

VIII

PAYMENT AND SETTLEMENT SYSTEMS AND INFORMATION TECHNOLOGY

VIII.1 Rapid and ongoing innovations in technology and communication infrastructure and its integration with the various modes of payments have led to significant changes in the payment and settlement systems. While leading to greater efficiency in the payment and settlement systems, these innovations have also necessitated increased emphasis on integrity of the various systems to maintain financial stability. The Reserve Bank, therefore, continued to take measures to provide efficient and integrated payment and settlement systems in the country during 2006-07 while simultaneously taking steps to mitigate risks. Furthermore, the use of information technology (IT) in various banking activities has witnessed a rapid expansion in recent years, both in the Reserve Bank and the commercial banking sector. Developments in IT are facilitating the processing of large volumes of transactions in an efficient and reliable manner.

VIII.2 This Chapter profiles the initiatives taken by the Reserve Bank during 2006-07 to provide safe, secure, efficient and sound payment and settlement systems. It also covers the measures taken to promote the efficient use of IT within the Reserve Bank as well as the banking sector. The main thrust of the various initiatives relating to payment and settlement systems was on electronification of the payment systems and building of appropriate legal and technological infrastructure. The turnover of the RTGS system has expanded rapidly on account of movement of large value time critical payments to this system and the widening of the RTGS network to cover more bank branches. In order to enhance the efficiency of the paper based clearing system, the Reserve Bank has also undertaken a cheque truncation system (CTS). The Payment and Settlement Systems Bill has been placed in the Parliament. Once enacted, it would vest the Reserve Bank with the formal power to conduct oversight of the payment and settlement systems. As regards IT related initiatives in the Reserve Bank during 2006-07, an enterprise-wide approach continued to be adopted. In order to use the IT systems efficiently and to provide for business continuity, state-of-the-art data centres are being set up. The Institute for Development and Research in Banking Technology (IDRBT) continued to discharge

its Certification Authority related functions for the banking sector, apart from managing the Indian Financial Network (INFINET) and the National Financial Switch (NFS) during the year.

PAYMENT AND SETTLEMENT SYSTEMS

Board for Regulation and Supervision of Payment and Settlement Systems

VIII.3 The Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), constituted in March 2005, as a Committee of the Central Board of the Reserve Bank, is entrusted with the responsibility for the smooth development and functioning of the payment and settlement systems in the country. The Board gives directions, sets standards for operations of the payment systems and reviews the membership criteria for each of the systems. During 2006-07, the main thrust of the BPSS directions was on electronification of the payment systems and building of appropriate legal, procedural and technological infrastructure. Specific directions of the Board included (i) preparing a roadmap for migration from paper-based funds transfer to electronic payment systems; (ii) bringing all real time gross settlement (RTGS) enabled branches under the national electronic funds transfer (NEFT); (iii) exploring the feasibility of setting up a low cost cross-border remittance system with neighbouring countries, especially Nepal; (iv) studying the feasibility of a couple of large banks providing associate membership to the smaller banks to participate in the cheque truncation system; (v) proposal to conduct an assessment of the RTGS system; (vi) studying payment systems in select countries to draw relevant lessons for India; and (vii) promoting credit/debit/pre-paid cards as one of the strategies for the increased use of electronic payments.

VIII.4 Following the directions of the BPSS, the frequently asked questions (FAQs) on payment systems (RTGS, NEFT, ECS) and a list of branches offering various payment services operated by the Reserve Bank were placed in the public domain. The Report of the Study Group on Migration from Paper Based Funds Movement to Electronic Funds Transfer was released in April 2007 for public comments.

DEVELOPMENTS IN PAYMENT AND SETTLEMENT SYSTEMS

VIII.5 In value terms, the annual turnover in the various payment and settlement systems rose by 37.5 per cent during 2006-07 (44.2 per cent during 2005-06). As a ratio to GDP, the annual turnover in terms of value increased from 6.0 in 2003-04 to 10.3 by 2006-07. The rise in the turnover could be attributed mainly to increased activity in financial markets which, in turn, reflects various measures to widen and deepen the various segments of the financial markets. The expansion in the turnover during 2006-07 was led by the systemically important payments systems (SIPS); the turnover in the SIPS segment now constitutes more than four-fifths of the total turnover. Amongst the various constituents of the SIPS, the

RTGS constituted the largest segment in terms of value (over 50 per cent), followed by foreign exchange clearing and high value clearing (Table 8.1). The turnover of the RTGS system continued to expand rapidly, both in terms of volume and value (60 per cent growth in the latter during 2006-07 on top of an increase of 183 per cent during 2005-06). The growth in RTGS can be attributed largely to the movement of large value time critical payments to this system and the widening of the RTGS network to cover more bank branches.

Retail Payment Systems

VIII.6 The growth in turnover (in value terms) of the various retail payment systems - cheque clearing, electronic clearing service and the card based

Table 8.1: Payment System Indicators

	Volume (000s)				Value (Rupees crore)			
	2003-04	2004-05	2005-06	2006-07	2003-04	2004-05	2005-06	2006-07
1	2	3	4	5	6	7	8	9
Systemically Important Payment Systems (SIPS)								
1. Inter-bank Clearing	1,142	808	–	–	30,46,666	9,91,436	–	–
2. High Value Clearing	13,172	13,077	15,924	18,730	30,23,290	46,07,208	49,81,428	50,34,007
3. Government Securities Clearing	265	185	151	167	25,18,322	26,92,129	25,59,260	35,78,037
4. Forex Clearing	331	466	490	606	23,18,531	40,42,435	52,39,674	80,23,078
5. RTGS	0.07	460	1,767	3,876	1,965	40,66,184	1,15,40,836	1,84,81,155
Total SIPS (1 to 5)	14,910	14,996	18,332	23,379	1,09,08,774	1,63,99,392	2,43,21,198	3,51,16,277
					(3.9)	(5.2)	(6.8)	(8.5)
Others								
6. MICR Clearing	609,786	927,571	1,015,912	1,128,656	31,08,795	37,57,608	44,92,943	54,15,103
7. Non-MICR Clearing	398,700	225,392	254,922	223,177	24,17,209	11,02,643	18,54,763	16,06,990
8. Electronic Clearings	29,016	57,900	83,241	148,997	29,607	77,702	1,06,598	1,86,160
9. Cards	137,936	171,004	201,772	229,713	22,537	31,047	39,783	49,533
Total Others (6 to 9)	1,175,438	1,381,867	1,555,847	1,730,543	55,78,148	49,69,000	64,94,087	72,57,786
					(2.0)	(1.6)	(1.8)	(1.8)
Grand Total (1 to 9)	1,190,348	1,396,863	1,574,179	1,753,922	1,64,86,922	2,13,68,392	3,08,15,285	4,23,74,063
					(6.0)	(6.8)	(8.6)	(10.3)

Note : 1. Paper-based inter-bank clearing was closed at Mumbai with effect from November 1, 2004 and was phased out at other centres by June 2005. Inter-bank transactions are now settled through RTGS system, which became operational on March 26, 2004.
2. High value clearing refers to cheques of Rs.1 lakh and above.
3. Settlement of Government securities clearing and forex clearing is through Clearing Corporation of India Ltd.
4. At end-March 2007, the MICR clearing was at 59 centres (53 centres a year ago). Non-MICR clearing refers to paper-based clearings at the centres where MICR cheque processing centres have not been set up.
5. Electronic clearings comprise Electronic Clearing Services (ECS), Electronic Funds Transfer (EFT), Special Electronic Funds Transfer (SEFT) (between April 2003 and February 2006) and National Electronic Fund Transfer Systems (NEFT) (since November 2005).
6. Cards include credit and debit cards. Data for debit cards for 2003-04 and 2004-05 are estimated based on 2005-06 figures.
7. Figures in parentheses are ratios to GDP at current market prices.

Table 8.2: Retail Electronic Funds Transfer Systems

Type	Volume (000s)				Value (Rupees crore)			
	2003-04	2004-05	2005-06	2006-07	2003-04	2004-05	2005-06	2006-07
1	2	3	4	5	6	7	8	9
ECS-Credit	20,300	40,051	44,216	69,019	10,228	20,180	32,324	83,273
ECS-Debit	7,897	15,300	35,958	75,202	2,254	2,921	12,986	25,441
EFT	819	2,549	3,067	4,776	17,125	54,601	61,288	77,446

payment system - was 11.8 per cent in 2006-07 on top of a growth of 30.7 per cent in 2005-06. There was an increase in turnover in absolute terms in all retail payments except for cheque clearing through non-MICR cheque processing centres (CPCs). The retail payment systems are dominated by the conventional cheque payment systems, comprising the clearing at both the magnetic ink character recognition (MICR) CPCs as well as non-MICR CPCs. The turnover of clearing at non-MICR CPCs witnessed a decline of 13.4 per cent, partly attributable to the ongoing conversion of the non-MICR CPCs into MICR CPCs. The turnover of the clearing at MICR CPCs increased by 20.5 per cent in 2006-07 on top of the growth of 19.6 per cent in 2005-06. The volume and value of cheques processed at the MICR CPCs continued to grow, with the turnover being more than three times that of the non-MICR CPCs during 2006-07. Nonetheless, growth in the combined turnover of the cheque clearing systems - MICR and the non-MICR centres - witnessed a deceleration from 30.6 per cent in 2005-06 to 10.6 per cent in 2006-07.

VIII.7 Electronic clearings - comprising electronic clearing service (ECS), electronic funds transfer (EFT) and national electronic funds transfer (NEFT) - continued to record a strong growth (74.6 per cent during 2006-07 as compared with 37.2 per cent a year ago) (Table 8.2); nonetheless, the share of electronic clearings remains fairly low in retail payment systems (only 2.6 per cent of the turnover of retail payment

systems). The ECS facility was available at 64 centres at end-March 2007. Under the ECS, the pace of growth of debit clearing transactions was much higher than credit clearing, as many utility companies/banks have been utilising the system for collection of monthly payments/EMIs. As ECS-Debit works on the strength of the mandates given by the destination account holders to the user institutions for raising a debit in their accounts, banks were directed to initiate steps for incorporating an appropriate mandate management routine for handling such transactions. In order to commence a robust state-of-the-art nationwide ECS, covering more branches and locations with centralised data submission system, banks were advised in June 2006 to furnish certain information indicating their level of preparedness for the project. The waiver of processing fees on banks for transactions under the ECS, EFT, RTGS and NEFT has been extended up to March 31, 2008 in order to promote electronic transactions.

VIII.8 The use of card based payments rose further during 2006-07, but remains negligible compared to the conventional cheque based payments (Table 8.3).

VIII.9 The coverage of the automated teller machine (ATM) network and the facilities being provided by the banks through the ATMs are increasing. At present, there are around 28,000 ATMs across the country. A host of services are now being provided by banks using the ATMs. The Reserve Bank has been encouraging the banks to use the ATM channel for greater financial inclusion.

Table 8.3: Card Based Payments

Type	Volume of transactions (000s)				Value of transactions (Rupees crore)			
	2003-04	2004-05	2005-06	2006-07	2003-04	2004-05	2005-06	2006-07
1	2	3	4	5	6	7	8	9
Credit Cards	100,179	129,472	156,086	169,536	17,663	25,686	33,886	41,361
Debit Cards	37,757	41,532	45,686	60,177	4,874	5,361	5,897	8,172

Note : Debit Card figures for 2003-04 and 2004-05 are estimated based on 2005-06 figures.

National Financial Switch

VIII.10 National Financial Switch (NFS) was established by the Institute for Development and Research in Banking Technology (IDRBT) to facilitate apex level connectivity among ATM switches of banks to enable banks' customers to access any ATM across the country. CCIL has been designated as the settlement agency for all transactions routed through NFS. The NFS network currently connects 12,940 ATMs of 25 participating banks. On an average, 90,130 transactions of total volume of Rs.11.67 crore are daily settled through the network.

Cheque Clearing

VIII.11 At end-March 2007, the MICR clearing facility was available at all the 59 centres identified for this purpose. These centres accounted for 84 per cent and 87 per cent, respectively, of the total volume and value of cheque clearing. As regards the remaining non-MICR centres, their conversion into MICR CPCs has been examined and found to be non-viable. Accordingly, the focus is on greater computerisation of the major non-MICR CPCs. Based on the volume of cheques processed and number of banks/branches in the centre, a total of 240 clearing houses have been identified; of these, more than 150 clearing houses with more than 15 member banks each have been computerised using the magnetic media based clearing system.

VIII.12 In order to enhance the efficiency of the paper based clearing system, the Reserve Bank has undertaken the implementation of a cheque truncation system (CTS). The pilot project for CTS in the National Capital Region of Delhi is expected to commence in the second half of 2007. The CTS obviates the physical presentation of the cheque to the clearing house; instead, the image of the cheque would be sent to the clearing house. The physical cheque would, thus, be truncated at the branch itself or the service branch. The CTS would enable the realisation of cheques on the same day, and provide a more cost effective mode of settlement than manual and MICR clearing. Smaller banks, which may find it unviable to set up the infrastructure, could utilise the services of service bureaus set up for this purpose by a few larger banks.

National Electronic Funds Transfer (NEFT) System

VIII.13 The National Electronic Funds Transfer (NEFT) System, operationalised in November 2005, is gaining importance with an increase in both the

usage and coverage. With the stabilisation of the system, the number of settlements in the NEFT has been increased from the initial two to six on week days (9.30 a.m., 10.30 a.m., 12.00 noon, 1.00 p.m., 3.00 p.m. and 4.00 p.m.). Although the NEFT system is a deferred net settlement system (DNS), the increase in the number of settlements has made it a near real time system. The banks are providing various e-payment services to their customers using the NEFT as a back-end. The NEFT network has increased from 1,755 branches in March 2006 to 22,978 branches in March 2007. Daily average settlement through NEFT is Rs.150 crore.

RTGS System

VIII.14 The real time gross settlement (RTGS) system, in operation since 2004-05, facilitates faster movement of high value transactions. Based on the recommendations of an Internal Group, which examined various aspects of payment systems, particularly relating to switching over to electronic modes, a minimum threshold value of Rs.1 lakh was introduced on January 1, 2007. Transactions below this amount could be routed through NEFT. The RTGS system has gained significance in terms of both coverage and value of transactions. The RTGS connectivity was available in 28,697 bank branches at end-March 2007 (19,187 branches at end-March 2006) and the value of transactions rose by 60 per cent during 2006-07, with customer transactions almost trebling. At end-May 2007, 29,850 branches had RTGS connectivity and had handled transactions valued at Rs.18,08,921 crore (Table 8.4).

VIII.15 The integration of the RTGS with the Integrated Accounting System (IAS) has enabled the provision of online funds transfer facility from current account with the Reserve Bank to the RTGS settlement account and *vice versa*. The integration also facilitates settlement of various CCIL-operated clearings (inter-bank Government securities, inter-bank foreign exchange, CBLO and National Financial Switch) through multilateral net settlement batch (MNSB) mode in the RTGS in Mumbai. With the integration of the RTGS-IAS with the securities settlement system (SSS), automatic intra-day liquidity (IDL) is available as per the eligibility of the participants.

Centralised Funds Management System (CFMS)

VIII.16 The centralised funds management system (CFMS) has two components - the centralised funds enquiry system (CFES) and the centralised funds transfer system (CFTS). The CFTS, the funds transfer

Table 8.4: Month-wise RTGS Transactions

(Value in Rupees crore)

Year/Month	No. of Participants	No of Branches	Inter-bank		Customer		Total	
			Volume	Value	Volume	Value	Volume (4+6)	Value (5+7)
1	2	3	4	5	6	7	8	9
2004-05			391,931	38,16,522	68,492	2,49,662	460,423	40,66,184
2005-06			1,053,940	89,70,624	713,058	25,70,212	1,766,998	1,15,40,836
2006-07			1,393,728	1,13,13,347	2,481,779	71,67,808	3,875,507	1,84,81,155
Apr-06	110	19,937	91,558	8,00,906	135,856	4,14,833	227,414	12,15,739
May-06	110	20,879	110,385	9,83,348	171,731	5,22,422	282,116	15,05,770
Jun-06	110	21,916	112,529	9,46,691	181,519	4,90,717	294,048	14,37,408
Jul-06	110	23,023	110,728	8,91,473	186,750	4,54,992	297,478	13,46,466
Aug-06	108	23,730	115,697	9,05,577	216,076	4,82,295	331,773	13,87,872
Sep-06	108	24,439	113,432	9,65,023	218,772	5,56,877	332,204	15,21,900
Oct-06	108	24,597	109,497	9,39,938	228,613	4,69,506	338,110	14,09,444
Nov-06	108	25,353	123,938	10,52,419	264,269	6,65,072	388,207	17,17,491
Dec-06	108	25,878	124,389	10,24,691	281,978	7,14,429	406,367	17,39,120
Jan-07	107	26,530	121,781	8,41,163	178,213	5,98,777	299,994	14,39,941
Feb-07	107	27,525	118,748	8,63,898	186,970	7,37,553	305,718	16,01,451
Mar-07	106	28,697	141,046	10,98,219	231,032	10,60,335	372,078	21,58,554
Apr-07	105	29,000	122,776	11,09,958	205,699	8,37,607	328,475	19,47,565
May-07	105	29,850	131,529	8,75,831	236,852	9,33,090	368,381	18,08,921

facility of the CFMS in operation since 2005-06, enables banks to better manage their current account balances with the Reserve Bank by electronically moving funds from one office of the Reserve Bank to another office, *i.e.*, from a surplus centre to a deficit centre. At present, nine Reserve Bank offices (Mumbai, Delhi, Chennai, Kolkata, Ahmedabad, Nagpur, Bangalore, Hyderabad and Chandigarh) have been brought under the system.

International Remittances

VIII.17 The flow of funds from migrant workers to their families in their home country is an important source of income in many developing economies. The total value of remittances has increased steadily over the past decade and the total remittances worldwide were estimated to be around US \$ 230 billion in 2005, involving some 175 million migrants. Remittances are the largest source of external financing in many developing countries and for some countries they can account for as much as a third of GDP; moreover, the flow of remittances seems to be significantly more stable than that of other forms of external finance. The importance of remittances, and the difficulties that can be associated with them, have been increasingly recognised in recent years. In order to ensure that the remittance services are safe and

efficient, the Committee on Payment and Settlement Systems and the World Bank Task Force have come out with general principles designed to assist countries in improving the market for remittance services (Box VIII.1).

Oversight of the Payments and Settlement Systems

VIII.18 The oversight of payment systems is being increasingly recognised as a core responsibility of central banks since the safe and efficient functioning of these systems is one of the most important prerequisites for the proper functioning of the financial system and for efficient transmission of monetary policy. The oversight of the payment systems involves putting in place systems and procedures that (a) clearly define the power and capacity of the central bank to carry out oversight responsibility; (b) ensure the smooth and efficient provision of payment services to all participants and users in a fair manner; (c) minimise and control the risk of transmitting shocks through the economy caused by failures of individual participants to settle their payment obligations; and (d) ensure development of technical and institutional infrastructure to meet the growing payment system needs of the country.

VIII.19 The Reserve Bank would derive its formal power for conducting oversight of the payment and

Box VIII.1**General Principles for International Remittance Services**

The General Principles recommended by the Committee on Payment and Settlement Systems (Bank for International Settlements) and the World Bank Task Force are aimed at the public policy objectives of achieving safe and efficient international remittance services. These principles aimed at contestable, transparent, accessible and sound markets for remittance services are:

- The market for remittance services should be transparent and have adequate consumer protection.
- Improvements in payment system infrastructure having the potential to increase the efficiency of remittance services should be encouraged.
- Remittance services should be supported by a sound, predictable, non-discriminatory and proportionate legal and regulatory framework.

- Competitive market conditions, including appropriate access to domestic payment infrastructures, should be fostered in the remittance industry.
- Remittance services should be supported by appropriate governance and risk management practices.
- Remittance service providers should participate actively in the implementation of the General Principles.
- Public authorities should evaluate actions to be taken to achieve the public policy objectives through implementation of the General Principles.

Reference:

BIS (2007), *Report on General Principles for International Remittance Services*, Committee on Payment and Settlement Systems, Bank for International Settlements, January.

settlement systems on enactment of the Payment and Settlement Systems Bill (see Chapter I). At present, the Reserve Bank exercises this power through regulation and supervision of its regulated entities providing various services. The Reserve Bank has prepared the first Report on Oversight of Payment Systems in India. The Report assessed the various payment systems in operation against the international standards.

INFORMATION TECHNOLOGY**Information Technology in the Reserve Bank**

VIII.20 The use of information technology in the day-to-day operations of the Reserve Bank has increased rapidly in the past few years with the objective of reaping efficiency gains. The intensive use of IT in the Reserve Bank is reflected in the setting up of the state-of-the-art data centres. The Reserve Bank is in the process of setting up three data centres which, besides enabling the consolidation of systems and centralised data processing, would also take care of business continuity and disaster recovery in the event of any contingency. With the establishment of the data centres, the process of migration of systems from the existing distributed setup to the centralised backbone at the data centre would commence. The Central Accounts Section (CAS) system and the Document Management Information System (DMIS) are being migrated to the new setup, while work is currently in progress in respect of migration of the Centralised Public Accounts Department System (CPADS); other systems are at various stages of migration.

Technology Implementation within the Reserve Bank

VIII.21 The focus of the IT facilitatory services for the internal users of the Reserve Bank followed a three-pronged approach. This includes (a) adhering to the 'centralisation with decentralised access' approach so as to ensure smooth migration to the data centres (Box VIII.2); (b) aiming at the goal of 'providing capabilities for on-line transaction processing, analytical and decision support facilities at the desktop of each official of the Bank'; and (c) activating high levels of safety and security in the IT based processing environment.

VIII.22 The current status of the IT based systems for the key operational areas of the Reserve Bank is as follows:

- The Deposit Accounts Department (DAD) at Mumbai migrated to the use of the new integrated accounting system (IAS), replacing the erstwhile BASIS system. Plans are being made to roll out the IAS at other locations as well, in a time bound manner.
- The new Centralised Public Accounts Department System (CPADS) has been made operational at Chennai, Thiruvananthapuram, New Delhi and Hyderabad. This system has stabilised well and provides inputs for the Government departments through the secured website of the Reserve Bank.
- The Centralised Public Debt Office (CPDO) system, in use for more than three years, has been upgraded to meet the changing requirements of debt management policies.

Box VIII.2

Centralised Databases with Decentralised Operations

The operation and functioning of organisations have gradually evolved to more flexible and entrepreneurial designs to cope with the constantly growing complexity of the business landscape. At the same time, technological breakthroughs in storage of information as well as connectivity have enabled organisations to become more centralised or decentralised, according to their strategic orientation, further enhancing the efficiency of managing global business processes. However, centralisation is still the prevalent mode of managing, despite the increased desirability of decentralised operations.

It is in this context that the benefits of centralisation and decentralisation have been uniquely blended and the Reserve Bank has decided to opt for centralised databases with decentralised operations. This approach has many advantages. First, there is a wealth of information stored at a central point for wide usage. Second, there is less dependency on local systems, thus, obviating the need for resources to be available at the local end. Third, centralised administration and maintenance ensures economies of scale. Finally, the efficiency levels get enhanced. With reliable networks in the country, this approach would yield substantial benefits for the organisation.

- The integrated computerised currency operations and management system (ICCOMS) was made operational during 2006-07, with more than 90 per cent of the currency chests in the country and more than 92 per cent of the link offices reporting movement of currency notes through this system. Once the system stabilises and is used by all currency chests throughout India, this would allow near on-line monitoring and managing of the distribution of currency by the Reserve Bank.

VIII.23 Reflecting the various initiatives, there was further progress in the use of IT in the Reserve Bank (Table 8.5).

VIII.24 The year 2006-07 also witnessed the implementation of the IT based systems for two main functional areas of the Reserve Bank's operations. First, a Human Resources Management System (HRMS) is being implemented in the Reserve Bank. The HRMS would be a repository of the profiles of all employees of the Reserve Bank. Second, work relating to the computerisation of the Rural Planning

and Credit Department (RPCD) is underway. The Banking Ombudsmen software system, which provides for a web based complaint tracking system with access facilities even to the Finance Minister for monitoring purposes, has stabilised well.

VIII.25 The setting up of the data centres follows the need for consolidation of IT systems to facilitate better management of such systems. The data centres also take care of the needs for business continuity, with recovery time objectives (RTO) surpassing normal standards and recovery process objectives requiring 'zero data loss' levels. To this end, high availability of the systems is being provided for at the data centres which, apart from providing for the state-of-the-art latest technological platforms, would also match the Tier IV Standard of the Uptime Institute.

VIII.26 An important requirement for uninterrupted operations using the IT systems is the availability of networks for secure and continuous operations. The networking requirements of the Reserve Bank have been met by the Indian Financial Network (INFINET)

Table 8.5: Critical IT Implementation Factors in 2006-07

Critical Requirement Factor	Performance Yardstick	Position as at end-March 2006	Position as at end-March 2007
Standardisation	Across all departments	85 per cent completed; 15 per cent under progress	95 per cent completed; 5 per cent under progress
Integrated Application Systems	For all functional units	65 per cent completed; 35 per cent under progress	85 per cent completed; 15 per cent under progress
Server Consolidation	At all locations	70 per cent completed; 30 per cent under progress	90 per cent completed; 10 per cent under progress
Connectivity	Across all offices and all locations	100 per cent completed	100 per cent completed
Productivity Tools	For all critical mainframe applications	100 per cent completed	100 per cent completed
Corporate e-mail	For all users at all locations	100 per cent completed	100 per cent completed
IS Security	For all information systems	90+ per cent completed	95+ per cent completed

of the Institute for Development Research in Banking Technology (IDRBT) for inter-office communication and Local Area Networks (LAN) for intra-office telecommunication. The LANs have been functioning satisfactorily and are subject to regular external audit.

VIII.27 In tune with the developments in the field of network based computing, the move from the Closed User Group network of the INFINET to the Multi-Protocol Label Switching (MPLS) has been initiated by the IDRBT and the finalisation of the service providers for this is at an advanced stage. The MPLS provides for Virtual Private Networks (VPN) to communicate in a secure manner over a private network. This improves efficiency and reduces costs, while ensuring adequate safety and security levels. The complete switch over is expected to be made by early 2008.

VIII.28 The corporate e-mail system of the Reserve Bank continued to function satisfactorily, with access provided for authorised users to access e-mails even from outside the office locations, with adequate safeguards. In order to further enhance this facility, the migration to a single forest-based Mail Messaging System has commenced and this activity is expected to be completed shortly.

VIII.29 The smart card-based access control system at the Central Office has stabilised. Enthused by its success, work is in progress to provide such systems across all locations of the Reserve Bank as well as to all its employees. This system shall be closely intertwined with the HRMS and the Integrated Establishment System (IES) for exploiting the benefits of synergy.

VIII.30 Most of the offices of the Reserve Bank are now connected by the video conferencing facility. The facility of video/audio is being constantly improved by continuous monitoring/fine-tuning. The use of this facility has been very encouraging across the Reserve Bank.

Reserve Bank and the IDRBT

VIII.31 During 2006-07, IDRBT continued to discharge its Certification Authority related functions for the banking sector, apart from maintaining the INFINET and the NFS. The IDRBT functions as a financial network service provider, besides performing the role of a premier research institute for the benefit of the banking sector. In order to provide for focused operations as per its Memorandum/Articles of Association, a roadmap to hive off the commercially oriented services from the research activities is being drawn up.

IS Audit

VIII.32 In the light of the growing use of IT in the Reserve Bank, IS Audit assumes critical importance. The major IT-based systems are subject to IS Audit. During 2006-07, the PDO-NDS system was subjected to an IS Audit and also a post-audit compliance related audit. Other critical payment systems shall also be subject to such audit in the future. While such audit is conducted by professional external entities, the internal inspection teams perform in-house audit of all the IT systems, whenever regular inspection of offices of the Reserve Bank is taken up by them.

IT for the Financial Sector

VIII.33 The Reserve Bank plays a critical role in facilitating initiatives in the field of IT in the banking industry. To this end, the Financial Sector Technology Vision Document, published by the Reserve Bank in 2005, is being reviewed and the plans for the ensuing medium term are being finalised in consultation with the various stakeholders of the financial system.

VIII.34 The year 2006-07 witnessed the large scale adoption of core banking solutions (CBS) by almost all the banks. The CBS enables the customers of banks to undertake their transactions from any branch of a bank instead of being attached to a particular branch, thereby resulting in better delivery of various customer services by the banks. At end-March 2007, 45 per cent of the branches of the public sector banks were interlinked using the CBS.

VIII.35 The reliance on outsourcing, especially in the use of IT, has increased significantly in the banking sector. This could be attributable to the strategy of these institutions to concentrate and focus on their core competencies for their main lines of business, rather than on providing for IT based services. While providing several benefits, outsourcing also poses a number of challenges (Box VIII.3).

Outlook

VIII.36 The Reserve Bank will persevere with its objectives of ensuring greater efficiency in the payment and settlement systems in a secure manner. The focus in the coming years would be on consolidation of the existing payment systems while promoting electronic means of payment and settlements. Efforts to create infrastructure for

Box VIII.3
Outsourcing: Features and Safeguards

The Indian banking sector has been undergoing radical transformation in view of the ongoing innovations, modernisation and large-scale adoption of newer technology. In the face of rapid technological developments, the reliance on outsourcing has increased due to a variety of factors. First, due to the fast pace of technological advancements, IT infrastructure and in-house expertise get obliterated, unless subjected to continuous upgradation. The costs associated with regular upgradation of infrastructure and skills in a highly dynamic environment tend to be high and thus outsourcing, which provides for latest technology based solutions, is a preferred option. Second, internal expertise can be inward looking, with focus on established and existing processes; outsourcing increases the scope for fresh reviews resulting in improved processes and services. Finally, the benefit of experience from other institutions is not generally available for internal experts; this is available for outsourced solutions. It is possible to fix high

performance yardsticks/uptime and functional levels for outsourced projects - even up to 99.9 per cent, which may be difficult in the case of an internal solution.

At the same time, there can be potential and significant threats arising out of outsourcing. Outsourcing is not a trouble free solution; it is only that the nature and types of problems change. Outsourcing requires that the necessary skills to outsource projects are first available in-house. Such skill sets include (i) management of the outsourcing process; (ii) managing vendors and, most often, multiple vendors for the same processes/systems; (iii) managing the conflicting interests of different vendors such as between a hardware vendor and an application software vendor using the same resources; (iv) knowledge of trends and developments in technology to keep pace with the requirements expected out of the vendors; and (v) capability to evaluate the charging pattern of vendors to ensure that the organisation is not at the mercy of the vendor.

remittance facility between some of the neighbouring countries would be pursued. In order to achieve the objective of timely, cheap and dependable service to customers, an annual review of the payment and settlement systems is proposed, beginning with a review for the year ended March 31, 2007. The review would be based on parameters such as timeliness of customer service, cost of operation, service charges and overall impact on the financial system.

VIII.37 The Reserve Bank would intensify steps to achieve greater operational efficiency within the organisation through large scale and holistic IT usage. In this context, the setting up of data centres would enable the functional units to focus more on their business related functions with the IT related aspects being managed centrally out of the data centres. The Financial Sector Technology Vision Document will be reviewed in the light of developments in the financial system.