

## **An Evaluative Study on Payment and Settlement Transaction System in India**

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**Abstract:** Now banking sectors are fully focused technology based and to engage on electronic devices, banking websites and mobile apps initiatives banking sectors. The main reason is reducing physical activities in money transactions and other operations. The Government of India through initiative cashless transactions is developing and the growing India economy is utilizing modern banking operations. But the payment settlement system digitalized transaction is entirely very well challenged and creates new opportunities for every person. They are the greatest opportunities and challenges are slowly acceptability. Safety and Security are the most concerning issues to the people. They are to create awareness and educate people followed by new initiatives to realize and utilize the benefits of a progress of banking transactions. This relative study of payment settlement systems is shows that there are levels of significant differences on the transactions of Real Time Gross Settlement (RTGS), Paper Clearing, Retail Electronic Clearing, Debit & Credit Cards, Prepaid Payment Instruments (PPIs), Mobile Banking and Mobile wallets volume and value. Simple percentages have been used to analyze and interpret the data on selected payment settlement systems made in India; during the study period of 2012-13 to 2018-19 (7 years).

**Keywords:** Real Time Gross Settlement, Paper Clearing, Retail Electronic Clearing, Debit & Credit Cards, Prepaid Payment Instruments, Mobile Banking and Mobile wallets.

## 1. INTRODUCTION

Banking systems are ready to move on digital transactions. Reserve Bank of India (RBI) has initiated the payment and settlement systems Act implemented in 2007. Payment and settlement system comprises various arrangements that are used to systematically, efficiently and securely transfer money/currency, cheques, demand drafts, and money through various electronic channels. In most countries the Central Bank is generally the regulatory authority and is responsible for development of the National Payment System. In India, RBI is the regulatory authority and is in charge of driving the development of our National Payment and Settlement System. The highest policy making body on the payment System in our country is the Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), a sub-committee of the RBI and the rule and regulation is done in in a manner conforming with the Payment and Settlement Systems Act, 2007 (PSS Act). The Reserve Bank of India frequently make great efforts towards given that more safe & secure, convenient and efficient procedure for payments systems in the country. RBI endlessly works towards promotion the existing systems and pushing utilizing for innovation and development of new ones, thus slowly and progressively appearance to the payment and settlement facilities in India.

The success of Payment and Settlement Systems in India is evaluated on the basis of programs through the following initiatives by Banks during the study period. The RBI has been playing the role of developing the nation by taking several initiatives to ensure a safe, secure, sound, efficient, accessible and authorized payment system in India. It has authorized the operator of prepaid payment instruments, card schemes, cross-border in-bound money transfers, debit card and credit card networks and centralized clearing arrangements under the payment & settlement system act 2007. Analysis mean, SD., average growth rate and simple percentage trend graphs have been used to analyze and interpret the data on Progress of Green Banking in India during the study period of 2011-12 to 2018-19 (8 years).

## **2. OBJECTIVES OF THE PAPER**

The following are the objectives of the present paper:

1. To examine the Payment and Settlement Systems in India.
2. To analyze the payment and settlement system transactions volume and value transactions services in India.

## **3. HYPOTHESIS**

The following hypothesis is framed and tested with Trend Line Graphs growth analysis.

H<sub>0</sub>: There is no significant association between the growth of payment and settlement system transactions volume and value.

H<sub>0</sub>: There is no moving on digitized banking transactions in India.

## **4. LITERATURE REVIEW**

Aisha Badruddin., (2015) examined this paper aimed to realize the various services provided by the RBI to expedite payment and settlement problems. The peoples are adoption of electronic payments need to speed, efficiency and security, creating awareness, trust and safety of operations in the behaviour activities. Further initiatives for banking technology infrastructure enhancement and introduction of white label ATMs, card less cash withdrawal ability for unaccounted persons, implements RTGS and attractive faculty of the NEFT system for larger volumes and effectiveness.

Saba Abid., (2016) said that the electronic payment system has changed the usual payment system in India. E-payment methods provided by RBI in Indian banks are created in terms of value and volume transactions. The comparative analyses of the five years report in RBI Bulletin to differentiated e-payment are Electronic Clearing Service, National Electronic Clearing Services, National Electronic Fund Transfer and Real-time Gross Settlement etc.

Prashanta Athma., & Bhavani, A. (2017) observed the India banking sector is moving on main conversion, with new policy initiatives and a good business environment. The factors recommend that India's banking sector is set for a vigorous enlargement with the increasing business new opportunity. The current technological progressions have brought the PC, mobile and internet banking services to the forefront which also includes a slew of enhanced services for giving the highest satisfaction to the banking customers.

Vasan, M., & Senthil, B. (2018) said that Information and Communication Technology has revived the financial services sector mostly in the Indian banking sector. The banks have accepted increasing practices of value of e- banking thought and they are adapting themselves with the pioneering technologies. E-banking has made the revenue and payments operations of the banks automatically. E-banking plays a considerable role in providing exclusive services to the banking customers. It makes it easy to increase the acceptance of the customers because it reduces cost, better efficiency, safety and security of a variety of banking operations. The reach of innovation and the new ideas are Real Time Gross Settlement, Mobile banking, National Electronic Fund Transfer, Electronic Clearing Service have made considerable moves in payment systems through electronic devices etc.

Kavita Yadav., (2019) said that finance and banking are moving on the same boat of any business money transactions. RBI has published more guidelines for Indian Banking sector and successfully developed a system of accounting with confidential banking main processes. The practice of banking was declared in the decade of the eighteen century. Current era banking technology has been moving in a great role in response to the rising requests of Indian financial system. To progress their concert, banks have made an important investment in the information technology sector.

## 5. RESEARCH METHODOLOGY

The present paper is descriptive in nature and is based on secondary data only. The data were collected from RBI bulletin annual report (2012-13 to 2018-19) and other related publications. The literature was collected from authorized national and international published journals and related websites. The analysis was based on trend line graphs, growth analysis and descriptive statistics has been used to analyze this data.

## 6. PAYMENT AND SETTLEMENT SYSTEMS IN INDIA

An Evaluative Study on Payment and Settlement for Real Time Gross Settlement, Paper Clearing, Retail Electronic Clearing, Debit & Credit Cards, Prepaid Payment Instruments, Mobile Banking and Mobile wallets Transactions Volume & Value System in India.

### 6.1 Real Time Gross Settlement (RTGS)

Real time gross settlement was introduced in 2004 and accepts all inter-bank. RBI has a money transfer system everywhere and follows transfer of money any time and to any place from one bank to another bank transaction on real time gross settlement basis. Transaction in real time of course payment transaction is not issued to any to come era.

Fig. 1.1 RTGS Volume (Million)

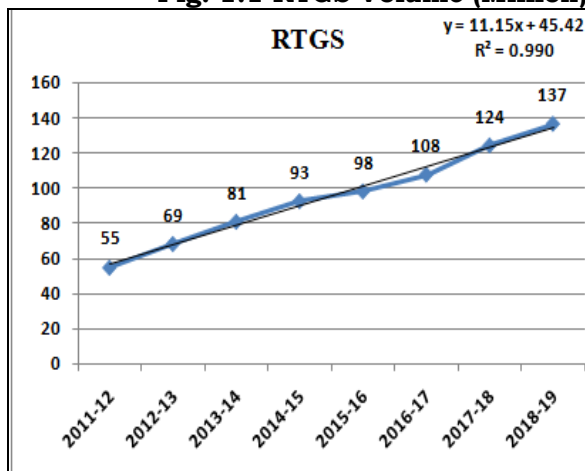
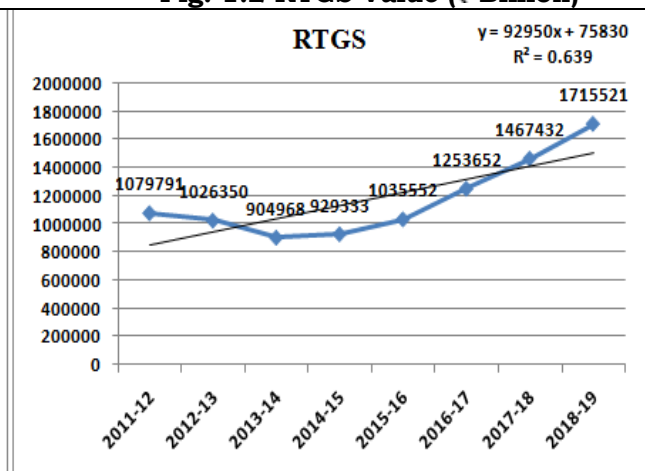


Fig. 1.2 RTGS Value (₹ Billion)



Source: RBI Bulletin 2012-13 to 2018-19.

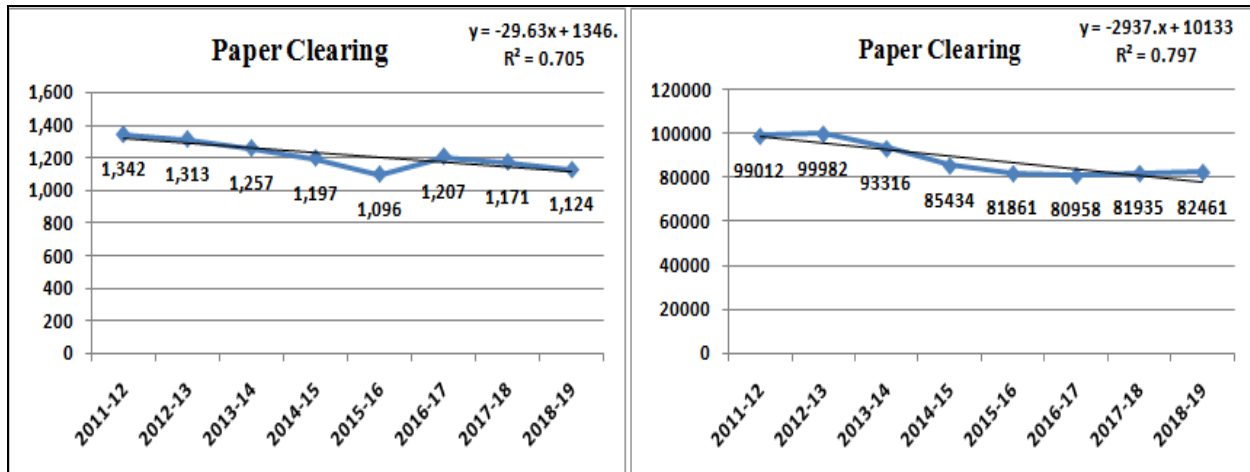
In these measures of Trend Line Graphs on Progress of RTGS in India are presented below the RTGS Volume (Million) that is positive trend; R-squared value is 0.990. So, it has a correct fit of the trend line is nearest to 100% growth and RTGS Value (Billion) that is positive trend; R-squared value is 0.639. So, it has a correct fit of the trend line is nearest to 64% growth.

### 6.2 Paper Clearing

Paper clearing banking transaction systems in India through use of paper based instruments like cheques and drafts accounts for almost 60% of the volume of total cashless transactions in the country. Negotiable Instrument (NI) Act 1881, Section 13 is a moreover to order to carried from recognized by statute is Promissory notes, Bills of exchange and Cheques is passed in India it gives legal usage of individualism instruments through cheque bill of exchange, Promissory note and non-cash paper payment instrument systems in India. Paper clearing banking measures Cheque Truncation System (CTS), Magnetic Ink Character Recognition (MICR) Clearing, RBI Centres, Other Centres, and Non-MICR Clearing. Paper clearing banking transaction systems has reduced the use of paper work transactions then some time to fully moving on electronic mode.

Fig. 2.1 Paper Clearing Volume (Million)

Fig. 2.2 Paper Clearing Value (₹ Billion)



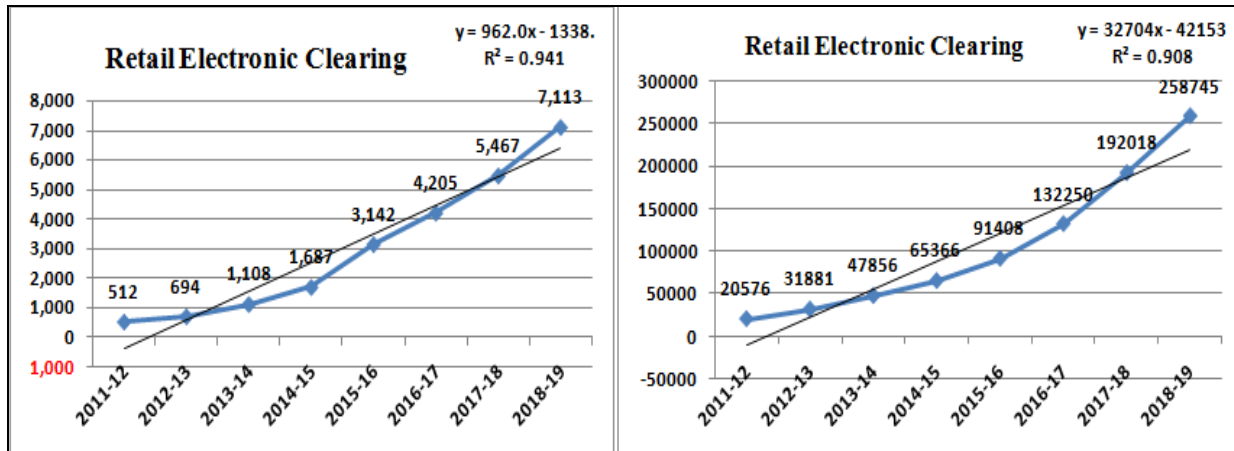
Source: RBI Bulletin 2012-13 to 2018-19.

The measures of Trend Line Graphs on Progress of Paper Clearing in India are presented below the Paper Clearing Volume (Million) that is negative trend; R-squared value is 0.705. So, it has a correct fit of the trend line is nearest to 70% growth and Paper Clearing Value (Billion) that is negative trend; R-squared value is 0.797. So, it has a correct fit because reducing the paperwork moving on digital transactions of the trend line is nearest to 80% growth.

### 6.3 Retail Electronic Clearing

The RBI has been following new technological transactions through online payment settlement systems. Retail Electronic Clearing for Electronic Clearing Services (ECS Debit), Electronic Clearing Service (ECS-Credit), National Electronic Funds Transfer (EFT/NEFT), Interbank Mobile Payment Service (IMPS), National Automated Clearing House (NACH). ECS Debit is known as the debit-pull option which is used mainly for minimum value payments from consumers and individuals to large business organizations or private & public companies. It uses payments like telephone bills, electricity bills, online purchases, card payments and insurance payments etc. ECS Credit known as Credit-push options are used mainly for maximum value or bulk payments. Such payments are used to pay salaries, dividends or commissions etc. It is one of the convenient ways of making large payments systems. Future NACH (Debit) & NACH (Credit) aims to make interbank easier to interbank more volume, down value of debit & credit transactions, which are recurring in the natural world, by electronic means by the NPCI service.

Fig. 3.1 Retail Electronic Clearing Volume (Million) Fig. 3.2 Retail Electronic Clearing Value (₹ Billion)



Source: RBI Bulletin 2012-13 to 2018-19.

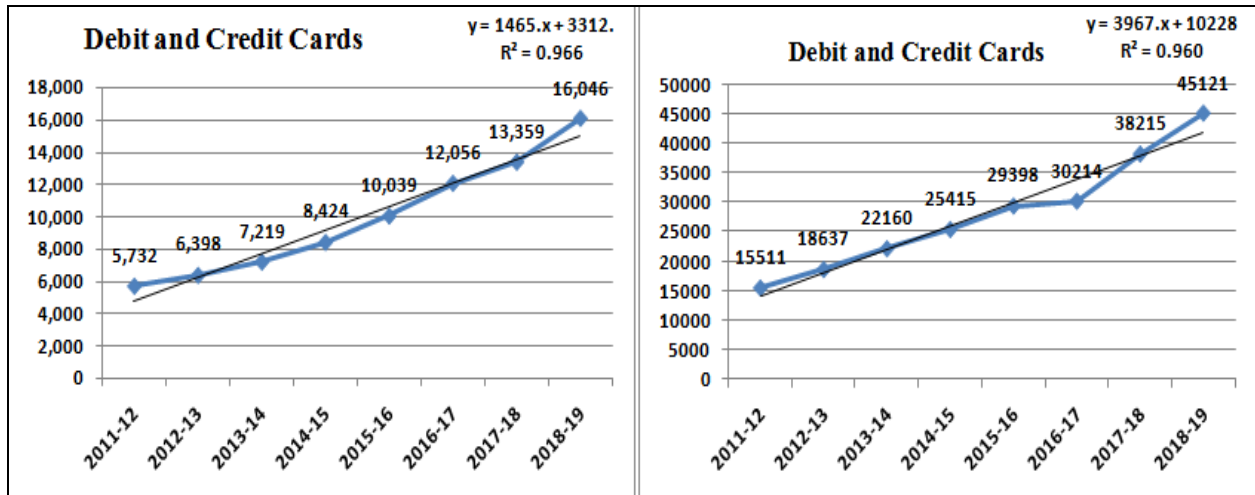
The measures of Trend Line Graphs on Progress of Retail Electronic Clearing in India are presented below the Retail Electronic Clearing Volume (Million) that is positive trend; R-squared value is 0.941. So, it has a correct fit of the trend line is nearest to 94% and Retail Electronic Clearing Value (Billion) that is positive trend; R-squared value is 0.908. So, it has a correct fit of the trend line is nearest to 91%.

#### 6.4 Debit & Credit Cards

The debit card had extended likely in India as the domestic and business funds were used for ATM transactions. Debit card or plastic payment card is used for purchases and Payment purposes. Indian banks have issued Visa debit cards while some banks through commercial banks in India have issued Maestro cards. Transactions of debit cards are routed in this Visa or Mastercard systems in India. Moreover, in the overseas slightly more than straight of via is issuing authority for banks only in some details given below within Usage at ATMs and Usage at POS.

Credit card is one of the plastic payment cards. This card issued to user's card holders that enables the card holder to pay for goods and services is supported on the cardholder's assurance to the card giver to pay them for the value of amounts so paid plus other agreed charges. The card issuer usually in a bank creates a revolving account and grants a line of credit to the cardholder, from which the cardholder can borrow money for payment to a merchant or a cash advance. Credit card is special from a charge card, where it needs the balance to be repaid in full amount for every month. It can be utilized to have Usage at ATMs and Usage at POS.

Fig. 4.1 Debit & Credit Cards Volume (Million) Fig. 4.2 Debit & Credit Cards Value (₹ Billion)



Source: RBI Bulletin 2012-13 to 2018-19.

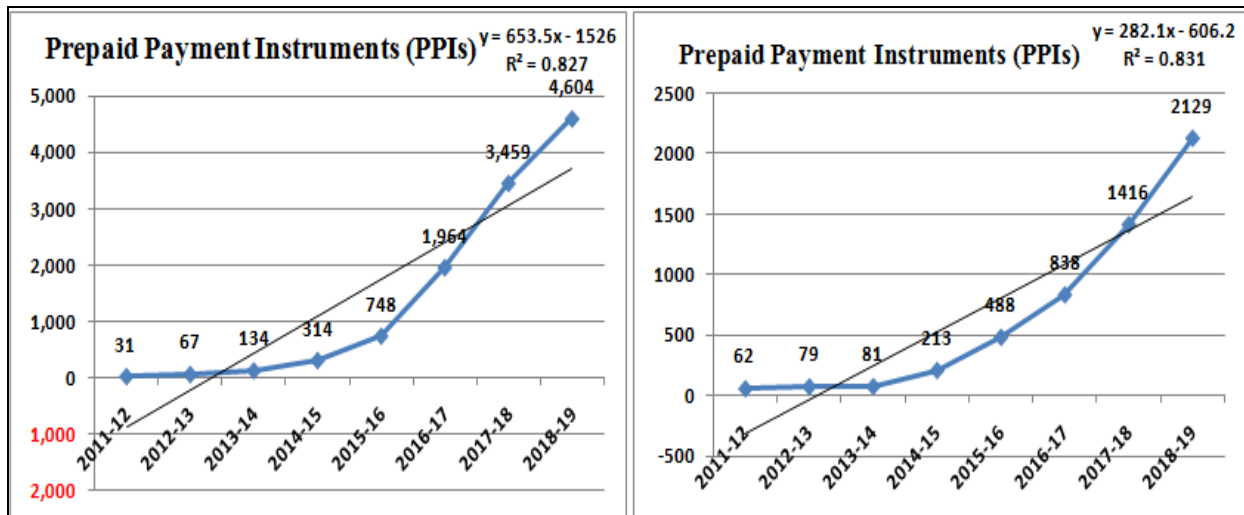
The measures of Trend Line Graphs on Progress of Debit & Credit Cards in India are presented below the Debit & Credit Cards Volume (Million) that is positive trend; R-squared value is 0.966. So, it has a correct fit of the trend line is nearest to 97% growth and Debit & Credit Cards Value (Billion) that is positive trend; R-squared value is 0.960. So, that is a correct fit of the trend line is nearest to 96% growth.

### 6.5 Prepaid Payment Instruments (PPIs)

Prepaid Payment Instruments is a type of m-Wallet such as PPI Cards and Paper Vouchers. Payment protection insurance is called PPI or sometimes loan policies are intended to help repay debts such as mortgages, loans and credit cards if they are unable to work because of illness or made redundant and some utilization through paper vouchers.

Fig. 5.1 PPIs Volume (Million)

Fig. 5.2 PPIs Value (₹ Billion)



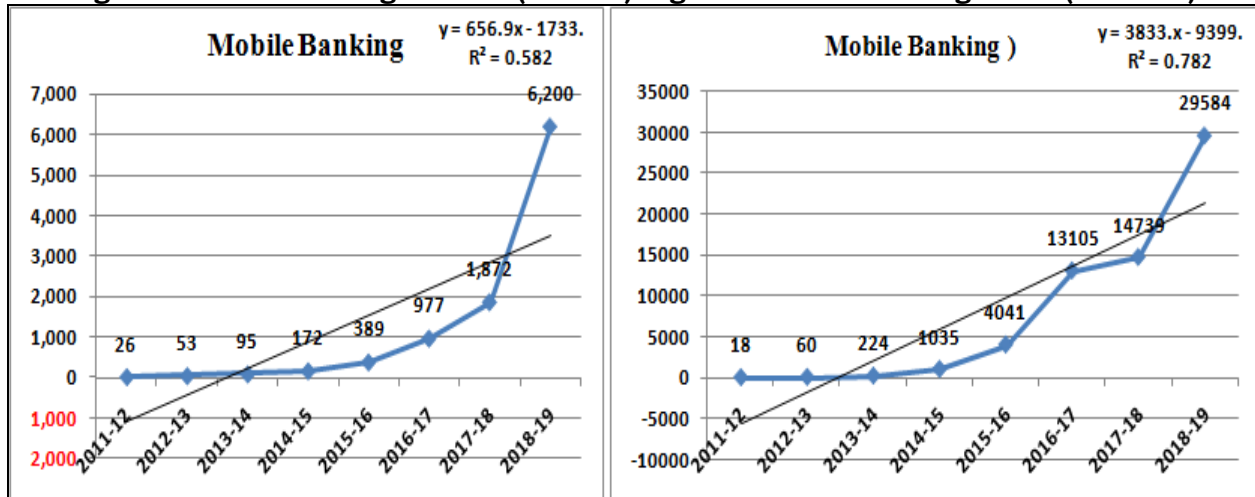
Source: RBI Bulletin 2012-13 to 2018-19.

The measures of Trend Line Graphs on Progress of Prepaid payment Instrument (PPIs) in India are presented below the PPIs Volume (Million) that is positive trend; R-squared value is 0.827. So, it has a correct fit of the trend line is nearest to 83% growth and PPIs Value (Billion) that is positive trend; R-squared value is 0.831. So, it has a correct fit of the trend line is nearest to 83% growth.

### 6.6 Mobile Banking

Mobile banking is done through money transactions in mobile device apps. That is possible for anytime & anywhere process is available to mobile app services. It has some transaction details of transfer services through a Short Message Service (SMS).

**Fig. 6.1 Mobile Banking Volume (Million) Fig. 6.2 Mobile Banking Value (₹ Billion)**



Source: RBI Bulletin 2012-13 to 2018-19.

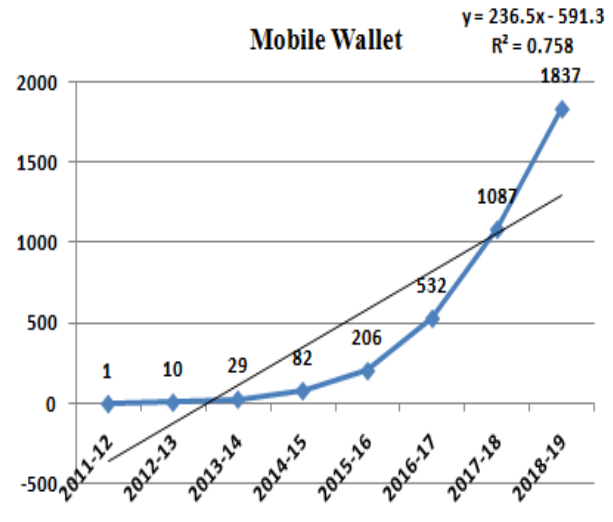
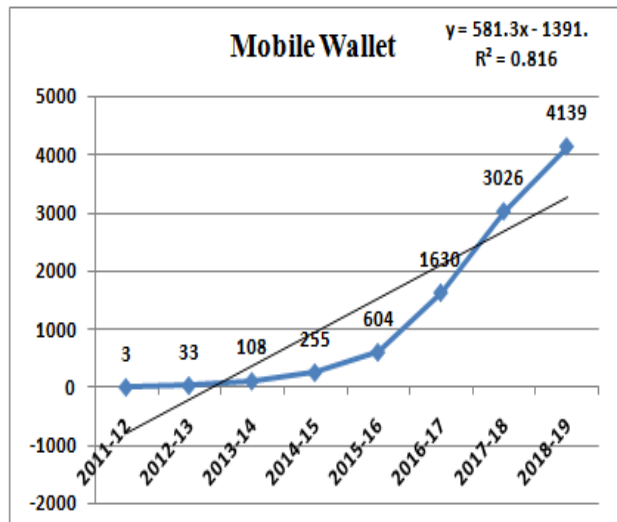
The measures of Trend Line Graphs on Progress of Mobile Banking in India are presented below the Mobile Banking Volume (Million) that is positive trend; R-squared value is 0.582. So, it has a correct fit of the trend line is nearest to 59% growth and Mobile Banking Value (Billion) that is positive trend; R-squared value is 0.782. So, it has a correct fit of the trend line is nearest to 78% growth.

### 6.7 Mobile Wallet

Mobile Wallet offers a mobile payment system with a determination to be obtainable on all mobile devices that maintain essential features similar to text messaging yet to be secure from parodying of mobile numbers and replay assaults. M-Wallet transactions are completely based on manuscript mails and give mobile apps only for added convenience. A user-specific PIN allows merely official right of entry. Mobile number parodying and replay assaults are eliminated as each transaction is protected with a sole one time key sent to the user's registered mobile number.

**Fig. 7.1 Mobile Wallet Volume (Million) Fig. 7.2 Mobile Wallet Value (₹ Billion)**





Source: RBI Bulletin 2012-13 to 2018-19.

The measures of Trend Line Graphs on Progress of Mobile Wallet in India are presented below the Mobile Wallet Volume (Million) that is positive trend; R-squared value is 0.816. So, it has a correct fit of the trend line is nearest to 82% and Mobile Wallet Value (Billion) that is positive trend; R-squared value is 0.758. So, it has a correct fit of the trend line is nearest to 76%.

**Table 1 Correlation Coefficient Analysis of Volume the transactions under Payment and Settlement Systems (in Million)**

Items	RTGS	Paper Clearing	Retail Electronic Clearing	Debit and Credit Cards	Prepaid Payment Instruments (PPIs)	Mobile Banking	Mobile Wallet
RTGS	1.00						
Paper Clearing	-0.83	1.00					
Retail Electronic Clearing	0.96	-0.75	1.00				
Debit and Credit Cards	0.98	-0.77	1.00	1.00			
Prepaid Payment Instruments (PPIs)	0.91	-0.61	0.97	0.96	1.00		
Mobile Banking	0.78	-0.53	0.86	0.85	0.90	1.00	
Mobile Wallet	0.91	-0.60	0.97	0.96	1.00	0.91	1.00

It is observed from the table 1 that the Correlation Coefficient Analysis of volume (in Million) the transactions under Payment Settlement Systems of correlation relationship between RTGS to Debit and Credit Cards (0.98) that is a very highly positive relationship, between RTGS to Paper Clearing (-0.83) that is a very low level positive relationship. In the Paper clearing to Debit and Credit Cards (-0.77) that is a low level positive relationship. Retail Electronic Clearing to Debit and Credit Cards (1.00) that is a very highly positive relationship, Debit and Credit Cards to PPIs & Mobile wallet (0.96) that is a very highly positive relationship. PPIs to Mobile wallet (1.00) that is a very highly positive relationship and Mobile Banking to Mobile wallet (0.91) that is a very highly positive relationship.

**Table 2 Correlation Coefficient Analysis of Value the Transactions under Payment and Settlement Systems (₹ Billion)**

Items	RTGS	Paper Clearing	Retail Electronic Clearing	Debit and Credit Cards	Prepaid Payment Instruments (PPIs)	Mobile Banking	Mobile Wallet
RTGS	1.00						
Paper Clearing	-0.50	1.00					
Retail Electronic Clearing	0.94	-0.74	1.00				
Debit and Credit Cards	0.86	-0.81	0.98	1.00			
Prepaid Payment Instruments (PPIs)	0.97	-0.66	0.99	0.96	1.00		
Mobile Banking	0.96	-0.63	0.97	0.93	0.98	1.00	
Mobile Wallet	0.97	-0.59	0.98	0.94	0.99	0.98	1.00

It is observed from the table 2 that the Correlation Coefficient Analysis of value (₹ Billion) the transactions under Payment Settlement Systems of correlation relationship between RTGS to PPIs & Mobile Wallet (0.97) that is a very highly positive relationship, between RTGS to Paper Clearing (-0.50) that is a very low level positive relationship. In the Paper clearing to Debit and Credit Cards (-0.81) that is a low level positive relationship. Retail Electronic Clearing to PPIs (0.99) that is a very highly positive relationship, Debit and Credit Cards to PPIs (0.96) that is a very highly positive relationship. PPIs to Mobile wallet (0.99) that is a very highly positive relationship and Mobile Banking to Mobile wallet (0.98) that is a very highly positively correlated relationship.

**Table 3 Descriptive Statistics Analysis Volume the Transactions under Payment and Settlement Systems (in Million)**

Items	Mean	Std. Deviation	Skewness		Kurtosis		T	P-Value
			Statistic	Std. Error	Statistic	Std. Error		
RTGS	96	27	0.06	0.75	-0.72	1.48	9.87	0.00
Paper Clearing	1213	86	0.23	0.75	-1.01	1.48	39.73	0.00
Retail Electronic Clearing	2991	2429	0.68	0.75	-0.86	1.48	3.48	0.01
Debit and Credit Cards	9909	3653	0.56	0.75	-0.87	1.48	7.67	0.00
PPIs	1415	1760	1.13	0.75	-0.17	1.48	2.27	0.06
Mobile Banking	1223	2109	2.38	0.75	5.87	1.48	1.64	0.14
Mobile Wallet	1225	1576	1.20	0.75	0.07	1.48	2.20	0.06

It is clarified from the table 3 that the difference between Volume of transactions under payment settlement system (in million) mean value range is from 96 to 9909 and it is a good measure of central value because the Std. Deviation (SD) value range is from 27 to 3653. As the Skewness value is (1.13, 2.38 and 1.20). Which is between -1 or greater than 1, the distribution is highly skewed. So, PPIs, Mobile Banking and Mobile Wallets do not correct distribution. If the kurtosis ranges from 0 to 3, there is normal distribution. But the calculated kurtosis has no normal distribution. It is classified p-value if the level of highly significance level is less than 5% indicates a 0.05, but Mobile Banking is not significant.

**Table 4 Descriptive Statistics Analysis of Transactions under Payment and Settlement Systems (₹ Billion)**

Items	Mean	Std. Deviation	Skewness		Kurtosis		t	P-Value
			Statistic	Std. Error	Statistic	Std. Error		
RTGS	1176575	284786	1.15	0.75	0.40	1.48	11.69	0.00
Paper Clearing	88120	8056	0.75	0.75	-1.54	1.48	30.94	0.00
Retail Electronic Clearing	105013	84047	0.98	0.75	-0.03	1.48	3.53	0.01
Debit and Credit Cards	28084	9919	0.57	0.75	-0.33	1.48	8.01	0.00
PPIs	663	758	1.26	0.75	0.65	1.48	2.48	0.04
Mobile Banking	7851	10614	1.43	0.75	1.57	1.48	2.09	0.07
Mobile Wallet	473	665	1.55	0.75	1.69	1.48	2.01	0.08

It is observed from the table 4 that the difference between the value of transactions under the payment settlement system (₹ in Billion) mean value range is from 663 to 1176575 and it is a good measure of central value because the Std. Deviation (SD) value range is from 665 to 284786. As the Skewness value is (1.15, 1.26, 1.43 and 1.55). Which is between -1 or greater than 1, the distribution is highly skewed. So, RTGS, PPIs, Mobile Banking and Mobile Wallet there is not correct distribution. If the kurtosis ranges from 0 to 3, there is normal distribution. But the calculated kurtosis is Paper Clearing, Retail Electronic Clearing and Debit & Credit Cards are no normal distribution. It is classified p-value if the highly significant level is less than 5% indicating a 0.05, but Mobile Banking and Mobile Wallet is not significant.

## 7. CONCLUSION

The result was concluded that the payment and settlement system transactions volume & value System in India. There is no significant association between the growth of Paper Clearing transactions volume and value only; because banking customers are ready to move on digitized banking transactions in India. In the Trend line R square value based on Real Time Gross Settlement, Retail Electronic Clearing, Debit & Credit Cards, Prepaid Payment Instruments, Mobile Banking and Mobile wallets Transactions Volume & Value are highly significant. The RBI guidelines on banking sector improving on paper based became computerized and now follow as Smartphone app for private companies, public and private banking sectors etc. But governments take steps on improving monitor for all transactions systems because avoid cyber crime problems.

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