

IX

PAYMENT AND SETTLEMENT SYSTEMS AND INFORMATION TECHNOLOGY

In pursuance of the vision of encouraging electronic payments and achieving a less cash society, the Reserve Bank continued its endeavour to have safe, inclusive and efficient payment systems in the country. Initiatives in this direction included rationalisation of policies relating to ATM transactions, prepaid payment instruments, white label ATMs and relaxation of additional factor of authentication for small value contact-less card present payments. In addition, the Reserve Bank also initiated the process of infrastructure enhancement in bill payments and MSME bill discounting segments by putting in place policy framework for setting up of Bharat Bill Payment System (BBPS) and Trade Receivables Discounting System (TReDS). The Reserve Bank also undertook a slew of in-house IT initiatives to brace up with the emerging challenges.

DEPARTMENT OF PAYMENT AND SETTLEMENT SYSTEMS

IX.1 Efficient and secure payment and settlement systems are essential components of a well-developed financial system. The department being the nodal wing of the Reserve Bank in matters of payment and settlement systems, focused towards migrating to a less cash society and on enhancing the efficiency and security of electronic transactions, while at the same time improving convenience of operations. Another key area of focus was enhancing access to finance through strengthening the inter-operable payment system infrastructure and putting in place a firm legal basis for payment system activities in conformity with international standards. With a view to ensuring seamless financial transactions, the Reserve Bank has been leveraging technology to upgrade the payment and settlement systems on a continuous basis over the years, resulting in a gradual shift from cash and paper based transactions to electronic modes of payments. The Reserve Bank while taking all these steps, recognised developments in technology and provided a facilitating environment for innovations in the payments sphere.

TREND AND PROGRESS IN PAYMENT SYSTEMS

IX.2 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.

Paper clearing

IX.3 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

IX.4 The growth in retail electronic payments has been encouraging both in terms of coverage and usage. As on March 31, 2015, the national

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
1	2	3	4	5	6	7
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.

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.

IX.5 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.

IX.6 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. Transactions through prepaid payment instruments (PPIs) also grew substantially, recording 314 million transactions valued at ₹212 billion. Mobile banking service, which is a relatively newer entrant among the payment options, has shown encouraging growth and handled 171 million transactions valued at ₹1 trillion during the year.

Agenda for 2014-15: Implementation Status

Mobile banking

IX.7 As part of the agenda for 2014-15, it was planned that efforts would be made to provide a fillip to mobile banking and undertake necessary groundwork to put in place standards for customer on-boarding, security of transactions and redressal of customer grievances, besides engaging with stakeholders to explore the feasibility of having a standardised application for mobile banking across banks. The Reserve Bank issued necessary guidelines to banks in December 2014 to enhance the usage of mobile banking in the country. Banks were advised to provide their customers options for easy registration for mobile banking services, through multiple channels, including ATMs, thereby minimising the need for branch visit to avail such services. NPCI is in the process of facilitating mobile banking registration at ATMs on the National Financial Switch (NFS) network. Similarly, NPCI was advised with regard to setting standards for industry agreements between banks and mobile network operators (MNOs) for handling customer grievances, particularly in the context of the National Unified USSD (Unstructured Supplementary Service Data) Platform (NUUP).

Trade Receivables Discounting System (TReDS)

IX.8 In order to provide quick and efficient financing options for the micro, small and medium

enterprises (MSME) segment, it was proposed to set up an electronic TReDS to bring together the MSME, their corporate buyers as well as financiers and reduce the constraints faced by the MSME segment in liquidity management. The participants in the TReDS will be corporate buyers, including government departments and public sector undertakings (PSUs). The system will also facilitate factoring of both receivables as well as payables. Accordingly, policy measures were taken towards setting up of TReDS. Seven applications received to set up TReDS are being scrutinised for consideration of their authorisation during 2015-16 under the Payment and Settlement Systems (PSS) Act, 2007.

Bharat Bill Payment Systems (BBPS)

IX.9 The guidelines for BBPS were issued in November 2014 as per the agenda for 2014-15. BBPS is being set up by NPCI as a pan-India integrated bill payment system under the PSS Act, 2007 offering inter-operable and accessible bill payment services to customers through a network of agents. It is expected to address the problems faced by consumers who are required to use multiple options (as put in place by respective billers) to meet their bills payment requirements. The process of authorisation of NPCI to act as a Bharat Bill Payment Central Unit (BBPCU) and authorisation of Bharat Bill Payment Operating Unit (BBPOU) will be completed during 2015-16.

Consolidation of Payment Systems

IX.10 The ECS suite and NACH provide similar services. As envisaged in the agenda for 2014-15, consolidation of these payment systems has commenced from December 2014 with migration of volume from the ECS suite to NACH and thus, almost all participants are on board in the NACH system.

Other developments during 2014-15

IX.11 In line with the objective of the department to enhance greater acceptance of electronic payments, the following policy changes were introduced during the year.

Expansion of infrastructure / service providers

IX.12 For ensuring availability of additional payment options, authorisation was issued to nine entities, increasing the number of authorised payment system operators to 63 in 2014-15. The number of entities authorised for operating PPIs increased to 34 with five entities authorised during 2014-15. The remaining four entities were authorised for the money transfer service scheme (MTSS) (cross-border inward remittances), white label ATMs (WLAs) and instant money transfer. As on March 31, 2015, there were 7,881 WLAs installed across the country, out of which 4,932 were in Tier III to VI centres.

IX.13 With expanding infrastructure and service providers, it is equally important that they operate as per the norms set out by the Reserve Bank. The Reserve Bank has accordingly devised an assessment template for retail payment systems. Non-bank entities were asked to submit a self-assessment as per the template.

Security and efficiency

IX.14 Security and efficiency of payment system infrastructure being critical in development of payment systems, the NEFT platform was migrated to UNIX platform under the data centre architecture, which not only enhanced the processing capacity but also addressed the concerns of business continuity. Similarly, in case of large value payment

systems, activation of hybrid features in the revamped real time gross settlement (RTGS) system has facilitated the settlement of transactions on a gross basis as well as through multilateral off-setting. Further, to enhance the efficiency and customer service aspects, acceptance of future value-dated transactions for settlement (up to three business days) has been activated, and the business hours of RTGS have been extended.

IX.15 With a view to mitigating certain risks in large value payment systems, the Clearing Corporation of India Limited (CCIL) took several initiatives. CCIL migrated its USD-INR settlement of inter-bank forex transactions to a payment *versus* payment (PvP) mode in April 2015 addressing the Herstatt risk¹. It has carried out the first cycle of portfolio compression in the forex forward segment, achieving a compression of about 62 per cent and thereby, reducing counterparty exposure. CCIL is also carrying out exposure checks in the forex forward rupee derivatives segment on an online basis for interest rate swap (IRS)/forward rate agreement (FRA) trades which facilitate checking the adequacy of margins in advance and thereby, mitigating the risk of rejection of trades by CCIL.

Customer convenience and innovations

IX.16 With the objective of ensuring convenience in the use of the payment system and also to facilitate the migration to electronic payments, the policy guidelines related to PPIs, mobile banking, usage of ATMs and additional factor of authentication (AFA²) were amended.

IX.17 The guidelines for issuance of PPIs were rationalised in December 2014 to ensure its

¹ The risk that one party in a foreign exchange trade pays out the currency it sold but does not receive the currency it bought, is called foreign exchange settlement risk or "Herstatt" risk.

² AFA is a security process in which the user provides additional means of identification, one of which is typically a physical token, such as a card, and the other of which is typically something memorised, such as a security code.

increased usage. The limit for full-KYC semi-closed PPIs was enhanced from ₹50,000 to ₹100,000; the validity of gift cards was increased from one year to three years; banks were allowed to issue multiple PPIs for dependent family members from full-KYC compliant bank accounts. In order to provide convenience to visiting foreign nationals and NRIs and also to reduce cash transactions emanating from this segment, banks were allowed to issue rupee denominated open system non-reloadable PPIs to visiting foreign nationals and NRIs during their stay in India, with the permissible ceiling on such PPIs being ₹200,000 with cash withdrawal restricted to ₹50,000 per month.

IX.18 The guidelines on WLAs were reviewed to allow for acceptance of international credit/debit/prepaid cards, besides the facility of dynamic currency conversion (DCC). WLA operators are now permitted to tie up with other commercial banks, besides the sponsor bank for supply of cash to the WLAs.

IX.19 Recognising the need for balancing aspects of security and convenience of card transactions, the requirement of AFA, which was earlier introduced for security of operations, was relaxed for small value card present transactions using contact-less EMV (*i.e.*, Europay, Mastercard and Visa) chip cards. Banks have also been advised to put in place suitable velocity checks while at the same time clearly indicate the maximum liability, if any, devolving on the customer.

Moving towards less cash

IX.20 Keeping in view the interoperable ATM infrastructure and the geographical dispersion of ATMs, the number of mandated free transactions at ATMs was rationalised in big cities. The minimum number of free transactions for savings bank account holders at other bank's ATMs was reduced to three per month from five in six metro centres. Further, banks were advised to provide their

savings bank account holders with at least five free transactions per month at their own ATMs. Beyond the mandatory free ATM transactions, banks were permitted to charge their customers up to a maximum of ₹20 (plus service tax) per transaction. However, banks can put in place their own policies offering more number of free transactions at ATMs.

Sound legal framework and compliance with international standards

IX.21 A firm legal framework for payment systems is equally critical and hence, in conformity with the international standards, certain amendments to the PSS Act 2007 were introduced during the year.

IX.22 Following the global financial crisis, trade repositories (TR) and legal entity identifier (LEI) system have gained importance for strengthening the over the counter (OTC) derivatives markets. Further, the functioning of a central counter party (CCP) and legal certainty in the event of its insolvency is critical. In order to provide specific legal backing to close out netting in the event a CCP goes insolvent, as also for regulation and supervision of TR and local operating unit (LOU - an entity issuing LEI) by the Reserve Bank, after extensive deliberations by the Select Committee of the Rajya Sabha in which the Reserve Bank participated actively, amendments to the PSS Act, 2007 were carried out. This provides legal backing/clarity to various issues like close-out netting in the event of insolvency of a CCP; regulating and supervising TR; LOU under the LEI system; and protection of customer funds for systems operated by authorised non-bank entities.

IX.23 In terms of focus areas in large value payment systems, efforts were directed at compliance with the Principles for Financial Market Infrastructures (PFMIs) by Financial Market Infrastructures (FMIs). Towards this end, the Committee on Payments and Market Infrastructures-

International Organisation of Securities Commissions (CPMI-IOSCO) which has been carrying out the Level 1 assessment³ against PFMLs, has rated the Indian jurisdiction as “4”⁴, *i.e.*, final implementation measures are fully in force.

Other initiatives

IX.24 The Reserve Bank organised an international seminar in November 2014 at Kovalam, Kerala, with a focus on the evolving role of central banks in retail payments, cash to cashless, role of non-banks in retail payments, innovations in retail payments, government payments and remittances, risk management and security and financial inclusion. A ‘Payment Systems Innovations Day’ was organised in December 2014 to provide a platform for presenting the various innovations taking place in payment systems. The Reserve Bank hosted the 14th SEACEN Advanced Course on Payment and Settlement Systems for Emerging Economies during May 2015 with a special focus on ‘Resilience of Payment Systems to Cyber Crime’.

Agenda for 2015-16

IX.25 The Reserve Bank would continue to encourage innovation in payment systems and play the role of a facilitator keeping the focus on safety and efficiency of payment systems. Given the fast changing payment landscape, the Reserve Bank will prepare a vision document for a 2/3 years horizon. The work with respect to authorisation of entities for operating TReDS and BBPS will be completed in 2015-16.

IX.26 In line with the endeavour to disincentivise cash transactions and incentivise card transactions,

measures for enhancing card acceptance infrastructure by acquiring banks will be examined and policy framework on ATMs and cash at POS will be reviewed along with the interchange/merchant discount rate (MDR) structure in consultation with all the stakeholders.

IX.27 With the growing e-commerce segment in the country, the role of payment aggregators and intermediaries is also increasing significantly. The Reserve Bank will engage with stakeholders to explore the need/feasibility of having a direct/indirect regulatory framework for these entities. An assessment of RTGS against PFMLs would be undertaken in 2015-16 by the Reserve Bank.

IX.28 CCIL has been identified as LOU for issuing LEI and endorsed as pre-LOU by the Regulatory Oversight Committee (ROC). It has since commenced issuance of LEI in India. A roadmap for use of LEI will be drawn in consultation with the Securities and Exchange Board of India (SEBI).

DEPARTMENT OF INFORMATION TECHNOLOGY

IX.29 The department continued to focus on the Reserve Bank’s IT vision of enabling the use of information technology (IT) as a strategic resource for bringing about overall efficiency in the Reserve Bank’s operations, improving standards of services being provided to its customers, strengthening governance and facilitating analytical and information based decision making in a safe and secure IT based environment. Information Technology Sub Committee (ITSC) of the Central Board continued to provide guidance in furthering this vision. ITSC met three times during 2014-15

³ Whether jurisdictions have completed the process of adopting the legislation and other policies implementing the 24 Principles for FMLs and four of the five Responsibilities for authorities within the regulatory framework that applies to FMLs.

⁴ Rating Level 1: Draft implementation measures not published; Rating Level 2: Draft implementation measures published; Rating Level 3: Final implementation measures published; Rating Level 4: Final implementation measures fully in force; Rating Level NA: No implementation measures needed (*i.e.*, not applicable).

and discussed major issues relating to IT projects and information security in the Reserve Bank; data warehouse; audits pertaining to information security; operations of the data centres (DCs); efficacy of disaster recovery drills; and working of the office of the chief information security officer (CISO).

Agenda in 2014-15: Implementation Status

Enterprise knowledge portal (EKP)

IX.30 The revamped EKP, launched in November 2013 provides a knowledge sharing platform within the Reserve Bank. During 2014-15, the portal was further enhanced with features like e-learning modules and improved search options. They were well received by users resulting in increased usage of the portal.

Video conferencing (VC) system

IX.31 The VC within the Reserve Bank which was upgraded in 2013-14 witnessed large scale usage; 532 VC sessions involving multiple locations were held during 2014-15, in addition to point-to-point user-based sessions. This has reduced the need for physical meetings.

Mail messaging system (MMS)

IX.32 The Reserve Bank's corporate mail messaging system was reinforced with advanced archival solutions which ushered in ease of usage and enhanced security. The up-gradation work on hardware commenced during the year and after its installation, the migration process to the new system is expected to be completed by the end of September 2015.

Committee on data standardisation

IX.33 A Committee on Data Standardisation (Convener: Shri P. Parthasarathi) which was constituted to bring about synergy and uniformity in the efforts being undertaken in the areas of data reporting and data standardisation, placed its draft

report in the public domain for feedback. Based on the inputs received, the committee has finalised its report. Work on implementation of the recommendations has since commenced.

Enhancements in core banking system (CBS) and stabilisation of e-treasury

IX.34 E-Kuber, the CBS of the Reserve Bank was introduced in 2012 for banks to participate in government borrowing programmes, liquidity adjustment operations and current account operations. During 2014-15, changes were made to e-Kuber to provide for the deployment of cash balances of the government (also see chapter VII). The Depositor's Education and Awareness (DEA) Fund scheme was implemented in e-Kuber at the very outset, enabling a flow of around ₹45 billion into the fund within two days. Treasury operations of the Department of External Investments and Operations of the Reserve Bank were successfully migrated from a legacy system to e-Kuber. This implementation, the first of its kind amongst central banks worldwide has brought in operational efficiency and unification of accounting processes.

Agenda for 2015-16

IX.35 The major initiatives planned for 2015-16 are discussed below.

Establishment of an IT subsidiary of the reserve bank

IX.36 Central banking operations have undergone a sea change thanks to the large scale integration of IT processes in banking. To handle the ever increasing complexities in a changing environment and to address cyber security and other related challenges, it is essential that a fully dedicated team of technical experts be continuously associated with this work. To this end, the Central Board of the Reserve Bank has approved the setting up of its IT Subsidiary. This initiative is being taken forward with guidance from experts in the industry.

Implementation of the electronic document management system (EDMS) within the Reserve Bank

IX.37 As a means towards large scale electronification of work processes within the Reserve Bank and to move towards a 'less paper' office environment, initiatives were undertaken to set up an electronic work flow and document management system along with data storage. The EDMS project, which commenced last year, is under progress. Given the enormous potential of the EDMS system on the overall efficiency of the Reserve Bank and its role in empowering its staff with knowledge, a comprehensive business process re-engineering (BPR) is being undertaken apart from evaluating the various software products available in the market. It is expected that a pilot implementation would commence during the first half of 2016.

Revamping of IT Infrastructure at DCs

IX.38 With the increased application systems operating from DCs and higher requirement of electric power, it is essential to improve the existing infrastructure at the DCs. Keeping in view the need to be environment friendly, work on virtualisation of hardware servers has commenced. As a first step, the migration of the RTGS system to a new IBM mainframe system was completed during the year.

Implementation of information security operating centre (ISOC)

IX.39 To handle enterprise wide IT security, ISOC is being set up. The project commenced with the issue of expression of interest (EOI) followed by the shortlisting of potential bidders. The tendering process has commenced and the project is expected to be completed by April 2016.

Extension of e-receipts and e-payments across all States using e-Kuber CBS

IX.40 The standardised e-receipt and e-payment functionalities using e-Kuber was demonstrated to most of the States, as well as in the recently held Conference of the State Finance Secretaries. In sequel, State Governments of West Bengal, Uttarakhand, Tamil Nadu and Kerala started using the system in 2014-15. The other states are at different stages of implementation. Efforts will be focussed on scaling up use of the system across all the major states in 2015-16.

Integrating currency management functions with CBS

IX.41 Accounting of currency movement and reporting is a potential area for integration with e-Kuber. A study of the system requirements, reverse presentation, discussions, design, development, testing and rollout of the modules will be undertaken during 2015-16 to facilitate its integration.