resulting in inefficiencies within their very own supply chain planning. Blockchain offers the

probability of primarily renovating these types of business operations, appreciably lowering the time period as well as expense for acquiring investment, whilst offering safeguarded visibility in the status of financial transactions for all parties concerned. Reducing the cost of financing, could have an additional constructive effect of opening financial answers to the actual typically previously untapped small and medium enterprise sector in the Indian subcontinent.

2. LITERATURE REVIEW:

(Dr.Deepak Tandon). [3] have analyzed in their study the transformation of payment system in the banking setup. The nineties reform of Indian economic system which paved way for globalization and new technological innovation helped in improving the overall efficiency, customer service, faster working of the banking operations. The authors attempted to support their study by applying Shapiro – Wilk test of (Punjabi, 2016) (Punjabi, 2016)normality and t-tests to check the movement from paper-based system to a paperless system.

In a study done by Punjabi (2016), [5] about the e-payment system which points out the revolution in the financial sector and its acceptance by the consumers, retail and corporates. The author has compared the e-finance model of India and China in order to compare the usage and reach of electronic modes and differentiate the business model in the two countries. [4] Further the trends of physical and financial savings of various households based on secondary data from RBI website was analyzed thereby showcasing an increase in the volume of digital transactions in India.

The past few years have seen the Indian government accepting the growth of various technological innovations in the financial markets which had been made prominent in the union cabinet meetings. The introduction of blockchain framework in the Indian banking industry in order to improve the operational efficiency and customer experience along with reducing the carbon-footprints. [6] The reports of the cabinet from 2013 highlights the performance of National Payments Corporation of India, Aadhar -enabled services, Bharat Bill Payment System, Payment Banks and Business Correspondents.

The Green banking study by (Dr. B Manohar, 2013) [2] highlights the primary initiative of green banking to their customers with the main aim of cost saving identifying the various initiatives taken by several banks. The paper also highlights the initiatives taken by the government of India in order to increase the usage of electronic payment thereby improving the quality and efficiency of the service delivery. Their study also highlighted the trend increase in value and volume of payment and settlement system in the country for the period of 2009-2012. The authors suggest the banking industry to adopt sustainable banking practices to sustain in the ever-changing global markets.

The demonetization of 2016 in India has had an ever-lasting impact in boosting the digital banking industry in the nation. The voluminous transaction increase in the non-cash mode of payment compared to the cash-based payment system has paved way for conducting a research study towards the technological revolution which aims to sweep away the traditional banking system and introducing various financial innovations. Financial Illiteracy has always been a hindrance in the path of Digital India and technological transformation.

Thus, India's Demonetization of 2016 made it necessary for the common man to be technologically – friendly and make efficient use of the payment and settlement system of the Indian Banking Industry. This research study analyses how an instant change occurred after various digital reforms and their forecasted growth in the future and their lasting impressions on the increased usage of formal financial system considering the Indian Banking Industry.
For this research, concerning the digital revolution of the financial system the data was collected from Reserve Bank of India and the National Payment Corporation of India. Information regarding, transactions of Point of Sale, Prepaid Payment Instruments, Unified Payment Interface and Mobile Banking transactions have been studied from the time period of October 2015 – October 2017. The data consisted of transactions pertaining to net settlement branches of Mumbai, Delhi and Chennai and the clearing houses managed by 21 banks which have been released on a monthly basis by the central bank, mobile banking figures taken from 5 banks and PPI of 8 issuers for goods and services transactions only collected by RBI. The limitations pertaining to this study would be the data studied to a confined time-period, data released by RBI constricts itself to only few centers and payment providers.

3. METHODOLOGY:

Recent demonetization activity of higher denomination notes via the government had truly sped up the transformation regarding digital banking in India. Increase in the volume of digital transactions has been rapid since November 2016. Thus, the increase in the formal financial system through the transactions in the Indian Banking Industry provides an insight on the revolutionary effect of the financial reforms and introduction of various innovative technology in the industry.

The primary objective of this research study is: -

- To study the impact of Digital Transaction Revolution on the Banking Industry in India.

The Secondary objective of this research paper will be as follows:

- To identify the usage of various modes of innovative Payment & Settlement in India.

- To ascertain the estimated growth of non-cash transactions using ARIMA Model.

The data has been analyzed with the help of forecasting the foreseeable future with the help of ARIMA forecasting analysis. It helps to forecast the growth of electronic transactions in the banking industry to help achieve the objectives of this study.

4. ANALYSIS AND FINDINGS:

Eviews 9.5 software was used for forecasting the estimated growth in the volume of transactions of new and innovative payment and settlement system using ARIMA – Autoregressive Integrated Moving Average Model. For this purpose, a stationarity test was carried out to find out if the data being analyzed is significant or not based on the following hypothesis:

H_o: Unit root is present in the data
H_a: Unit root is not present in the data. The data is stationary.
The below table gives the stationarity result of the data by analyzing the probability (p-value), it states that if the p-value is less than 0.05%, then reject null hypothesis i.e. the data being analyzed is significant or the data is stationary.

Table:1 Stationarity Test

AUGMENTED – DICKEY FULLER TEST (UNIT ROOT STATIONARITY TEST)		
INSTRUMENT	**P-VALUE**	**REMARK**
Mobile Banking	0.0203	At Level
Point of Sale	0.0475	At Level
Pre-Paid Instruments	0.0022	At Level
Unified Payment Interface	0.0001	At First Difference

From the above table, it can be ascertained that the p-value of the payment systems are less than 0.05%. thus,
Reject Null hypothesis (H_o) and
Accept Alternate hypothesis(H_a)
which means the data is stationary or there is no presence of unit root in the data being analyzed.

ARIMA forecasting also known as time series analysis for the payment and settlement system being studied in this research paper to predict their performance in terms of voluminous transactions in the foreseeable future based on the data of the Demonetisation period as it showed a greater impact on the increased usage of such payment systems in banking industry on a daily usage. The Automatic ARIMA Forecasting tested on Eviews9.5 for Mobile Banking, Point-of-sale, Pre-Paid Instruments and Unified Payment Interface takes into consideration the following criteria regarding observations: -

Table:2 Automatic ARIMA Forecasting

SAMPLE	12/01/2016 11/30/2017
RANGE	12/01/2016 12/31/2018
INCLUDED OBSERVATIONS	364
FORECAST LENGTH	396

MOBILE BANKING

ARIMA Forecasting for Mobile Banking transactions has been tested in E-Views 9.5, wherein the sample for the test is dated from 1/12/2016 to 30/11/2017 with a range of observations from 1/12/2016 to 31/12/2018. Henceforth the forecasted performance of mobile banking transactions has been showcased and the best AR MA model has been selected by the software from a total of 364 observations.

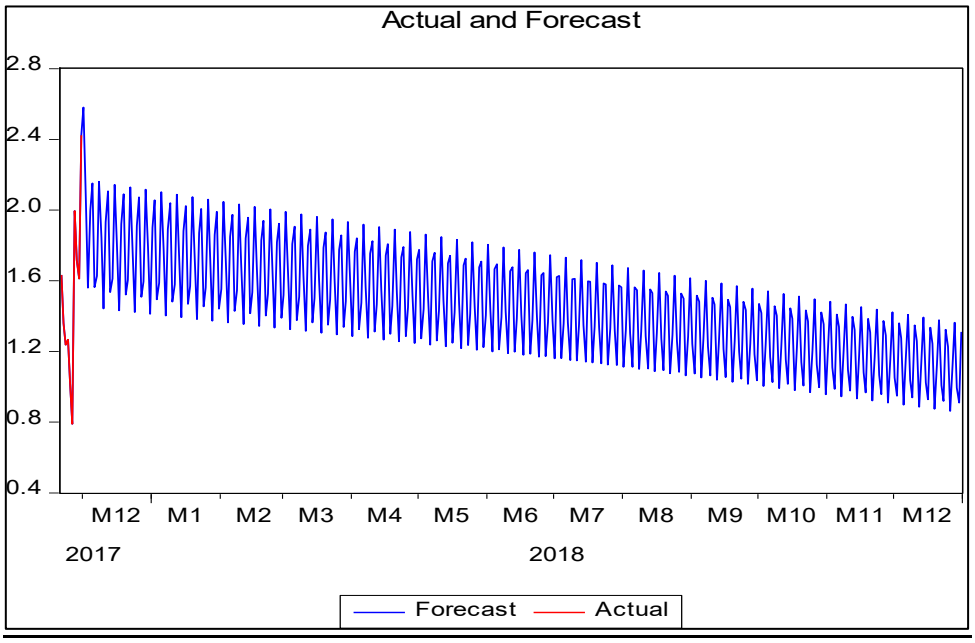

Figure:1 Mobile Banking Transactions

It can be inferred from Graph that the forecast of mobile banking transactions showcases a declining performance in the foreseeable future for the year 2018 post-demonetisation incident.

The ARIMA model studies the trend and performance of mobile banking transactions from the sample observations and as a result it showcases the forecast of the transaction depending upon their performance in the past which is depicted by the actual performance.

POINT-OF-SALE (POS)

ARIMA Forecasting for Point-of-Sale transactions has been tested in E-Views 9.5, wherein the sample for the test is dated from 1/12/2016 to 30/11/2017 with a range of observations from 1/12/2016 to 31/12/2018. Henceforth the forecasted performance of Point-of-Sale transactions has been showcased and the best AR MA model has been selected by the software from a total of 364 observations.

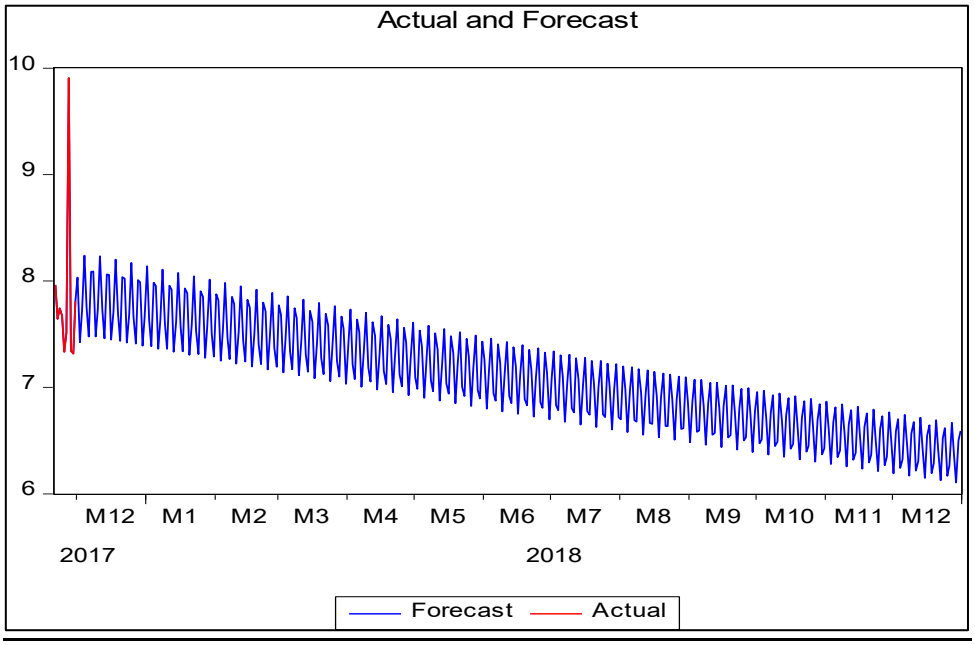

Figure:2 Point of Sale Transactions

It can be inferred from Graph that the forecast of Point-of-Sale transactions showcases a declining performance in the foreseeable future for the year 2018 post-demonetisation incident.

The ARIMA model studies the trend and performance of Point-of-Sale transactions from the sample observations and as a result it showcases the forecast of the transaction depending upon their performance in the past which is depicted by the actual performance.

PREPAID INSTRUMENTS (PPI)

ARIMA Forecasting for Point-of-Sale transactions has been tested in E-Views 9.5, wherein the sample for the test is dated from 1/12/2016 to 30/11/2017 with a range of observations from 1/12/2016 to 31/12/2018. Henceforth the forecasted performance of Point-of-Sale transactions has been showcased and the best AR MA model has been selected by the software from a total of 364 observations

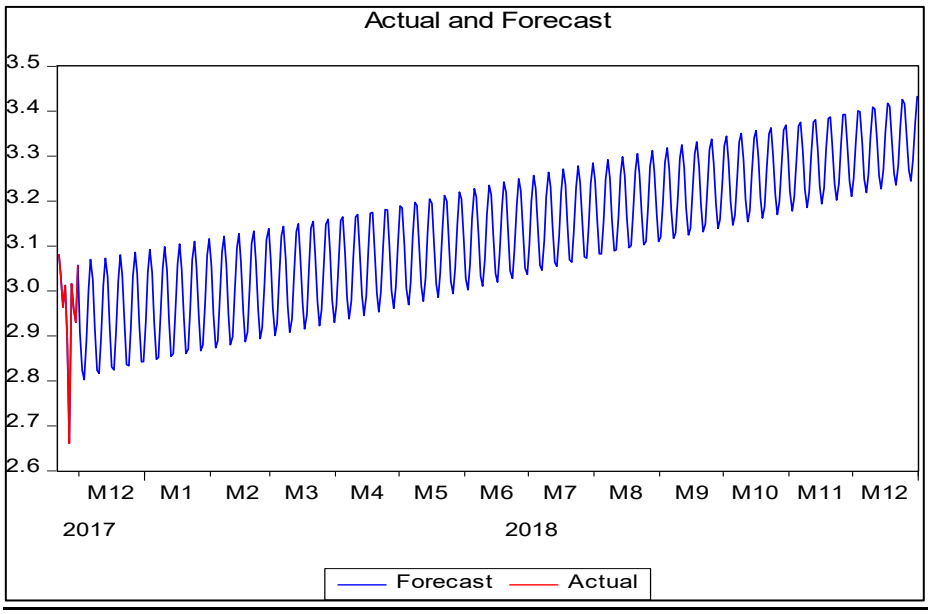

Figure:3 Prepaid Instruments Transactions

It can be inferred from Graph that the forecast of Point-of-Sale transactions showcases a declining performance in the foreseeable future for the year 2018 post-demonetisation incident.

The ARIMA model studies the trend and performance of Point-of-Sale transactions from the sample observations and as a result it showcases the forecast of the transaction depending upon their performance in the past which is depicted by the actual performance.

UNIFIED PAYMENTS INTERFACE (UPI)

ARIMA Forecasting for Point-of-Sale transactions has been tested in E-Views 9.5, wherein the sample for the test is dated from 1/12/2016 to 30/11/2017 with a range of observations from 1/12/2016 to 31/12/2018. Henceforth the forecasted performance of Point-of-Sale transactions has been showcased and the best AR MA model has been selected by the software from a total of 364 observations

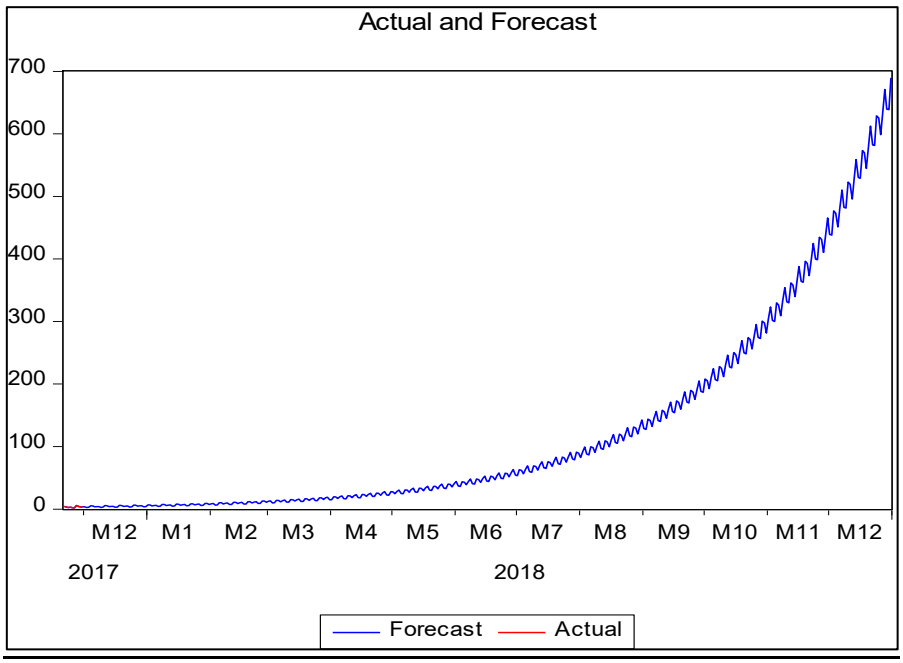

Figure:4 Unified Payments Interface Transactions

It can be inferred from Graph that the forecast of Point-of-Sale transactions showcases a declining performance in the foreseeable future for the year 2018 post-demonetisation incident.

The ARIMA model studies the trend and performance of Point-of-Sale transactions from the sample observations and as a result it showcases the forecast of the transaction depending upon their performance in the past which is depicted by the actual performance.

5. CONCLUSION:

The digital transaction revolution in the Indian Banking Industry has made its mark and with the tech-savvy millennials as the end-customer it becomes essential for the traditional banks to adopt changes which attract such customers and maintain their market position since various financial innovations in terms of payment banks and other payment and settlement system which supports the results of this study via forecasting an upward projection in the volume of transactions of new age settlement system. The present ecosystem relies upon over the presence of physical facilities; for the approval of non-cash payments as well as the development of these facilities has, so far, lagged the issuance involving payment instruments which include credit and debit cards

Fintech participants are anticipated to be able to significantly lower the cost of financial intermediation, eroding lenders' income. Could wide-spread interruption might appear disturbing, it can also give access to ways intended for digital transformation and thus, innovative options for income for banking institutions. Banking institutions are now being motivated to enhance age-old business methods to provide a broader range of expert services that will allow them to also compete efficiently with all the lean, agile and innovative fintech startups.

6. RECOMMENDATIONS:

The digital transaction revolution in the Indian Banking Industry has made its mark and with the tech-savvy millennials as the end-customer it becomes essential for the traditional banks to adopt changes which attract such customers and maintain their market position since various financial innovations in terms of payment banks and other payment and settlement system which supports the results of this study via forecasting an upward projection in the volume of transactions of new age settlement system. The present ecosystem relies upon over the presence of physical facilities; for the approval of non-cash payments as well as the development of these facilities has, so far, lagged the issuance involving payment instruments which include credit and debit cards.

Blockchain, typically identified as the anchor technological innovation with regards to Bitcoin, has become the promising modern advances presently available in the market luring massive amount attentions from businesses, start-ups as well as media. Reserve Bank of India (RBI) continues to be closely managing advancements associated with Blockchain technology. In July 2016, Institute for Development and Research in Banking Technology (IDRBT) the technological know-how research arm associated with RBI) obtained the initiative regarding studying the applicability of Blockchain for the Indian Banking and Financial Industry by means of conducting a workshop concerning all of the stakeholders including the academicians, bankers, regulators and technology partners. This particular study leads the way to carry out additional research within the identical lines. The additional probable studies in relation to this study can be:

1. The concept of Blockchain technology in the Banking Industry.
2. The performance of Banking Institutions with respect to their partnership with their Fintech counterparts.

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