

5 Strengthening Payment Systems

5.1 Overview

Efficient payment systems reduce systemic and operational risks; lower transaction costs, assist in judicious use of financial resources, and help financial market to become more liquid and promote stability in the financial system. Oversight of payment systems is a critical function of a central bank to meet the objectives by developing regulatory framework, effectively overseeing the existing systems, ensuring systems compliance with BIS core principles and promoting innovative e-banking technologies and cross-border connectivity. Safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and where necessary incorporating change. Payment System Department (PSD) continuously issues guidelines and circulars to develop new policy and oversight framework for achieving these objectives. During 2007-08, few developments took place that would further strengthen the high value and retail payment systems in the country.

5.2 Payment Systems and Electronic Fund Transfer Act 2007

Effective legal framework is essential for smooth operation of Payment Systems. To provide regulatory framework for payment systems and electronic fund transfers, SBP has provided valuable feedback for the Payment Systems and Electronic Fund Transfers Act 2007. This has laid down solid foundation for development and further strengthening of payment systems in the country. The Act covers all areas related to Payment Systems, RTGS, Payment Instruments, Clearing, Electronic Fund Transfers, E-Banking / ATMs, Burden of Proof, Fines and Penalties, etc.

5.3 Real Time Gross Settlement (RTGS)

Real Time Gross Settlement Systems (RTGS) are mechanisms that enable banks to make large-value payments to one another in real-time using online telecommunication facilities. The payments are settled on gross basis in real time minimizing the systemic risks inherent in large-value net settlement systems. This allows the monetary authorities to ensure that systemic risks inherent in any netting based payment systems are effectively minimized, if not eliminated. And above all it facilitates customers of banks full and immediate utilization of their liquidity by enabling them to transfer their large payments across banks immediately.

Keeping in view the global trend in payment systems development and the growing payments market in the country, SBP took a decision to implement RTGS in early 2002 primarily with assistance from the World Bank. The RTGS in Pakistan has been named as Pakistan Real-time Interbank Settlement Mechanism (**PRISM**). Using this system, the banks holding accounts at SBP would be able to operate their accounts in real time from their own premises via computerized network between SBP and the participating banks (see **Box 5.1**). With RTGS, banks would be able to settle their large value transactions affecting their accounts at SBP (e.g. inter-bank lending/borrowing) immediately, provided sufficient balance is available in the account. At times, banks may face temporary shortage of funds in their accounts during the day. This shortage would be catered for in RTGS through the availability of intraday repos (a form of collateralized lending). Alternatively, the transaction can also be queued in the system until the required liquidity becomes available.

5.3.1 RTGS Launch

In view of the sensitivity and criticality of the system and to ensure a smooth transition of all the participants from the existing to the new system of settlement, it was therefore decided to launch the system in different phases. This would allow the banks to slowly adjust to the new system and allow SBP to carefully monitor the situation and effectively provide support.

Accordingly, RTGS system was inaugurated by the Prime Minister of Pakistan on July 1, 2008, the day when State Bank of Pakistan celebrated its 60th anniversary. From July 2, 2008, 39 direct member institutions started making their large value inter-bank payments through new system. After monitoring the situation and assessing the readiness and adaptability of the system participants, new features like online trading of government securities would be added to further facilitate the market participants.

Box 5.1: Broad Features of PRISM

- Thirty nine (39) commercial banks and DFIs would be the initial direct participant members of PRISM.
- The participant banks will have the facility of online monitoring of their interbank payments via one settlement account and their status (like settled, queued, or rejected). They would also be able to change their payment priority (if transaction is queued) giving them more control over their funds.
- SBP departments will have the ability to monitor the inter-bank transactions and take immediate action as and when required.
- Intraday Liquidity Facility (ILF) would be offered to banks collateralized against Government Securities so that the payments may be cleared immediately.
- The system also has queue management features and mechanisms for Grid Lock resolution.
- The system will also hold government securities portfolios and will enable securities trade matching for Delivery Vs Payment and intra-day liquidity management.
- The IT security component of the system will provide PKI infrastructure and transactional and link encryptions for data security.
- “Centralized Multilateral Netting” of retail clearing was a mandatory pre-launch requirement for smooth functioning of the PRISM System. Previously the country-wide retail clearing operations were settled in the sixteen field offices of SBP across the country. Now with the help of National Institutional Facilitation Technologies (NIFT)-an institution responsible for the clearing operations of retail cheques- SBP has started country-wide multilateral netting and centralized settlement of cheque clearing.

Important Milestones

- Finalization of Business and Technical Design.
- Establishment of Telecommunication & IT Infrastructure.
- Development of interfaces with internal banking application of SBP.
- Establishment of a legal framework (Payment System & EFT ACT 2007).
- Realignment of retail clearing settlement with RTGS’ requirements.
- Testing & trainings of all participant banks.
- Market rehearsals (practice run) with banks.
- System Launch

Impact of RTGS

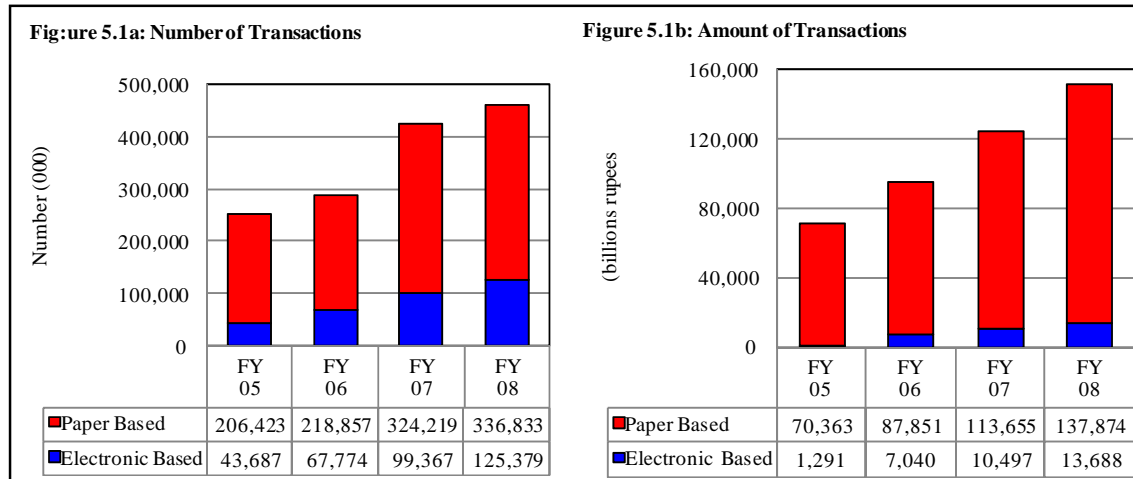
- Banks will be able to receive / pay funds on real time basis, trade Government Securities on Delivery Vs Payment basis whereby securities will be transferred to buyer’s account only against the simultaneous payment of funds to the seller of securities, thus eliminating the settlement risk.
- Centralized Multilateral Net Settlement in RTGS will enable banks to efficiently use their liquidity, which previously they had to maintain in different current accounts with the SBP BSC offices for retail clearing.
- Corporate customers of the banks will also be able to use RTGS for their time critical payments.
- RTGS Implementation provides the capability of connecting with various other regional / international payment systems for foreign exchange, government bonds, and private equity settlements.
- RTGS will also enhance the capability of State Bank in the area of interbank market monitoring and will provide online information in this regard.

5.4 Performance of Retail Payment Systems

5.4.1 Retail Payment System

Increase in volume and value of transactions shows increase in the business and commerce activities in the country which in turn affects economic growth positively. Retail Payment systems handles high volume and low value transactions through both paper based (such as cheque) and e-banking (such as ATM, POS, IVR, Internet, Mobile, etc). During FY08 the total number of retail payment transactions

increased by 8.4 percent to reach 462.2.0 million and the total value of such transactions increased by



21.8 percent to amount to Rs.151.56 trillion (see **Figure 5.1(a) & 1(b)**).

5.4.2 Paper Based and e-Banking Transactions

Paper based transactions showed growth of 3.1 percent reaching 336.8 million where value reached Rs.137.8 trillion. The cheques carried the largest portion with 93 percent in number and 91 percent in value. Similarly, ease and comfort associated with e-banking has increased the composition of e-banking substantially in terms of number as well as value. The growth witnessed in e-banking transactions during the same period was 25.4 percent reaching 125.4 million and the total value of such transactions increased by 32.3 percent to reach Rs.13.68 trillion. In terms of number, ATMs showed the maximum number of transaction contributing 54 percent in e-banking. In terms of value, however, RTOB contributed the maximum amount contributing 96%.

5.5 SWIFT Service Bureau

Society for Worldwide Interbank Financial Telecommunications (SWIFT) has introduced a very cost effective solution for its users namely SWIFT Service Bureau. SBP evaluated the proposal from other SWIFT partners in this region. M/S EastNets, Dubai, granted approval for establishment of SWIFT service bureau in Pakistan. Now commercial banks in Pakistan would enjoy the following benefits through the bureau:

- 99.5 percent guaranteed availability through service level agreement.
- 60 percent saving in annual management cost in foreign currency.
- Maintenance support locally
- System back-up from service bureau in Dubai and Turkey which will reduce operational risk.
- Local presence of SWIFT solution partner (*Eastern Networks*) will provide training to SWIFT community locally.

5.6 ATM Network Performance Enhancements

ATM switches are one of the strategic components of ATM network. In Pakistan, MNET and 1LINK are two switch operators that provide important routing facility on ATM transactions seamlessly across the country. The two switches were working in isolation when SBP took initiatives to join these to facilitate customers of both the switches in executing transactions on any switch. Some of the initiatives are still underway to enhance the existing performance of these two switches:

5.6.1 SLA and SOP between 1LINK and MNET Switches

The working of the switches (1LINK/MNET) in harmony is crucial for the effective working of Payment Systems. Till June 30, 2008, 28 banks were interconnected on 1LINK and 10 banks were using MNET switch. Here a reliable infrastructure is critical for the smooth operation of e-banking. In this connection, SBP initiated dialogue with the two ATM switch operators and standardized Service Level Agreements (SLA) and Standard Operating Procedures (SOP) are being developed. Once finalized, this initiative will improve the delivery of ATM service and operating procedures would be compatible with international best practices. The SLA has built-in mechanism of monitoring compliance through a monitoring committee consisting of representatives of Switches and Banks.

5.6.2 Management of ATM Cash and Downtime

ATMs have become a popular mode of e-banking channel in Pakistan constituting 54 percent of total e-banking transactions for FY08. However, there had also been increasing complaints about malfunctioning of ATMs. To address the problem, SBP issued guidelines to the commercial banks for compliance regarding management of ATM Cash and Downtime to minimize the incidents of cash, service outage and ensure continuous availability of ATM facility particularly during Ramadan, Eid holidays and other long weekends. Instructions were also issued to all member banks of 1-LINK and MNet Switches to refund the charges deducted on failed transactions including partial/full cash retract along with the amount of such failed transactions.

5.6.3 Utility Bills Payments on ATMs

Payment of utility bills has gained a critical importance for consumers, utility companies and banks. Consumers have been looking for convenience and safety, utility companies looked for timely payment and reconciliation with the banks to provide cost effective means for payment. SBP took the initiative to leverage the e-banking channels to provide a solution which meets the requirements of all the stakeholders.

Individual banks have started utility bills payment facility through their ATMs. A plan is underway to offer utility bills payment facility at switch level.

5.6.4 Operational Guidelines on ATMs

The central bank values safety and convenience the most to build consumers' confidence on e-banking channel. SBP issued operational guidelines for ATM through discussion and agreement with the financial sector, inter alia require banks to comply with installing surveillance cameras, providing proper lighting/locking arrangements, 24/7 helpline service, customer education and addressing customers complaints to name a few.

5.6.5 Settlement Function (for ATM Transactions)

Timely settlement of interbank/interswitch transaction is critical to manage credit risk in retail payments of financial industries. Since the establishment and inter-connectivity of ATM switches ABNAMRO and MCB were acting as settlement agent on behalf of 1LINK and MNET respectively. This was obligating banks to maintain their accounts with 1LINK as well as with MNET causing them to block extra liquidity in the system. In addition to extra liquidity, there was inherent credit risk by the banks and they also had settlement issues amounting to millions of rupees with MCB Bank and ABNAMRO bank, the settlement banks.

Adhering to the core principals of BIS and following international best practices for payment and settlement systems, from July 1, 2008 and onwards, the settlement function on ATM Transactions has been completely transferred to Karachi Office, SBPBSC after comprehensive analysis and testing. All the current accounts of 1-Link member banks have been closed by ABN Amro and the balance has been returned to member banks.

5.6.6 Synchronization of Settlement Time

Moving forward, State Bank would also like to improve settlement process from next day to same day and ultimately several settlement cycles to enhance efficiency in the payment system of the country.

From June 27, 2008 onwards, like MNET, 1-Link also agreed to prepare bank-wise statements of all ATM transactions executed through their switch at 00:00:00 (hh:mm:ss) which was previously being done at 06:00:00. This major achievement would bring harmony between the two switch operators and streamline the ATM operations. The synchronization of settlement timings between MNET a 1 LINK would also enable commercial banks to complete their reconciliation in a shortest possible time and minimum resource requirement.

5.6.7 Inter-Switch Committee

To promote self governance, State Bank has taken the initiative of forming an inter-switch committee consisting of CEOs of MNET and 1LINK switches and the representatives from selected member banks in order to expedite the problem resolution process; synchronize business and IT processes at both the switches; create inter-switch harmony and quickly resolve various issues at switches end.

5.6.8 Interoperability of Switches

Different technology standards used by MNET and 1LINK are causing a huge back log because of protocol difference. Keeping in view the importance of a single understandable protocol, SBP has directed both the switches (1-Link and M-Net) to map their transaction response codes on one to one basis as one code of 1 switch must be mapped against only one code of the other switch, presently 1-Link has 100 codes while M-Net has 73 codes. One to one mapping of codes would streamline the interoperability of the two switches and will bring seamless processing.

5.6.9 Business Continuity Plan / Disaster Recovery / Backup for Switches

The two switches have become the strategic component of financial system architecture of the country. Hence it is of utmost importance to ensure their continuity even in the event of any disaster. Currently the two switches (1-Link and M-Net) rely on single channel for inter-connectivity. Considering the importance of electronic channels, State Bank has directed the two switches to prepare comprehensive Business Continuity, Disaster Recovery and Crisis Management Plans.

5.7 Clearing of Paper Based Instruments

Clearing transactions is one of the major functions of the payment system. In Pakistan, State Bank has delegated the National Institutional Facilitation Technologies (Pvt.) Limited (NIFT) to perform the clearing function. NIFT has established 15 centers which cover 15 big cities and over 80 satellite cities and towns in all the four provinces. In addition to NIFT, National Bank of Pakistan (NBP) is also providing clearing and settlement services at all those places where NIFT and SBP offices do not exist. NIFT, the clearing house, also performed clearing for local US dollar instruments numbering 11,530 and valuing US\$354.86 millions.

5.8 Standardization of Paper Based Instruments and SLA

While reviewing the clearing data submitted by NIFT, it was observed that 39 percent of paper based payment instruments were classified as non-standard. On one hand banks are to pay extra cost for processing non standard cheques and on the other hand it also caused extra delay in clearing. Therefore SBP proactively engaged commercial banks to standardize the payment instrument such as cheques, demand drafts, payment orders, etc. In order to effectively address this issue and to streamline the clearing process in the country, SBP Payment Systems Department has conducted one to one meeting with all commercial banks and issued various instructions to replace all their non-standard paper based instruments with standard instruments. All the banks have agreed to comply with December 2008 deadline.

A Service level Agreement (SLA) is in the developmental process with the coordination of NIFT, the clearing activity partner of SBP. This SLA will enhance the service level of the clearing activity which will ultimately benefit the whole banking industry, reducing the cost that will trickle down to the general customer.

5.9 Guidelines for Third Party ATM

ATM is the most popular mode of transaction among all the electronic channels. Its utility is further enhanced when made available to the user where it is most needed, i.e. in commercial centers and shopping complexes. Considering the relatively small number of off-site ATMs currently installed, the Payment Systems Department has allowed the installation of off-site ATMs by third parties through guidelines in collaboration with any licensed commercial bank in Pakistan. Comprehensive guidelines to this effect have been prepared and will soon be issued.

5.10 Policy Paper on E-Money

Electronic money (e-money) holds vast potential for micro retail payments with enormous advantages in terms of cost, time, accuracy, security, etc. A number of e-money schemes have been launched successfully in some countries, with unmatched benefits. It is believed that e-money will become a reality sooner or later in every part of the world. Payment Systems Department has initiated a policy paper on e-money to invite comments from stakeholders both within and outside the central bank. This policy paper will eventually lead to regulations regarding issuance and usage of e-money in Pakistan.

Box5.2: Enhancing Security on Plastic Money

PAN masking on POS Terminals Payment Systems Department (PSD) in collaboration with the commercial banks started the PAN masking exercise wherein all the POS terminals were reconfigured so that they should print only the encrypted transaction slips. The exercise was successfully completed on June 30, 2008 and more than 54000 POS terminals placed at various merchant locations (such as patrol pumps, shopping centers, etc) across the country were reconfigured for PAN masking. The plastic money users in Pakistan now can comfortably use their Debit/Credit/Smart cards anywhere in Pakistan irrespective of the amount of transaction without the fear of disclosing their personal information on transaction slips. Similarly, those POS terminals which do not carry the capability to get reconfigured for PAN masking here all the acquiring banks were instructed to replace all their non-EDC POS terminals with reconfigured EDC POS terminals. A sample pair of transaction slips each with and without PAN masking is mentioned at **BOX-5.3**:

Cardholders' Signature Verification The signature verification mechanism provides a strong support in effectively controlling the frequency and quantum of fraud on Plastic money in the country. Here all the credit/Debit/Smart card issuing banks were specifically instructed by State bank to educate their merchants located across the country to match/verify the card holders' signature on the transaction slips. In case of mismatch, refuse the transaction.

Chip and PIN For securing the card transactions, State Bank has been pursuing the implementation of Chip and PIN standards on Credit Cards since 2005. VISA has also given deadline to its member banks in Asia Pacific to be compliant with EMV standards by 2010 and all Pakistan member banks have agreed with the same. Currently in Pakistan, 70% POS terminals are EMV compliant and acquiring banks are in process of changing existing POS terminals with the ones compliant to EMV.

Database on Fraudulent Entities It has been observed that several merchants, cardholders, courier companies and even the bank employees have been found involved in making fraudulent transactions, misusing the card holder's personnel information and sharing it with other banks without the card holder's prior consent. On the directions of State Bank, PBA in consultation with all the Commercial Banks will develop a database containing the information of all those merchants, card holders, courier companies found involved in the fraudulent activities. The subject database would help reducing the misuse of Plastic Money instruments in Pakistan to greater extent.

SMS Alerts on Every Transaction In order to further minimize the chances of misuse of Credit/Debit cards in Pakistan, all the card issuing banks have agreed to implement the SMS system wherein after each and every transaction, a SMS alert would be sent to the card holder informing him/her about the status of transactions taking place on his/her card. The subject exercise will ensure on-time monitoring of card transactions thus reduce the incidents of fake transaction and promote customer confidence in plastic money.

Box 5.3: Sample Transaction Slips

Alpha Patrol Pump
Karachi
XYZ bank
Date/time: 14/06/08 21:23:00
Merchant ID: 20057894105002
POS terminal ID: 21087520
Batch Num: 000043
Invoice Num: 00958
Sale
Card Num: 4025 81896620 6015
Card Holder: Hamid Ahmed
Exp Date: 05/10
Card Type: VISA
Amount: RS. 5000
Sig: _____
I agree to pay above total amount
according to the card issuer agreement
**** customer copy****
Thank you

Alpha Patrol Pump
Karachi
XYZ bank
Date/time: 14/06/08 21:23:00
Merchant ID: 20057894105002
POS terminal ID: 21087520
Batch Num: 000043
Invoice Num: 00958
Sale
Card Num: 4025 **** * 20 6015
Card Holder: Hamid Ahmed
Exp Date: 05/10
Card Type: VISA
Amount: RS. 5000
Sig: _____
I agree to pay above total amount
according to the card issuer agreement
**** customer copy****
Thank you