

## **Electronic Payment System: An Evolution in Indian Banking System**

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**Abstract:** In this paper an attempt has been made to study electronic payment system that has changed the traditional payment system in India. The time period for study is defined to last five years only, i.e., from 2010-11 to 2014-15 and is based on secondary data sources. The paper talks about different e-payment methods provided by RBI and Indian banks and their level of transaction in terms of value and volume. A comparative analysis of different e-payment namely ECS, NEFT, CBC and RTGS methods are done for the defined time period.

**Keyword:** NEFT, RTGS, ECS, CBC.

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### **I. Introduction**

The driving force in the development of national payment systems of any country is usually the central bank of that country. The Reserve Bank of India as the central bank of India has been playing this developmental role and has taken several sufficient steps for Safe, Efficient, Accessible, Secure, Sound, and Authorized payment systems in the country.

The Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), a sub-committee of the Central Board of the Reserve Bank of India is the highest policy making body on payment systems in the country. The BPSS is empowered for authorizing, prescribing policies and setting standards for regulating and supervising all the payment and settlement systems in the country. In India, the payment and settlement systems are regulated by the Payment and Settlement Systems Act, 2007 (PSS Act) which was legislated in December 2007. The initiatives taken by RBI in the mid-eighties and early-nineties focused on technology-based solutions for the improvement of the payment and settlement system infrastructure, coupled with the introduction of new payment products by taking advantage of the technological advancements in banks. The continued increase in the volume of cheques added pressure on the existing set-up, thus necessitating a cost-effective alternative system.

### **Financial System in India**

At present, there are 27 Public Sector Banks in India including SBI and its 5 associates and 19 nationalized banks. Moreover, there are two banks, which have been categorized by RBI as "Other Public Sector Banks" IDBI and Bhartiya Mahila Bank. As on September 2015 there are 46 foreign banks from 26 countries operating as branches in India and 39 banks from 21 countries operating as representative offices in India.

### **II. Electronic Payment System In India**

The RBI plays a pivotal role in the development of India's payment and settlement systems for both large-value and retail payments. The central bank played a pioneering role in automating the paper-based clearing system in the 1980s. It introduced an electronic funds transfer system and electronic clearing services (ECS Credit and Debit) in the 1990s. The special electronic fund transfer (SEFT) system was introduced in April 2003 (subsequently discontinued in March 2006, after the implementation of the National Electronic Fund Transfer (NEFT) system in November 2005) and the real-time gross settlement (RTGS) system in March 2004. The RBI operates the RTGS, which has replaced the paper-based inter-bank clearing system and settles a sizeable volume of large-value and time-critical customer transactions. RBI also manages the clearinghouses (for paper-based and electronic clearing) in 17 large cities while operating the clearinghouses at four major

Locations. It is the settlement banker in these cities. The RBI introduced the NEFT system in November 2005. Together with ECS, this forms the electronic retail payment infrastructure.

The National Electronic Clearing Services (NECS) system, which aims to centralize the Electronic Clearing Service (ECS) operation and bring uniformity and efficiency to the system, was implemented in September 2008. At present, the NECS settles only credit transfers.

#### **2.1.RBI vision 2012-2015**

To proactively encourage electronic payment systems for ushering in a less-cash society in India and to ensure payment and settlement systems in the country are safe, efficient, interoperable, authorized, accessible, inclusive and compliant with international standards.

The Vision Statement indicates RBI's renewed commitment towards providing a safe, efficient, accessible, inclusive, interoperable and authorized payment and settlement systems for the country. Payment systems will be driven by customer demands of convenience ease of use and access that will impel the necessary convergence in innovative e-payment products and capabilities. Integration of various systems through unified solution architecture and current technology would lead to adoption and usage of resilient payment systems. Regulation will channelize innovation and competition to meet these demands consistent with international standards and best practices. The overall regulatory policy stance is oriented towards promoting a less cash/less paper society, the "green" initiative, and hence the increased emphasis on the use of electronic payment products and services that can be accessed anywhere and anytime by all at affordable prices. Embracing new technology and innovation to unveil a bouquet of simple, low cost, easy to use modern payment products and services would be the corner stone of this endeavor. The Reserve Bank recognizes that building dexterity of payment systems through standardization and a broad consultative process is a continuing agenda.

## **2.2 Electronic Clearing System**

ECS is an electronic mode of payment / receipt for transactions that are repetitive and periodic in nature. ECS is used by institutions for making bulk payment of amounts towards distribution of dividend, interest, salary, pension, etc., or for bulk collection of amounts towards telephone / electricity / water dues, cess / tax collections, loan installment repayments, periodic investments in mutual funds, insurance premium etc. Essentially, ECS facilitates bulk transfer of monies from one bank account to many bank accounts or vice versa. ECS includes transactions processed under National Automated Clearing House (NACH) operated by National Payments Corporation of India (NPCI).

Primarily, there are two variants of ECS - ECS Credit and ECS Debit.

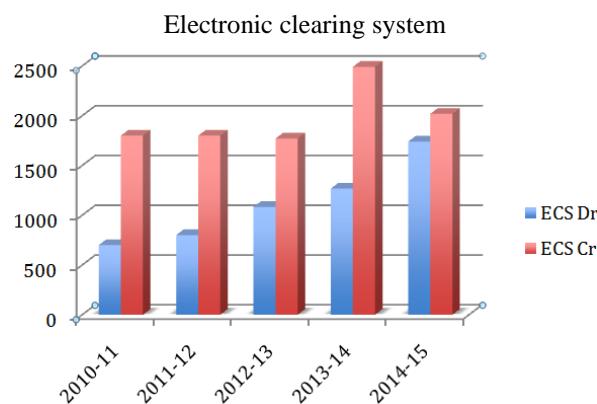
ECS Credit is used by an institution for affording credit to a large number of beneficiaries (for instance, employees, investors etc.) having accounts with bank branches at various locations within the jurisdiction of an ECS Centre by raising a single debit to the bank account of the user institution. ECS Credit enables payment of amounts towards distribution of dividend, interest, salary, pension, etc., of the user institution.

ECS Debit is used by an institution for raising debits to a large number of accounts (for instance, consumers of utility services, borrowers, investors in mutual funds etc.) maintained with bank branches at various locations within the jurisdiction of a ECS Centre for single credit to the bank account of the user institution. ECS Debit is useful for payment of telephone / electricity / water bills, cess / tax collections, loan installment repayments, periodic investments in mutual funds, insurance premium etc., that are periodic or repetitive in nature and payable to the user institution by large number of customers etc.

Table no: 1-Electronic clearing system

Years	ECS Dr		ECS Cr	
	Volume (Mn)	Value (Bn)	Volume (Mn)	Value (Bn)
2010-11	156.7	700	117.3	1800
2011-12	164.7	800	121.5	1800
2012-13	176.5	1083.1	122.2	1771.3
2013-14	192.9	1268.3	152.5	2492.2
2014-15	226	1739.8	115.3	2019.1

Source: RBI annual report



## **2.3 National Electronic Funds Transfer System (NEFT)**

**National Electronic Funds Transfer (NEFT)** is one of the most prominent electronic funds transfer systems of India. Started in Nov.-2005, NEFT is a facility provided to bank customers to enable them to transfer funds

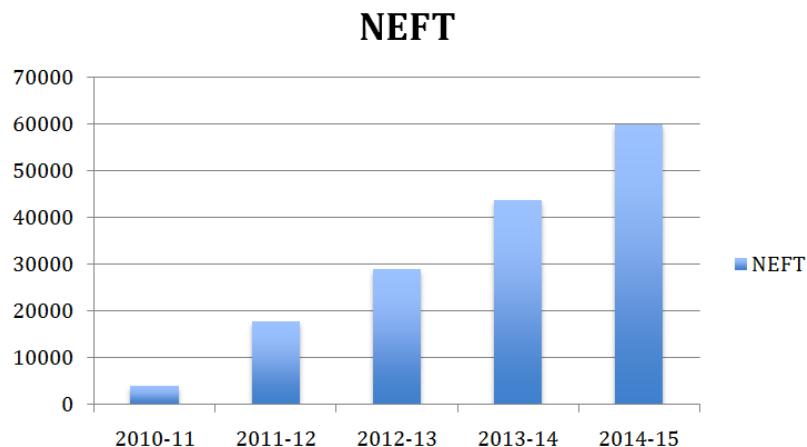
easily and securely on a one-to-one basis. It is done via electronic messages. This is not on real-time basis like RTGS(Real Time Gross Settlement). This is a "net" transfer facility, which is executed, in hourly batches resulting in a time lag. NEFT facilities are available in 30,000 bank branches all over the country and work on a batch mode.

NEFT has gained popularity due to its saving on time and the ease with which the transactions can be concluded. This reflects from the fact that 42% of all electronic transactions in the 2008 financial year were NEFT transactions.

Table:2- National Electronic Fund Transfer System(NEFT)

Years	Volume (Mn)	Value (Bn)
2010-11	132.3	4000
2011-12	226.2	17900
2012-13	394.1	29022.4
2013-14	661	43785.5
2014-15	927.6	59803.8

Source: RBI annual report



#### 2.4 Card based clearing (CBC)

As mentioned above India is one of the fastest growing countries in the plastic money segment. Already there are 130 million cards in circulation, which is likely to increase at a very fast pace due to rampant consumerism. India's card market has been recording a growth rate of 30% in the last 5 years. Card payments form an integral part of e-payments in India because customers make many payments on their card-paying their bills, transferring funds and shopping.

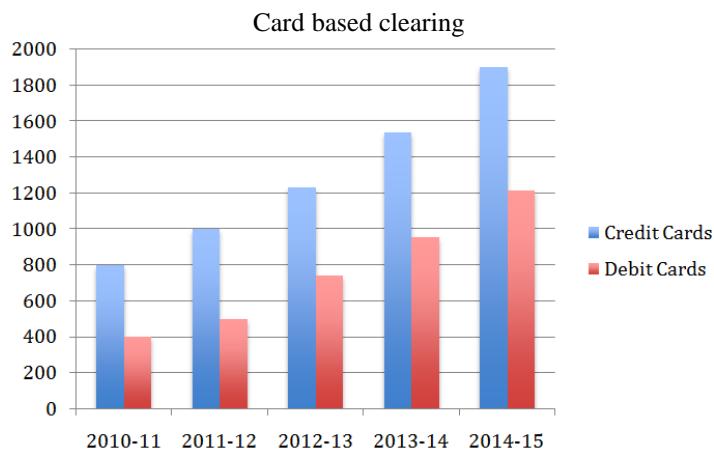
Ever since Debit cards entered India, in 1998 they have been growing in number and today they consist of nearly 3/4th of the total number of cards in circulation.

Credit cards have shown a relatively slower growth even though they entered the market one decade before debit cards. Only in the last 5 years has there been an impressive growth in the number of credit cards- by 74.3% between 2004 and 2008. It is expected to grow at a rate of about 60% considering levels of employment and disposable income. Majority of credit card purchases come from expenses on jewelry, dining and shopping. Another recent innovation in the field of plastic money is co branded credit cards, which combine many services into one card-where banks and other retail stores, airlines, telecom companies enter into business partnerships. This increases the utility of these cards and hence they are used not only in ATM's but also at Point of sale(POS) terminals and while making payments on the net.

Table: 3-Card based clearing (CBC)

Years	CREDIT CARDS	DEBIT CARDS
	Volume (Mn)	
2010-11	265.1	800
2011-12	320	1000
2012-13	396.6	1229.5
2013-14	509.1	1539.9
2014-15	615.1	1899.2

Source: RBI annual report



## **2.5 Real-time gross settlement (RTGS)**

**Real-time gross settlement** systems (RTGS) are specialist funds transfer systems where transfer of money or securities takes place from one bank to another on a "real time" and on "gross" basis. Settlement in "real time" means payment transaction is not subjected to any waiting period.

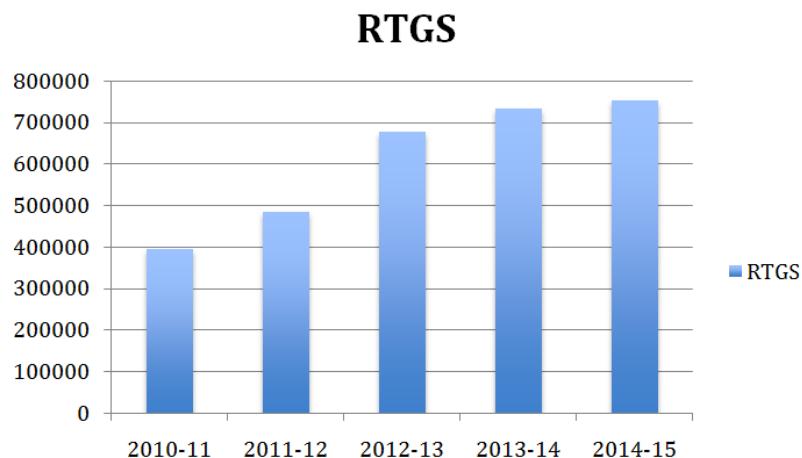
The transactions are settled as soon as they are processed. "Gross settlement" means the transaction is settled on one to one basis without bundling or netting with any other transaction. Once processed, payments are final and irrevocable.

RTGS systems are typically used for high-value transactions that require 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. However, most regular payments would not use a RTGS system, but instead would use a national payment system or network that allows participants to batch and net payments.

Table: 4- Real-time gross settlement (RTGS)

Years	Volume (Mn)	Value (Bn)
2010-11	49.3	394500
2011-12	55	484900
2012-13	68.5	676841
2013-14	81.1	734252.4
2014-15	92.8	754032.4

Source: RBI annual report



### **III. Comparative Analysis Of Different Payment Methods In Terms Of Value(Billion) (2010-2015)**

#### **3.1 2010-11**

In 2010-11 Ecs Cr was 1800 billion whereas Ecs Dr was 700 billion, NEFT was 4000 billion, Card based Clearing was 800 billion in Credit cards and 400 billion in Debit cards and RTGS transactions in value was 394500 billion which was the highest contributor to the different e-payments modes.

#### **3.2 2011-2012**

In 2011-12 Ecs Cr was 1800 billion and Ecs Dr was 800 billion, NEFT was 17900(increased of 13900 billion), Card based Clearing was 1000 billion in Credit cards and 500 billion in Debit cards and RTGS transactions accounted to 484900 billion again being the highest contributor.

#### **3.3 2012-13**

In 2012-13 Ecs Cr was 1771.3 billion and Ecs Dr was 1083.1 billion, NEFT was 29022.4 billion, Card based Clearing was 1229.5 billion in Credit Cards and 743.4 billion and RTGS was 676841 billion being the highest among four.

#### **3.4 2013-14**

In 2013-14 Ecs Cr rose to 2492.2 billion and Ecs Dr was 1268.3 billion, NEFT increased to 43785.5 billion, Credit cards clearing was 1539.9 billion and Debit cards clearing was 954.5 billion and RTGS value jumped to 734252.4 billion.

#### **3.5 2014-15**

In 2014-15 Ecs Cr was 2019.1 billion and Ecs Dr was 1739.8 billion, NEFT was 59803.8 billion, Card based clearing was 1899.2 billion in Credit cards and 1213.4 billion in Debit cards and RTGS transaction accounted for 754032 billion.

### **IV. Conclusion And Findings**

The electronic payment systems registered high volumes in 2014-15, following the determined efforts made by the Reserve Bank for migration to electronic payments (Table IX.1). Correspondingly, transactions processed by the paper-based clearing systems have shown a continuous decline both in volume and value terms. Overall, the payment and settlement systems posted a higher growth of 27.1 per cent in volume and a lower growth of 5.4 per cent in value in 2014-15 in relation to the previous year.

**Table IX.1: Payment System Indicators - Annual Turnover**

Item	Volume (million)			Value (₹ billion)		
	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Systemically Important Financial Market infrastructures (SIFMIs)						
1. RTGS	68.5	81.1	92.8	676,841.0	734,252.4	754,032.4
Total Financial Markets Clearing (2+3+4)	2.3	2.6	3.0	501,598.5	621,569.6	672,455.6
2. CBLO	0.2	0.2	0.2	120,480.4	175,261.9	167,646.0
3. Government Securities Clearing	0.7	0.9	1.0	119,948.0	161,848.2	179,372.0
4. Forex Clearing	1.4	1.5	1.8	261,170.1	284,459.5	325,437.6
Total SIFMIs (1 to 4)	70.8	83.7	95.7	1,178,439.5	1,355,822.0	1,426,488.0
Retail Payments						
Total Paper Clearing (5+6+7)	1,313.7	1,257.3	1,195.8	100,181.8	93,316.0	85,439.3
5. CTS	275.0	591.4	964.9	21,779.5	44,691.4	66,769.9
6. MICR Clearing	823.3	440.1	22.4	57,504.0	30,942.8	1,850.4
7. Non-MICR Clearing	215.3	225.9	208.5	20,898.3	17,681.8	16,819.0
Total Retail Electronic Clearing (8+9+10+11+12)	694.1	1,108.3	1,687.4	31,881.1	47,856.3	65,365.5
8. ECS DR	176.5	192.9	226.0	1,083.1	1,268.0	1,739.8
9. ECS CR	122.2	152.5	115.3	1,771.3	2,492.2	2,019.1
10. NEFT	394.1	661.0	927.6	29,022.4	43,785.5	59,803.8
11. Immediate Payment Service (IMPS)	1.2	15.4	78.4	4.3	95.8	581.9
12. National Automated Clearing House (NACH)	-	86.5	340.2	-	214.8	1,220.9
Total Card Payments (13+14+15)	932.6	1,261.8	1,737.7	2,052.1	2,575.4	3,324.5

13. Credit Cards	396.6	509.1	615.1	1,229.5	1,539.9	1,899.2
14. Debit Cards	469.1	619.1	808.1	743.4	954.5	1,213.4
15. Prepaid Payment Instruments (PPIs)	66.9	133.6	314.5	79.2	81.0	211.9
Total Retail Payments (5 to 15)	2,940.3	3,627.4	4,620.9	134,115.0	143,747.7	154,129.3
Grand Total (1 to 15)	3,011.1	3,711.1	4,716.6	1,312,554.5	1,499,569.7	1,580,617.3
-Not applicable						

- Note: 1. Real Time Gross Settlement (RTGS) system includes customer and inter-bank transactions only.  
 2. Settlement of Collateralised Borrowing and Lending Obligation (CBLO), government securities clearing and forex transactions is through the Clearing Corporation of India Ltd. (CCIL).  
 3. Consequent upon migration of total cheque volume to the cheque truncation system (CTS), there is no Magnetic Ink Character Recognition (MICR) Cheque Processing Centre (CPC) location in the country as of now.  
 4. The figures of cards are for transactions at point of sale (POS) terminals only.  
 5. The National Automated Clearing House (NACH) system was started by the National Payments Corporation of India (NPCI) (on December 29, 2012), to facilitate inter-bank, high volume, electronic transactions which are repetitive and periodic in nature.  
 6. Figures in the columns might not add up to the total due to rounding off of numbers.

Source RBI annual report 2012-2015

Share of different e-payments in total payments recorded in **2013** in value terms are: RTGS-51.567%, NEFT- 2.211%, ECS Dr& Cr- .217% and Card Based Clearing- .150%.  
**2014:** RTGS-48.96%, NEFT-2.91%, ECS Dr& Cr- .250% and Card Based Clearing-.166%.  
**2015:** RTGS-47.70%, NEFT- 3.78%, ECS Dr& Cr- .237% and Card Based Clearing- .196%.

The share of paper-based transactions in total transactions continued to show a declining trend over the years. In volume terms, paper-based transactions accounted for 25.4 per cent of the total transactions during 2014-15, down from 33.9 per cent in the previous year. Their share in value terms also declined to 5.4 per cent from 6.2 per cent.

**Retail Electronic Payments:** The growth in retail electronic payments has been encouraging both in terms of coverage and usage. As on March 31, 2015, the national electronic funds transfer (NEFT) facility was available through 121,845 branches of 161 banks, in addition to the business correspondent (BC) outlets. NEFT handled 928 million transactions valued at around ₹60 trillion in 2014-15 as against 661 million transactions for ₹44 trillion in the previous year. During the month of March 2015, NEFT processed the largest ever-monthly volume of 106 million transactions.

The increasing trend is also reflected in case of bulk electronic payments systems [total of electronic clearing service (ECS) and National Automated Clearing House (NACH)]. Banks continued to use both NACH operated by National Payments Corporation of India (NPCI) as well as ECS operated by the Reserve Bank.

As regards card transactions, during 2014-15, 615 million transactions valued at around ₹1.9 trillion were carried out through credit cards, while 808 million transactions valued at ₹1.2 trillion were carried out through debit cards.

Significant growth in e-payments is evident from our 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.

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