Developments in the Payment System Architecture of India

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ABSTRACT

The payment and settlement systems are at the core of financial infrastructure in a country. A well-functioning payment and settlement system is crucial for the successful implementation of monetary policy and maintaining the financial stability. This paper examines the various types of Payment systems in India along with the developments aimed at improving the efficiency of Payments system. We analyse both the large value payment systems and retail payment systems. The large value payment infrastructure comprises RTGS, high value clearing, and CCIL. The retail payment systems include MICR/non-MICR cheque clearing, national electronic funds transfer (NEFT) system, electronic clearing service (ECS), cheque truncation system (CTS) and payment channels like credit/debit cards, internet and mobile phone-based products. The paper also looks at the role of RBI in Payment and Settlement System. In addition, there is a description of various recent measures to promote electronic retail payments such as the Digital Wallet, Aadhaar-enabled Payment System (AEPS) and Unified Payment Interface (UPI) of India.

Keywords: *Payment system; Electronic clearing service (ECS); NEFT; Digital wallet; Aadhaar-enabled Payment System (AEPS); Unified Payment Interface (UPI).*

1.0 Introduction

Payment system architecture in India is based on international benchmarks, and guiding principles. The Payment and Settlement System Act, 2007 provides a comprehensive legal framework for payment and settlement services in India for subjects like authorisation of payment system operators, netting and finality of payment and settlement. The payment system objectives of having a safe, sound, cost-effective and wide distribution network are being met in so far as the large value and countrywide payment and settlement systems are concerned. The grand vision is that cash dominant economy may transit to a predominantly non-cash dominant economy with non-cash transactions primarily in electronic mode, which is the international norm.

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1.1 Significance of a sound payment and settlement system

The payment and settlement systems are at the core of financial infrastructure in a country. A well-functioning payment and settlement system is crucial for the successful implementation of monetary policy and maintaining the financial stability. Central banks have, therefore, always maintained a keen interest in the development of payment and settlement system as part of their responsibilities for monetary and financial stability. In India, the development of a safe, secure and sound payment and settlement system has been the key policy objective. In this direction, the RBI, apart from performing the regulatory and supervisory functions, has also been making efforts to promote functionality and modernisation of the payment and settlement systems on an on-going basis.

A safe and efficient payment system is a prerequisite for smooth functioning of the financial markets. The conduct of monetary policy in an effective manner requires safe and efficient payment and settlement systems to facilitate transfer of funds and securities between the central bank and other participants in the financial system. An efficient and stable payment and settlement system is also a pre-condition for inter-bank money markets and other short-term credit markets through which monetary policy is transmitted. In addition, developments in the payment and settlement systems that affect the speed and realisation/availability of funds for further deployment can influence the overall demand for money in the economy.

By linking financial institutions together for the purpose of transferring monetary claims and settling payment obligations, payment and settlement system becomes a channel through which financial risks are transmitted across financial institutions and markets. Well-designed and efficiently managed systems, therefore, help in maintaining financial stability by reducing uncertainty of settlement. Settlement failures which spread to other payment and settlement systems through the contagion effect not only undermine the smooth functioning of the financial markets, but can also adversely affect the public confidence in money and efficacy of the instruments used to transfer money.

Payment and settlement systems, which constitute the backbone of the financial economy, aim at minimising the systemic risk. The payment system influences the speed, financial risk, reliability and the cost of domestic and international transactions. With the significant improvements in payment and settlement systems, depth and liquidity of various segments of the financial market can be improved.

Settlement systems in India have evolved over a period of time from physical settlement systems with considerable amount of risks to the current electronic systems with central counterparty with emphasis on risk mitigation. During the early 1990s, government securities market was opaque with limited information dissemination and inefficient pricing. The securities were held in physical form requiring execution of

physical transfer forms for transfer of securities in any trade leading to inefficiencies in settling the trades. Settlement of securities and funds legs were independent of each other (non-DvP), leading to considerable settlement risks. Moreover, pre-settlement comparison and confirmation of trades was not systematised. Settlement cycles were not uniform with settlements happening on T+0 and T+1 basis.

1.2 Review of literature

There are a number of studies that have examined various aspects of payment system in India. In this section of literature review, we examine more recent literature on cashless transactions in an economy. Zandi et al. (2013) study 56 countries over 2008–2012, and calculate that USD 983 billion were added to their cumulative real GDP because of increased card usage. This amounts to 0.3% of their GDP per year. They further estimate that among the major emerging economies, a 1% increase in card usage will increase consumption by 4.89% in China, 1.070% in Russia, 1.147% in Brazil, with India at a lower level of 0.047%. A number of studies indicate significant savings if an economy graduates to cashless payments (Bolt et al., 2008; Kruger and Seitz, 2014).

There have been studies that have examined India's move towards a cashless Mukhopadhyay (2016) analyses India's gradual transition towards a cashless economy. He presents a theoretical model that evaluates decisions by consumers and sellers to adopt cashless payments, and finds that the most crucial enabler of cashless payments are inflows of funds into the accounts. Roy and Sahoo (2016) postulate that an efficient payment system acts as an enabler for speeding up liquidity flow in the economy, apart from ensuring proper utilization of limited resources. They bring out the fast advances in information technology in India that have aided the rise of new payment practices, products and delivery channels for small as well as large value, and urgent payments. The paper shows areas for improvement in the efficiency in existing payment systems in India and the other countries especially in regard to the liquidity risk, operational risks, access criterion, and transparency.

2.0 Segments of Payment System

Payment systems in India comprise electronic payment systems as well as paper-based systems. Another classification pertains to large value payment systems and retail payment systems. The large value payment infrastructure comprises RTGS, high value clearing, and CCIL. Based on the criteria outlined by CPSS, the RTGS system and the high value clearing system have been identified as SIPS. The funds leg of the CCIL-operated clearing systems covering government securities, foreign exchange and money

market settle in the RTGS system. The retail payment systems include MICR/non-MICR cheque clearing, national electronic funds transfer (NEFT) system, electronic clearing service (ECS), cheque truncation system (CTS) and payment channels like credit/debit cards, internet and mobile phone-based products.

2.1 Large value payment systems

Real Time Gross Settlement (RTGS) System: The Indian RTGS system was operationalised in March 2004. The system started operations with four banks and settled only inter-bank transactions. Subsequently, the system was opened for settlement of customer transactions. It was operationalised for settlement of multilateral net settlement batch (MNSB) files from September 2006.

RTGS system is owned and operated by the Reserve Bank of India (RBI). The system works on a mainframe computer. Members are provided with a participant interface (PI), using which the participants connect to the system at the RBI through the INFINET. The message flow architecture in the RTGS system uses the Y topology. The members communicate through their PI to the inter-bank funds transfer processor (IFTP) which validates all communication and also does the *strip and store* function. Upon successful completion of a transaction and receipt of confirmation from the RTGS, the IFTP forwards the complete credit information to the beneficiary member's PI. All communication between the PI and IFTP and IFTP to RTGS uses digital signatures (public key infrastructure) to ensure security.

The membership of RTGS is open to all scheduled commercial banks (SCBs), primary dealers (PDs) and others, as may be decided by the RBI. The SCBs are provided with Type A membership, primary dealers Type B and clearing houses Type D membership. Except Type A members, customer-based transactions cannot be submitted by other members. Type D members are permitted to submit only net settlement batches for settlement under the RTGS system. Other banks and financial institutions can participate as customers of the direct members.

RTGS operations are governed by the RTGS Membership Regulations, 2004 and RTGS (Membership) Business Operating Guidelines, 2004. The members of the system agree to abide by these regulations and guidelines and any subsequent amendments to these documents.

The settlement of RTGS transactions takes place in the books of the RBI. For this purpose, members have to open a 'RTGS Settlement Account' with the RBI at Mumbai. This account is to be funded at the beginning of each RTGS processing day from the member's current account with the RBI, and at the end of the day, the balance in the

settlement account is transferred back to the current account of the member. Members are provided with collateralized intra-day liquidity (IDL) facility to tide over their IDL mismatches. This facility is provided to Type A and Type B members only. The IDL facility utilised by the members has to necessarily be reversed by them at the end of RTGS day. Failure to do so attracts penal action.

In addition to IDL, the system provides many features for effective liquidity management by the members. These include message release method, queuing management and queue visibility. The Indian RTGS has adopted the FIFO rule for queuing. The system has a centralised queuing arrangement with priorities assigned by the system participant. The participant/system operator can change the priority of messages/revoke the messages in the queue. The system operator would alter the queue only in extreme situations. At the end of the day, all pending unsettled messages are cancelled by the system. The system has a multilateral offsetting algorithm to resolve any gridlock situations that may arise. This process can be configured to be invoked manually or automatically by the system. Since it is mainly a large-value funds transfer system, a floor of Rs. 2 lakh has been prescribed for minimum value of transactions that can be settled through RTGS.

There has been a substantial increase in the volume of transactions settled through RTGS. The inter-bank clearing at all the RBI centres have been migrated to the RTGS system. Further, multilateral net settlements from CCIL, viz. rupee leg of US dollar-Indian rupee settlement, funds leg of government securities settlement and funds leg of CBLO, and the retail net settlement systems operated by National Clearing Cell, Mumbai (MICR cheque clearing, high value clearing, NEFT and ECS) are settled in RTGS as multilateral net settlement batch (MNSB) files. The liquidity management operations of the RBI are also settled through the RTGS system.

2.2 Retail payment systems

The retail payment systems in India consist of the paper-based clearing systems, electronic clearing systems and those systems relating to payment cards (credit and debit).

Paper-based systems (cheques): Cheques as payment instruments are the most popular mode of non-cash payment in India. The clearing and settlement of cheques drawn on different banks require the coming together of the banks in that area for transfer of instruments and the final settlement of funds. This process is facilitated by the clearing houses at these centres. As on May 31, 2014 there were 1,396 operational clearing houses. Of these, at 66 centres, the clearing and settlement processes have been automated by the introduction of MICR technology-based sorter machines. 80 percent of the total cheque clearing volume and value are accounted for by these centres. The

clearing and settlement cycle is completed in two days—on day 1, the cheques are presented at the clearing house and on day 2, the funds settlement and return clearing are accounted for.

Paper-based systems still constitute the major part of retail payment systems in India. Steps taken by the Reserve Bank to improve the availability of this facility have resulted in an increase in the number of clearing houses from 860 in 2001 to 1,396 as on May 31, 2014. Further, in order to increase the spread of computerised clearing houses, magnetic media-based clearing system (MMBCS) technology is also being implemented in cities and towns where the process is carried out manually at present.

The introduction of cheque truncation system (CTS) was yet another step for increasing the efficiency of retail payment system. Truncation is the process of stopping the flow of the physical cheque issued by a drawer at some point with the presenting bank enroute to the drawee bank branch. In its place, an electronic image of the cheque is transmitted to the drawee branch by the clearing house, along with relevant information like data on the MICR band, date of presentation, presenting bank, etc.

The Reserve Bank implemented the CTS in the National Capital Region (NCR), New Delhi, Chennai and Mumbai with effect from February 1, 2008, September 24, 2011 and April 27, 2013 respectively. After migration of the entire cheque volume from MICR system to CTS, the traditional MICR-based cheque processing has been discontinued in the country. Based on the advantages realised by the stakeholders and the experienced gained from the roll-out in these centres, it was decided to operationalise CTS across the country. The new approach envisioned as part of the national roll-out is the grid-based approach. Under this approach, the entire cheque volume in the country which was earlier cleared through 66 MICR cheque processing locations is consolidated into the three grids in New Delhi, Chennai and Mumbai. Each grid provides processing and clearing services to all the banks under its respective jurisdiction.

Under grid-based cheque truncation system clearing, all cheques drawn on bank branches falling within in the grid jurisdiction are treated and cleared as local cheques.

Electronic retail payment instruments: The electronic retail payment systems in India are National Electronic Funds Transfer (NEFT) system and the electronic clearing service (ECS).

(i) *National Electronic Funds Transfer (NEFT):* Electronic Funds Transfer (EFT) system was introduced in the mid-1990s. EFT facilitates transfer of funds from one bank account to another. In the beginning EFT system was permitted only for government transactions and RBI-initiated payments. NEFT is an electronic message-based payment system, and was introduced by the Reserve Bank of India in November 2005 to replace the EFT system which was public key infrastructure (PKI)-enabled and the settlements were

effected on a decentralized mode.

NEFT is more secure, nation-wide retail electronic payment system to facilitate funds transfer by the bank customers, between the networked bank branches in the country. This has facilitated the availability of electronic payment modes at more centres. There are 12 daily settlements during weekdays. The banks are to credit the accounts of the customers for the first four settlements on the same day and for the fifth and sixth settlements, the customers' accounts are to be credited not later than T+1 (next working day).

In order to popularise the e-payments in the country, the RBI, on its part, waived the service charges to be levied on the member banks, till March 31, 2009, in respect of the real time gross settlement (RTGS) and NEFT transactions. The RBI also provides, free of charge, intra-day liquidity to the banks for the RTGS transactions. The service charges to be levied by banks from their customers for RTGS and NEFT have, however, been deregulated and left to the discretion of the individual banks. While some of the banks have rationalised their service charges and a few have made it even cost-free to the customers, there are also certain banks that have fixed unreasonably high service charges for providing these services to their customers—even though the RBI provides these services to the banks free of charge.

(ii) *Electronic Clearing Services (ECS)*: ECS is a retail payment system which facilitates bulk payments that can be classified as one-to-many and receipts that are many-to-one. The two components of this system are ECS (Credit) and ECS (Debit). This facility is now available at 91 major centres.

- ECS (Credit): It facilitates the bulk payments whereby the account of the institution remitting the payment is debited and the payments remitted to beneficiaries' accounts. This facility is mostly used for making multiple payments, like payment of dividend to investors, payment of salaries of employees by institutions etc. For this purpose, the company or entity making the payment has to have the bank account details of the individual beneficiaries.
- ECS (Debit): It facilitates the collection of payments by utility companies. In this system the account of the customers of the utility company in different banks are debited and the amounts are transferred to the account of the utility company. The company providing this facility has to receive the mandate to collect funds from its customer. On receipt of the mandate, the company advises the consumer's bank to debit the payment due from the account on the due dates.

Settlement in this system currently takes place on T+0 basis and the cycle gets completed on T+1 basis. The clearing and settlement transactions through ECS occur at the respective centres. A centralised facility is available at the RBI, Mumbai to receive the ECS (Credit) files meant for credit at the other 14 RBI centres.

Deficiencies in Retail Payment Systems: The deficiencies in retail payments mainly pertain to the inefficient outstation cheque collection process. In this regard, it is difficult to prescribe a standard time-frame for collection in view of large disparities at various centres, in terms of their location, availability of infrastructure, communication facilities, etc. In respect of metropolitan cities, State capitals and A class cities, most banks have a policy of collecting instruments within a period of 7 to 10 days. In respect of other cities including States in the North-eastern region, most banks have declared in their policies that the instruments will be collected within a maximum period of 14 days.

The usage of ECS has seen rapid increase. The main deficiency in ECS system has been the decentralised model of transaction processing in the system. While a centralised ECS has been provided, this is available only at the RBI centres. To address this deficiency, a National Electronic Clearing Platform was implemented in September 2008.

The benefits of electronic payment infrastructure are not yet trickling down to the lower end of the customer segment which still largely uses services like money order and informal channels for transferring money of small value which has much higher cost and time lag for transferring money. There is a need to develop solutions using newer technologies which would allow all segments of the society to gain access to the benefits offered by these facilities.

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3.0 Reforms Relating to Clearing and Settlement

The area of clearing and settlement has witnessed substantial progress in Indian securities market over the last decade as a result of the various reforms initiated by the regulatory authorities. Implementation of advanced information technology, at every stage, has played a crucial role in the entire process. Some of the key developments, in this regard are as follows:

- Screen-based trading.

- Dematerialisation and electronic transfer of securities.
- Introduction of rolling settlement.
- Compression of settlement cycle to T+2.
- Multilateral netting.
- Delivery versus payment.
- Robust risk management.
- Emergence of clearing corporation to assume counterparty risk.
- Real time gross settlement/electronic fund transfer facility.
- Limited straight-through processing (STP).
- Cheque truncation system (CTS).

4.0 Role of Clearing Corporation of India Limited (CCIL)

CCIL was incorporated on April 30, 2001 to provide clearing and settlement services in government securities, foreign exchange and money market instruments. The RBI took the initiative of setting up the CCIL with State Bank of India (SBI), Industrial Development Bank of India (IDBI), Life Insurance Corporation of India (LIC), ICICI Bank Ltd., Bank of Baroda and HDFC Bank Ltd. as its core promoters. This initiative was taken recognising the need for upgrading the country's financial infrastructure in respect of clearing and settlement of debt instruments and forex transactions. CCIL currently provides guaranteed settlement facility for government securities clearing, clearing of Collateralised Borrowing and Lending Obligations (CBLO) and foreign exchange clearing.

4.1 Government securities segment

During 1996-2002, a quasi-DvP system was in place with the book-entry system in government securities not directly linked with the funds accounts, with no mechanism to prevent a gridlock in the system. In 2002, CCIL was constituted by the banks to play the role of a CCP and for providing a settlement guarantee mechanism. The government securities settlement system has evolved since then and transactions are now settled on a net basis. Settlement through CCIL has the following advantages: (a) assurance of settlement to the members on the settlement date, (b) reduction in counterparty exposure, (c) operational efficiency, and (d) improved liquidity.

CCIL provides guaranteed settlement of all secondary market outright sales and repo transactions in government securities by the process of novation. All trades reported on the RBI's NDS platform or contracted on the online anonymous, trading platform NDSOM, are

accepted by CCIL for settlement after the necessary validations. These trades are settled on a DvP-III basis, i.e. the funds leg and the securities leg are settled on a net basis.

4.2 CBLO segment

The CBLO is a money market product developed by CCIL and launched on January 20, 2003. The product was initially developed with a view to providing entities that have been phased out from the unsecured inter-bank call money market with an avenue for their funds operations. A repo variant, CBLO enables borrowing/lending of funds of various maturities up to one year, fully backed by collaterals in the form of central government securities/treasury bills. CCIL provides guaranteed settlement facility for trades in this instrument as a central counterparty. The funds leg of the trades in this instrument is settled in the current account maintained by these entities with the RBI. The borrowing and lending takes place through an electronic anonymous order matching platform. CBLO operates in a straight-through processing (STP)- enabled environment, seamlessly encompassing dealing to settlement. The CBLO market has now become the preferred option for participants in the money market. The volume in this market is now significantly higher than the combined volumes in the call and the repo market.

4.3 Forex segment

CCIL provides a guaranteed settlement facility for all US dollar-Indian Rupee inter-bank Cash, Tom, Spot and forward transactions. The matched and accepted forward deals are guaranteed for settlement from S-2 day (two days previous to settlement) and the Spot, Tom, Cash deals are guaranteed for settlement from the trade date as the CCIL becomes the central counterparty to every accepted trade through the process of novation. The rupee-leg of the transaction is settled through the member's current account with the RBI and the US dollar leg through CCIL's account with the Settlement Bank at New York.

CCIL also provides continuous-linked settlement (CLS) settlement services for banks in India by availing of third party services of a settlement bank. Banks participating in this segment of CCIL report their cross-currency trades to the settlement bank directly or through CCIL. The settlement is made through the nostro accounts of CCIL with the settlement bank in CLS settlement currencies.

The settlement of forex transactions by CCIL has resulted in a reduction in counterparty exposure, increased operational efficiency and overall lower operational costs. Forex settlement volumes in CCIL have been rising consistently through the years and have witnessed substantial growth since it commenced operations.

5.0 Government Securities Settlement System

The infrastructure for the government securities settlement systems in India is provided by the RBI. The Public Debt Office (PDO) in the RBI functions as the depository. The PDO has well-laid-down guidelines for opening subsidiary general ledger accounts (SGL) for recording all purchase and sales transactions in government securities. Secondary market transactions in government securities are settled in the books of the RBI for both securities leg and funds leg on delivery versus payment (DvP) basis.

A series of measures taken by the RBI has changed the way the government securities settle currently in India:

- *July 1995: Introduction of Delivery versus Payment (DvP):* The system was DvP I, wherein securities and funds were settled on a gross basis. Through this, settlement risk has been greatly reduced.
- *February 2002: Establishment of Clearing Corporation of India (CCIL):* Acting as a central counterparty through novation, the CCIL provides guaranteed settlement and has put in place risk management systems to limit settlement risk and operates a settlement guarantee fund backed by lines of credit from commercial banks. The netting of funds by CCIL reduces the liquidity requirements of the market and thereby liquidity risk of the system. All the transactions in government securities market, concluded or reported on NDS and NDS-OM have to be necessarily settled through the CCIL.
- *February 2002: Introduction of Negotiated Dealing System (NDS):* Besides enabling electronic dealing and transparency in the system, the NDS-enabled paperless settlement of transactions in government securities with electronic connectivity to CCIL and the DvP settlement system at the Public Debt Office through electronic SGL transfer form. All entities having SGL Accounts with the RBI were advised to join the NDS-CCIL system by March 31, 2003.
- *May 2002: Introduction of Compulsory Holding of Government Securities in Demat Form:* Compulsory holding of government securities in demat form for the RBI-regulated entities was introduced to prevent possibility of fraudulent transactions in government securities held in physical form. This improved the efficiency of security settlements by reducing the time taken and aided in simplification of settlement procedures.
- *March 2004: Introduction of Real Time Gross Settlement System (RTGS):* Introduction of RTGS system was an important measure in improving the stability of settlements in all inter-bank transactions including the government securities. The

netted settlement files are also currently being submitted on RTGS for settlement. The system has integrated module for IDL against government securities. Towards the end of 2006, the total solution release (TSR) of RTGS has been implemented in which the security settlement system (SSS) has been integrated facilitating *on-demand* IDL facility for the market participants.

- *May 2005: Introduction of Standardised Settlement Cycle of T+1:* The settlement cycle for all outright OTC and NDS-OM trades in government securities was standardised to T+1 cycle for better fund management and risk management by the participants.

6.0 Role of RBI in Payment and Settlement System

Central banks world-wide are involved in payment and settlement systems in a number of ways. They provide settlement accounts, oversee core payment arrangements, and operate, provide and use various payment services. In India, RBI regulates and supervises payment and settlement systems with the objective of promoting safety and efficiency by monitoring the existing and planned systems, and, where necessary, inducing change. The oversight of payment and settlement systems has become more distinct and formal in recent years as part of a growing concern with financial stability as also with the increasing role of private participants in financial transactions. The increasing attention by the RBI also reflects the large increase in the value of transfers cleared and settled, the increasing centralisation of transactions around a small number of key systems and the growing technological complexity.

6.1 Vision Document for Payment Systems, 2005-08

In the recent period, the RBI has taken a number of initiatives to strengthen the institutional, technological and procedural framework for the payment and settlement systems. To carry forward these initiatives in an integrated and cohesive manner, a Vision Document for 2005-08 was prepared after taking into consideration the feedback from the various stakeholders such as banks, technology solution providers, members of public and other experts in the field. The Vision Document set out the roadmap for implementing the vision for payment and settlement systems within the next three years. The key themes of the action plans identified in the Vision Document are safety, security, soundness and efficiency (Triple-S and E). While safety in payment and settlement systems relates to risk reduction measures, security implies confidence in the integrity of the payment systems. All payment systems are envisaged to be on a sound footing with adequate legal backing for operational procedures and transparency norms.

Efficiency enhancements are envisaged by leveraging the benefits of technology for cost effective solutions. The main action points for Payment and Settlement Systems, 2005-08 as set out in the Vision Document are provided in Annexure 1.

6.2 Board for Regulation and Supervision of Payment and Settlement Systems (BPSS)

In order to provide focused attention to the payment and settlement systems, the RBI constituted the BPSS as a Committee of its Central Board. The Reserve Bank of India (Board for Regulation and Supervision of Payment and Settlement Systems) Regulations, 2005 were notified in the Gazette of India on February 18, 2005. The BPSS is headed by the Governor of the RBI with the Deputy Governor in-charge of payment and settlement systems as the Vice-Chairman and the other Deputy Governors and two members of the Central Board of the RBI as members. Functions and powers of the BPSS include the following.

1. Formulating policies relating to the regulation and supervision of all types of payment and settlement systems.
2. Setting standards for existing and future systems.
3. Authorising the payment and settlement systems.
4. Determining criteria for membership.

The National Payments Council, which was set up in 1999, has been designated as a Technical Advisory Committee of the BPSS. To assist the BPSS in performing its functions, a new department, the Department of Payments and Settlement Systems (DPSS), was set up in the RBI in March 2005. The Board at its meetings had emphasised, *inter alia*, the following.

- a) Payment system services in India should be taken to a level comparable with the best in the world.
- b) Appropriate legal infrastructure may be created as early as possible.
- c) A plan be drawn up to “leapfrog” from cash to electronic modes of payment, wherever possible.
- d) Cheque clearing system would have to be made more efficient through cheque truncation system.
- e) Usage of the real time gross settlement (RTGS) system be increased both in terms of opening additional branch outlets and more number of transactions being put through.

6.3 Vision Document for Payment Systems, 2012-15

The main focus of the Vision Document for Payments Systems, 2012-15 is to

provide a thrust to modern electronic payments that are safe, simple and low-cost for use by all. The document aims at increasing the share of electronic payment transactions and taking measures towards moving to a less cash society and customer convenience. The focus of cheque clearing operations in the coming years would be consolidation, rationalisation, centralisation, through the implementation of grid-based CTS solution (which is Information Technology Act compliant) across the country by NPCI. The grid-based CTS will usher in a standardised cheque clearing scenario across the country. The issuance of CTS 2010 compliant cheques will facilitate this process. Introduction of user/customer friendly features and increasing the number of settlement cycles in NEFT would be further examined.

7.0 Recent Measures to Promote Electronic Retail Payments

In recent years, advancements in banking technology, progress in mobile banking and innovative technologies to facilitate digital payments have enabled large number of small denomination transactions to be handled smoothly in electronic mode. As per the World Payments Report (2015), global non-cash transactions reached 358 billion in 2013, an increase of 7.6% over 2012. The Government of India has taken policy decisions to encourage cashless/electronic transactions. In its endeavour on moving towards electronic payments, the Central Government has announced a number of incentives.

Electronic retail payments provide a variety of benefits to both the common man and the vendors. For the common man making the payment, it leads to reduced cash and hence more safety, faster payment, reduced number of visits to bank, and interest earning on money in the bank. For the vendors, it has benefits like quick settlement of transactions, getting rid of coins and change, larger transactions made easy, improved accounting and book keeping, and no need to keep large amounts of cash.

7.1 National Payments Corporation of India (NPCI)

NPCI is an umbrella organisation for all retail payments system in India. It was set up with the guidance and support of the Reserve Bank of India (RBI) and Indian Banks' Association (IBA). The RBI, after setting up the Board for Regulation and Supervision of Payment and Settlement Systems (BPSS) in 2005, released a vision document incorporating a proposal to set up an umbrella institution for all the Retail Payment Systems in the country. The core objective was to consolidate and integrate the multiple systems with varying service levels into nation-wide uniform and standard business process for all retail payment systems. The other objective was to facilitate an affordable

payment mechanism to benefit the common man across the country and help financial inclusion.

IBA's untiring efforts during the last few years helped to turn this vision into a reality. NPCI was incorporated in December 2008 and the Certificate of Commencement of Business was issued in April 2009. It was incorporated as a Section 25 company under Companies Act, 1956 (now Section 8 of Companies Act 2013) and is aimed to operate for the benefit of all the member banks and their customers. The authorized capital is pegged at Rs. 300 crore and paid-up capital is Rs. 100 crore. The aim is to create infrastructure of large dimension and operate on high volumes resulting in payment services at a fraction of the present cost structure. NPCI has ten promoter banks, namely State Bank of India, Punjab National Bank, Canara Bank, Bank of Baroda, Union Bank of India, Bank of India, ICICI Bank, HDFC Bank, Citibank and HSBC.

From a single service of switching of inter-bank ATM transactions, the range of services has grown to cheque clearing, immediate payments service (24x7x365), automated clearing house, electronic benefit transfer and a domestic card payment network named RuPay to provide an alternative to international card schemes. As in January 2016, over 247 million Indians owned RuPay cards. During the week following the demonetisation, RuPay card usage increased by 118.6 percent.

BPSS at its meeting held on September 24, 2009 had given an in-principle approval to issue authorization to NPCI for operating various retail payment systems in the country and granted Certificate of Authorization for operation of National Financial Switch (NFS) ATM Network with effect from October 15, 2009. NPCI had deputed its officials to IDRB Hyderabad and had taken over NFS operations on December 14, 2009. Membership regulations and rules had been framed for enrolling all banks in the country as members. This was done so that when the nation-wide payment systems are launched, all would get included on a standardized platform.

7.2 Committee to review the framework related to digital payments

The Ministry of Finance, Government of India had constituted this Committee on Digital Payments to review the payment systems in the country and to recommend appropriate measures for encouraging digital payments. The Committee (Chairman: Ratan P. Watal) was constituted on August 23, 2016 with the following terms of reference:

- a) To study and recommend need for changes, if any, in the regulatory mechanism and any legislation, relevant for the purpose of promotion of payments by digital modes.
- b) To study and recommend ways for leveraging Unique Identification Number or any other proof of identity for authentication of card/digital transactions and setting up of a Centralised KYC Registry.

- c) To study introduction of single window system of Payment Gateway to accept all types of cards/digital payments of Government receipts.
- d) To study feasibility and framing rules for creating a payments history of all digital payments and create necessary linkages between payments transaction history and credit information.
- e) To study and recommend various measures to incentivise transactions through cards and digital means.
- f) To study global best practices in payments including initiatives taken by various Governments/Government Agencies.
- g) To identify market failure(s), if any, along with suitable interventions that may be implemented to promote payment by card/digital means.
- h) To identify regulatory bottlenecks, if any, and suggest changes to promote payment by card/digital means.
- i) To study and make recommendations on any other matter related to promotion of payments through cards and digital means.

The Committee submitted an Interim Report to the Ministry of Finance on November 21, 2016. Towards finalisation of the report, the Committee engaged extensively with all stakeholders and technology groups including Reserve Bank of India (RBI), State Governments, Comptroller and Auditor General of India, payment companies, technology companies and the academia. The Committee submitted its Final Report to the Finance Minister on December 9, 2016.

The Committee, *inter alia*, recommended a medium-term strategy for accelerating growth of digital payments in India with a regulatory regime which is conducive to bridging the 'digital divide' by promoting competition, open access and inter-operability in payments. The Committee recommended inclusion of financially and socially excluded groups and assimilation of emerging technologies in the market, while safeguarding security of digital transactions and providing level playing to all stakeholders and new players who will enter this new transaction space. It suggested inter-operability of the payments system between banks and non-banks, upgradation of the digital payment infrastructure and institutions and a framework to reward innovations and for leading efforts in enabling digital payments. This Committee was seized of the developments following the decision of the Government to cancel legal tender character of currency of high denominations. The Committee calibrated its recommendations accordingly and provided a suitable framework for smooth and speedy transition towards a digital payments economy.

7.3 Credit/Debit cards

A credit card is a payment card issued to users (cardholders) to enable the cardholder to

pay a merchant for goods and services, based on the cardholder's promise to the card issuer to pay them for the amounts so paid plus other agreed charges. The card issuer (usually 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 as a cash advance. A debit card is a plastic payment card that can be used instead of cash when making purchases. It is similar to a credit card, but unlike a credit card, the money comes directly from the user's bank account when performing a transaction.

There has been phenomenal increase in the number of credit cards issued by the banks in India during the last few years. The number of outstanding credit cards at end-October 2016 stood at 2.73 crore. While the increasing usage of the credit cards is a welcome development in as much as it reduces reliance on currency for settlement of transactions, it also entails certain additional elements of operational risk and can be a potential source of customer complaints.

In order to ensure orderly growth of the card segment of consumer credit and protect the interests of banks/non-banking financial companies (NBFCs) and their customers, the RBI constituted a Working Group on Regulatory Mechanism for Cards (Chairman: R. Gandhi). Based on the recommendations of the Working Group, draft guidelines on credit cards were framed by the RBI in June 2005 for all commercial banks/NBFCs with regard to their credit card operations.

The draft guidelines delineated the broad parameters that banks/NBFCs should, at the minimum, take into account with regard to the following:

- a) Issue of cards with respect to clear mentioning of most important terms and conditions (MITCs).
- b) Interest rates and other charges on customers.
- c) Corrective mechanism on account of wrongful billing.
- d) Use of direct sale agents and other agents for outsourcing various credit card operations.
- e) Protection of customer rights especially in respect of right to privacy, customer confidentiality and fair practices in debt collection.
- f) Redressal avenues of customer grievances.
- g) Internal control and monitoring systems of the banks/NBFCs for such card operations.

The draft guidelines further stipulated that each bank/NBFC must have a well-documented policy and a *fair practices code* for credit card operations. The *fair practices code* for credit card operations released by the IBA in March 2005 could also be used by banks/NBFCs. The bank/NBFCs code should, at the minimum, however, incorporate the relevant guidelines contained in the draft guidelines released by the RBI.

7.4 ATM networks

The main advantage of an ATM network is that it obviates the need for having bank-specific multiple ATM installations in the same geographical area, thereby reducing the entailed costs for the banks but without compromising on the reach of the banks to their customers. Over the years, the relative growth in off-site ATMs has been much more than that of on-site ATMs. As a result, by end October 2016, off-site ATMs accounted for approximately 47.63 percent (97,731) of the total ATMs in the country. With the policy initiative to enable non-bank entities to set up and operate ATMs—White Label ATMs (WLAs)—the proportion of off-site ATMs is likely to grow further.

The National Financial Switch (NFS) network started its operations on August 27, 2004. NFS is one of the several shared ATM networks which inter-connect the ATM switches of the banks together and thus enable inter-operability of the ATM cards issued by any bank across the entire network. The Board for Regulation and Supervision of Payment and Settlement systems (BPSS) approved in-principle to issue authorisation to National Payments Corporation of India (NPCI) for operating various retail payment systems in the country. Reserve Bank of India also issued authorisation to NPCI to take over the operations of National Financial Switch (NFS) from the Institute of Development and Research in Banking Technology (IDRBT) on October 15, 2009. NPCI took over NFS operations from December 14, 2009. Use of the ATMs connected through any of the ATM networks in the country became cost free for the customers from April 1, 2009. As at end-October 2016, the number of ATMs in the country stood at 2,05,151.

7.5 Digital wallet

Digital wallet refers to an electronic device that allows an individual to make electronic transactions. This can include purchasing items online with a computer or using a smartphone to purchase something at a store. An individual's bank account can also be linked to the digital wallet. He may also have his driver's license, health card, loyalty card(s) and other ID documents stored on the phone. The credentials can be passed to a merchant's terminal wirelessly via near field communication (NFC). Increasingly, digital wallets are being made not just for basic financial transactions but to also authenticate the holder's credentials. For example, a digital wallet could potentially verify the age of the buyer to the store while purchasing alcohol. The system has already gained popularity in Japan, where digital wallets are known as "wallet mobiles".

A digital wallet has both a software and information component. The software provides security and encryption for the personal information and for the actual transaction. Typically, digital wallets are stored on the client side and are easily self-maintained and fully compatible with most e-commerce websites. A server-side digital

wallet, also known as a thin wallet, is one that an organization creates for and about you and maintains on its servers. Server-side digital wallets are gaining popularity among major retailers due to the security, efficiency, and added utility it provides to the end-user, which increases their satisfaction of their overall purchase. The information component is basically a database of user-input information. This information consists of your shipping address, billing address, payment methods (including credit card numbers, expiry dates, and security numbers), and other information.

Digital wallet systems enable the widespread use of digital wallet transactions among various retail vendors in the form of mobile payments systems and digital wallet applications. A client-side digital wallet requires minimal set-up and is relatively easy to use. Once the software is installed, the user begins by entering all the pertinent information. The digital wallet is now set up. At the purchase or check-out page of an e-commerce site, the digital wallet software has the ability to automatically enter the user information in the online form. By default, most digital wallets prompt when the software recognises a form in which it can fill out; if one chooses to fill out the form automatically, the user will be prompted for a password. This keeps unauthorised users away from viewing personal information stored on a particular computer.

Application of Digital Wallets: Consumers are not required to fill out order forms on each site when they purchase an item because the information has already been stored and is automatically updated and entered into the order fields across merchant sites when using a digital wallet. Consumers also benefit when using digital wallets because their information is encrypted or protected by a private software code; merchants benefit by receiving protection against fraud.

Digital wallets are available to consumers free of charge, and they are fairly easy to obtain. For example, when a consumer makes a purchase at a merchant site that is set up to handle server-side digital wallets, he types his name and payment and shipping information into the merchant's own form. At the end of the purchase, the consumer is asked to sign up for a wallet of his choice by entering a user name and password for future purchases. Users can also acquire wallets at a wallet vendor's site. Although a wallet is free for consumers, vendors charge merchants for wallets. Some wallet vendors make arrangements for merchants to pay them a percentage of every successful purchase directed through their wallets. In other cases, digital wallet vendors process the transactions between cardholders and participating merchants and charge merchants a flat fee.

Advantages for E-commerce Sites: Many online shoppers abandon their order due to frustration in filling in forms. The digital wallet combats this problem by giving users the option to transfer their information securely and accurately. This simplified approach to completing transactions results in better usability and ultimately more utility for the customer. Digital wallets can also increase the security of the transaction since the wallet typically does not pass payment card details to the website (a unique transaction identifier or token is shared instead). Increasingly this approach is a feature of online payment gateways, especially if the payment gateway offers a hosted payment page integration approach.

7.6 Aadhaar-enabled Payment System (AEPS)

AEPS is a bank led model which allows online interoperable financial inclusion transaction at PoS (Micro-ATM) through the Business Correspondent¹ of any bank using the Aadhaar authentication. The four Aadhaar enabled basic types of banking transactions are balance enquiry, cash withdrawal, cash deposit and Aadhaar-to-Aadhaar funds transfer. The only inputs required for a customer to do a transaction under this method are (i) IIN² (Identifying the bank to which the customer is associated); (ii) Aadhaar number; and (iii) fingerprints captured during the enrolment.

The objectives of having an AEPS are the following:

- a) To empower a bank customer to use Aadhaar as his identity to access his respective Aadhaar enabled bank account and perform basic banking transactions like balance enquiry, cash deposit, cash withdrawal, remittances that are intra-bank or inter-bank in nature, through a Business Correspondent.
- b) To sub-serve the goal of Government of India and Reserve Bank of India (RBI) in furthering Financial Inclusion.
- c) To sub-serve the goal of RBI in electronification of retail payments.
- d) To enable banks to route the Aadhaar initiated inter-bank transactions through a central switching and clearing agency.
- e) To facilitate disbursements of Government entitlements like NREGA, Social Security Pension, Handicapped Old Age Pension etc. of any Central or State Government bodies, using Aadhaar and authentication thereof as supported by UIDAI.
- f) To facilitate inter-operability across banks in a safe and secured manner.
- g) To build the foundation for a full range of Aadhaar-enabled banking services.

AEPS is a new payment service offered by the National Payments Corporation of India to banks, financial institutions using Aadhaar. This is known as Aadhaar-enabled Payment System and may also be referred to as AEPS. Aadhaar is a unique identification number issued by the Unique Identification Authority of India (UIDAI) to any resident

of India. Any resident of India holding an Aadhaar number and having a bank account may be a part of the Aadhaar-enabled Payment System. Also, the customer needs to have a bank account for availing AEPS.

Customer should have an Aadhaar (Unique ID as issued by UIDAI) number linked with any bank account (bank should be a part of AEPS network) where customer has an account. The registration process shall be as per the procedures laid down by the bank providing AEPS service. A customer may visit a Business Correspondent (BC) Customer Access Point. The BC using the point of sale (Micro-ATM) device will be able to process transactions like cash withdrawal, cash deposit, balance enquiry and fund transfer by selecting the transaction of their choice. The customer needs to provide his Aadhaar Number and his bank name or bank IIN number. A Point of Sale-PoS (Micro-ATM) device is used to facilitate customers to make cash deposit, cash withdrawal, fund transfer and balance enquiry. The PoS device may be a Micro-ATM.

7.7 Unified Payment Interface (UPI) of India

UPI is a payment system which facilitates the fund transfer between two bank accounts. This payment system works on the mobile platform. Sending money through the UPI app is as easy as sending a message. The customer is not required to give bank account details for the funds transfer through the UPI payment system. Some of the important benefits of UPI are as follows:

- a) UPI transfers the fund immediately. No restriction of holiday or working hours. The bank strike will also not affect the UPI payments.
- b) Customer does not require the bank account number and IFSC code of the recipient.
- c) Customer can transact from many bank account through a single UPI app.
- d) Customer is not required to wait up to 24 hours to send money to a new payee. Anyone would get money immediately.
- e) Customer can send bills and get money once the client approves it.
- f) Customer can use the cash on delivery without paying cash to the delivery boy. Just approve the bill and the delivery boy would get confirmation.

Virtual Payment Address (VPA): The UPI payment system does not use the bank account details of the recipient. But, there should be an accurate identification of the money recipient. Ultimately, all this convenience is fruitful if the money goes in right hands. Therefore, every user of the UPI apps must have a unique ID. This unique ID is called as the virtual payment address (VPA). In fact, the App provider bank would allot the VPA to each user. The user can choose the VPA similar to the mail address. One can give this VPA to anyone to receive the money. The app would itself keep storing the VPAs of the persons to whom you have transferred the money. It is like saving contacts in email.

UPI payment system works only through the mobile application. Thus, you need a smartphone and internet data pack. There are several UPI apps. A customer can choose any of them. Each bank can launch its UPI-based app. In fact, most of the banks have incorporated UPI in their existing mobile application.

UPI has made the fund transfer very easy. But it is not a mobile wallet. Unlike the mobile wallet, you are not required to credit money into the UPI app. Rather, the every fund transfers take place through your bank account. UPI app just acts as the link between you and your account. In other words, it has made the bank account transaction much easy and cheap. Therefore, to establish the link between you and your account, you have to connect UPI app to your bank account. This is a one-time process. It is done when you download a new UPI app. While connecting to the bank account, you have to authenticate it through the card details and OTP. Once your UPI app gets connected to a bank account, you can easily transfer funds to any person.

The UPI payment system is revolutionary. It makes the non-cash payment a very easy affair. Moreover, the NPCI is coming with new features of UPI. Soon the UPI 2.0 would be launched which has more flexibility, easy and wide reach. You should adopt this method of payment because it also reduces the black economy.

7.8 Unstructured Supplementary Service Data (USSD)

Mobile banking has brought the bank account in your hand. Today, a person can check bank-balance, get a mini statement and transfer fund through the mobile banking. However, what if a person does not have a smart phone or the internet? The answer to this problem is the USSD based mobile banking. Here, the person has to dial *99# and he can do all those things which are available to a person with smartphone and 3G data. Almost every bank supports *99# USSD mobile banking service.

The person can get the mobile balance by dialling a certain code. Similarly, the recharge vendor uses certain codes to access mobile services. These are, in fact, USSD codes. The code which directly communicates with the server of telecom company is called as the USSD. This code starts with * (asterisk) and ends with # (hash).

As USSD code connects to the telecom operator's server, it also connects to bank's server. Hence, it gives the person access to his bank account and performs some transaction. The entry to the bank account is given on the basis of registered mobile number. Thus, he must use registered mobile number to dial the USSD code. The connection to the server of your bank goes through the servers of telecom companies. The NPCI handles all the technicality of this USSD service. A special number *99# is fixed to access the banking services. This number works across the banks. This system of banking transaction is termed as the National Unified USSD Platform (NUUP).

NUUP is an innovative service developed by NPCI and launched by the Indian government in 2014. The service allows the banks and telecom service providers to work together seamlessly. The services of NUUP are based on the USSD method.

USSD is a technology normally used in the field of telecommunication. It is available on all GSM enabled handsets. You do not need an internet connection to use the services of this method. It uses voice connectivity only. NUUP uses USSD to perform various financial, non-financial and value added services. A person can not only check his balance and see mini statement but also send money. There are some more options such as show MMID, generate OTP and change M-PIN.

7.9 RuPay

RuPay is an Indian domestic card scheme conceived and launched by the National Payments Corporation of India (NPCI). It was created to fulfil the Reserve Bank of India's desire to have a domestic, open loop, and multilateral system of payments in India. In India, 90 percent of credit card transactions and almost all debit card transactions are domestic. However, the cost of transactions was high due to monopoly of foreign gateways like Visa and MasterCard. In recent years, the usage of credit and debit cards (called plastic money) has increased manifold. It was thought that if this process of transactions is made India-centric, cost can come down drastically. RuPay facilitates electronic payment at all Indian banks and financial institutions, and competes with MasterCard and Visa in India. NPCI maintains ties with Discover Financial to enable the card scheme to gain international acceptance.

RuPay is a portmanteau of the words *rupee* and *payment*. The colours used in the logo are an allusion to the tricolour national flag. RuPay card was launched on March 26, 2012. NPCI entered into a strategic partnership with Discover Financial Services (DFS) for RuPay Card, enabling the acceptance of RuPay Global Cards on Discover's global payment network outside of India. RuPay cards are accepted at all ATMs across India under National Financial Switch, and under the NPCI's agreement with DFS, RuPay cards are accepted on the international Discover network. According to the data published by National Payments Corporation of India, there are around 145,270 ATMs and more than 875,000 point of sale (PoS) terminals in India under the RuPay platform. In addition to the ATMs and PoS terminals, RuPay cards are accepted online on 10,000 e-commerce websites.

7.10 Bharat Interface for Money (BHIM)

It is a Mobile App developed by National Payments Corporation of India (NPCI) based on the Unified Payment Interface (UPI). It was launched by Prime Minister Shri

Narendra Modi in New Delhi on December 30, 2016. Named after Dr. Bhimrao Ambedkar, it is intended to facilitate e-payments directly through banks and as a part of the drive towards cashless transactions in the wake of demonetization of high value currency notes in November 2016. This UPI App supports all Indian banks which use that platform, which is built over the *immediate payment service* infrastructure and allows the user to instantly transfer money between the bank accounts of any two parties. It can be used on all mobile devices.

8.0 Conclusion

To sum up, several steps have been taken by the RBI in recent years to improve customer service of commercial banks. In the context of the rapidly evolving financial landscape, RBI has also been suitably reorienting its regulatory and supervisory framework to meet the needs of the common man. It has also been the endeavour of RBI to improve credit delivery and customer service by banks. RBI has simultaneously focussed on financial inclusion and extension of banking services to the unbanked areas of the economy. RBI has taken a host of measures in recent years aimed at providing customer service at reasonable cost. These measures include enhancing customer protection and disclosures, code of ethics and grievance redressal, among others. RBI's broad approach to financial inclusion aims at *connecting people* with the banking system and not just credit dispensation; giving people access to the payments system; and portraying financial inclusion as a viable business model and opportunity. RBI has been initiating measures to improve the outreach of banks and their services, and promote financial inclusion in less developed states and union territories.

As is well-known, the financial sector has witnessed a quantum jump in the availability of technological solutions for delivery of financial services, and the RBI too has launched several payment system products for improving the efficiency of the payment system. A smooth and efficient payment and settlement infrastructure plays an important role in maintaining stability in the financial sector. Significant progress has been made in improving the payment systems infrastructure in India with the introduction of RTGS, operation of high value cheque clearing system (HVCCS), setting up of Clearing Corporation of India Limited (CCIL) as the central counterparty in the government securities, foreign exchange and collateralised borrowing and lending obligation (CBLO) segments as also setting up Central Counterparties (CCPs) for the settlement of equities and derivatives. The legal framework for payment and settlement systems has also been strengthened by the recent notification of the Payment and

Settlement Systems Act and Rules. This has made India largely compliant with international standards and codes in this area.

Endnotes

1. Business Correspondent (BC) is an approved bank agent providing basic banking service using a MicroATM (terminal) to any bank customer wishing to avail their bank BC service.
2. IIN identifies the bank with which a customer has mapped his Aadhaar number. IIN is a six digit number. In most banks BC customer service points, this number would be represented on the terminal by the banks logo or name.

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Annexure 1

Main action points for Payment and Settlement Systems, 2005-08 as set out in the Vision Document

A. Action Points during 2005-06

1. Pursuing with Indian Banks' Association and major banks for setting up of a national level entity which will operate all retail payment systems in the country.
2. Operationalising National Settlement System for all clearings at four metro centres by December 2005.
3. Finalising the proposed electronic funds transfer (EFT) regulations.
4. Implementing Stage-2 of RTGS System, *i.e.*, integrated accounting system (IAS)-RTGS rollout during which all inter-bank transactions at all major centres would be settled on RTGS platform and paper-based inter-bank clearing will be closed.
5. Pursuing with RTGS participants to cover all their networked branches under RTGS framework paving way for RTGS-based customer related transactions at about ten thousand branches in the country.
6. Implementing image-based cheque truncation system (CTS) at the National Capital Region (NCR) on a pilot basis.
7. Preparing minimum standard of operational efficiency at MICR cheque processing centre (CPC).
8. Making available EFT facility at 500 capital market intensive centres as identified by BSE and NSE.
9. Setting up customer facilitation centre (CFC) at the RBI for various segments of national payment systems.
10. Public disclosure from each payment service provider of its standards, terms and conditions under which the payment will be effected and also compensation policy and procedure for any deficiency in services including the setting up of CFC.
11. Drafting the Red Book on payment systems in India.
12. Drafting a comprehensive legislation on payment system.

B. Action Points during 2006-07

1. To complete the tasks initiated during 2005-06.
2. To extend MICR clearing to 20 additional identified centres.
3. To ensure that every cheque issued follows MICR format and standards.
4. To implement EFT systems at a national level through the new retail payment institution.

5. To take all payment systems in India compliant with the core principles for systemically important payment systems (SIPS).
6. To increase the reach of payment services by means of tie-up and collaboration with other large coverage entities such as the post offices.
7. To facilitate government payments and receipts through electronic mode.

C. Action Points during 2007-08

1. Creating off-city back-up arrangements for large value national payment systems such as RTGS and G-Sec clearing.
2. Making fully functional the new organisation for retail payment systems with all such payment under its umbrella.
3. Regulating various payment systems.
4. Ensuring cheque truncation based clearing at Mumbai, Chennai and Kolkata.
5. Covering National Settlement System at all major clearing houses/clearing organisations in the country.