

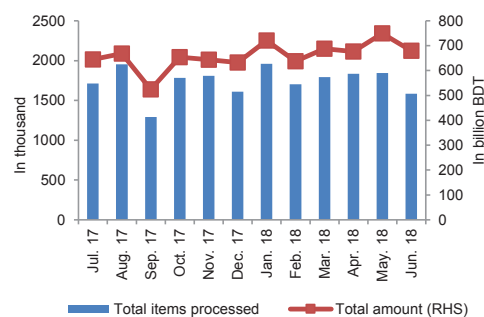
Payment and Settlement Systems

12.1 Payment system is one of the most vital financial market infrastructures of a country. An efficient payment and settlement system ensures smooth circulation of money and thereby promote economic growth. Payment and settlement systems also play crucial role in the implementation of monetary policy. Modern Payment Systems infrastructure enables the services to be delivered in the rural and remote areas which in turn paves the way for financial inclusions and boost the economic development.

Functional Areas of Payment Systems

12.2 Considering the importance of payment and settlement systems for Bangladesh, Payment Systems Department (PSD) of Bangladesh Bank works in three broad areas, i.e. Operation, Policy and Regulation, Oversight. At present, Bangladesh Bank operates four major national interbank payment systems; out of which three systems are for retail value (RV) -Bangladesh Automated Cheque Processing System (BACPS), Bangladesh Electronic Funds Transfer Network (BEFTN), National Payment Switch Bangladesh (NPSB) and one is for high value (HV)- Bangladesh Real Time Gross Settlement (BD-RTGS) system. In parallel, it licenses and regulates services such as mobile financial services, e-money services, and internet based payment gateway services for facilitating e-commerce transactions while it oversees payment system operations. All the activities of the department are focused to ensure that the country's payment systems are safe, efficient and are aligned with the international best practice standards.

Chart 12.1 Number of Regular Value Cheque and Amount



Source: Payment Systems Department, Bangladesh Bank.

Bangladesh Automated Clearing House (BACH)

12.3 Established in 2010, BACH operates two interbank payment systems - the Bangladesh Automated Cheque Processing System (BACPS) and the Bangladesh Electronic Funds Transfer Network (BEFTN). Both the systems operate in batch processing and Deferred Net Settlement (DNS) mode. The central BACH system receives transactions (through instruments or instructions) from the member banks in 24/7 basis while these are processed and settled at a pre-fixed time. After each clearing cycle a single multilateral netting figure on each participating bank is settled by posting it to their respective books of account maintained with Bangladesh Bank. The system is based on a centralized processing centre at Motijheel, Dhaka and a disaster recovery site at Mirpur, Dhaka.

Bangladesh Automated Cheque Processing Systems (BACPS)

12.4 BACPS uses the Cheque Imaging and Truncation (CIT) technology for clearing the paper-based instruments (i.e. cheque,

pay order, dividend & refund warrants, etc.) electronically. This electronic cheque presentment technique made possible to bring the whole country under single clearing umbrella. The clearing cycle has been brought down to t+1 for regular value cheques and t+0 for high value cheques.

BACPS Transaction Status

12.5 During the last fiscal year ended on June 30, 2018, 20.87 million regular value and 2.32 million high value cheques and other instruments were cleared valuing Taka 7918.29 billion and Taka 13965.08 billion respectively. Chart 12.1 and Chart 12.2 show the trends of instruments and amount cleared with respect to regular and high value cheques respectively in FY18.

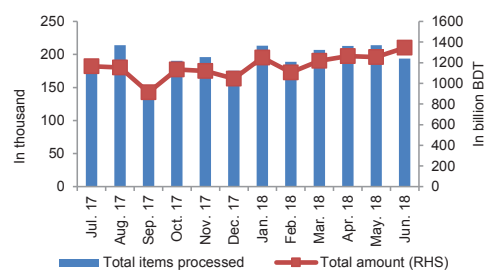
Bangladesh Electronic Funds Transfer Network (BEFTN)

12.6 BEFTN started its Live Operation on February, 2011 with a view to establish a paperless electronic payment method for secured & cost-effective transaction. BEFTN is a faster and efficient alternative to paper-based clearing and settlement system. A wide range of credit transfers, such as, salary payment, foreign and domestic remittances, social security payments, company dividends, retirement benefits could be settled through EFT credits while utility bill payments, loan repayments, insurance premiums, corporate to corporate payments could be accommodated in EFT debits. Bangladesh Government is an early adopter of the EFT network, currently; salaries of most govt. officials are being paid through this system.

Transaction Status of Bangladesh Electronic Funds Transfer Network (BEFTN)

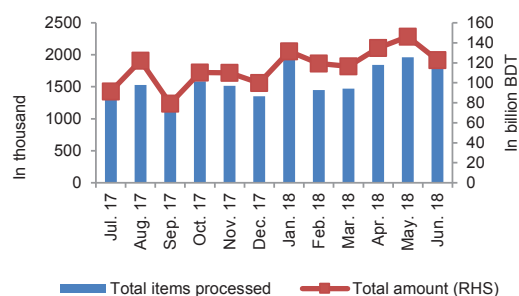
12.7 During FY18, 19.65 million EFT credit

Chart 12.2 Number of High Value Cheque and Amount



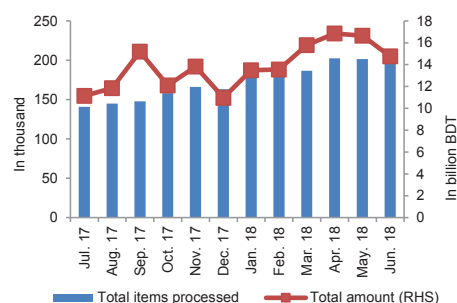
Source: Payment Systems Department, Bangladesh Bank.

Chart 12.3 Number of Credit Entries and Amount



Source: Payment Systems Department, Bangladesh Bank.

Chart 12.4 Number of Debit Entries and Amount



Source: Payment Systems Department, Bangladesh Bank.

transactions valuing Taka 1384.07 billion and a total of 2.07 million EFT debit transactions valuing Taka 166.15 billion have been completed through BEFTN. During this period, a positive or increasing trend in credit as well as debit transactions with respect to number

and amount has been observed. Chart 12.3 and Chart 12.4 show the trend of EFT credit and debit transactions respectively in FY18.

Mobile Financial Services (MFS)

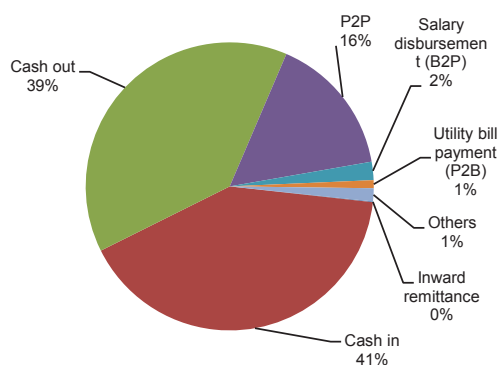
12.8 Rapid countrywide expansion of Mobile phone network as well as exponential growth in the number of subscribers has opened up opportunities for introducing innovative mobile phone based off-branch financial services. Utilizing this opportunity, Mobile Financial Services, since its inception in 2011, has been experiencing a remarkable growth. MFS becomes a key driver of financial inclusion through providing services for the unbanked population segment and in unblocking the advancement opportunities for the underserved section of the society.

As of June 30, 2018, 28 banks and 1 subsidiary have been permitted to provide MFS, whereas 17 Banks and 1 Subsidiary are in operation. Bangladesh Bank permits only bank-led MFS providers to operate in the country.

The permitted Mobile Financial Services in broad categories are as follows:

- Cash-in and cash-out using mobile account through agents, bank branches and ATMs.
- Disbursement of Inward foreign remittances (Only the domestic part of transaction, no cross border transaction is permitted)
- Person to business payments. e.g. utility bills, merchant payments.
- Business to person payments. e.g. salary disbursement, dividend/interest and refund payments.

Chart 12.5 Market Share of Different Services in MFS in June 2018



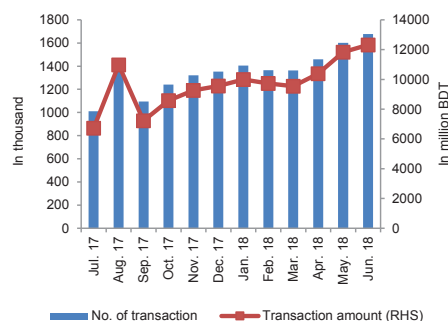
Source: Payment Systems Department, Bangladesh Bank.

Table 12.1 Present Scenario of MFS in Bangladesh

| Months | No. Agent (in thousand) | No. of registered customers (in million) | No. of transaction (in million) | Transaction amount (in billion) |
|---------|-------------------------|--|---------------------------------|---------------------------------|
| Jul. 17 | 772.11 | 54.43 | 152.31 | 233.69 |
| Aug. 17 | 767.77 | 57.00 | 175.72 | 321.83 |
| Sep. 17 | 773.28 | 57.73 | 147.64 | 215.50 |
| Oct. 17 | 774.89 | 57.76 | 164.36 | 276.34 |
| Nov. 17 | 777.18 | 58.57 | 158.58 | 275.73 |
| Dec. 17 | 786.46 | 58.80 | 166.32 | 285.71 |
| Jan. 18 | 787.49 | 58.97 | 171.28 | 303.96 |
| Feb. 18 | 796.73 | 59.65 | 162.08 | 284.45 |
| Mar. 18 | 804.61 | 60.15 | 181.01 | 313.39 |
| Apr. 18 | 811.07 | 60.63 | 178.42 | 311.99 |
| May. 18 | 820.35 | 61.32 | 185.48 | 328.23 |
| Jun. 18 | 829.78 | 61.08 | 192.59 | 332.13 |

Source: Payment Systems Department, Bangladesh Bank.

Chart 12.6 Trends in Interbank ATM Transactions



Source: Payment Systems Department, Bangladesh Bank.

Box 12.1 Digital Currency

The advent of information and communication technology has created the opportunity to make financial transactions through electronic money and without involving physical (fiat) currency. Electronic money is generally issued by Financial Institutions against fiat money, such as Debit or Credit card. Digital wallet or e-wallet is a recent innovation which is a store value product for electronic money, introduced by Fintech/Banks to make digital payments easier.

With the evolution of electronic money, world has seen the rise and decline of a new type of assets called digital currency or crypto currency. The specialty of this currency is that, it is not backed by any fiat currency and is not issued by a legitimate authority (i.e. bank or central bank), rather it is controlled mainly by third party IT companies and sometimes termed as private money. 'Bitcoin' is the most prominent and talked-about crypto currency in the world. The value of each unit of this crypto currency stood nearly \$ 19,000 during end 2017 which loose almost two-third of its value within next six months time. Though, these types of digital assets are termed as 'currency', however, as per functionality, these types of assets do not possess the characteristics of a currency (i.e. unit of account, medium of exchange, store of value, etc.).

The financial industry including the central banks worldwide is more interested on the technology behind the cryptocurrency which is called 'Blockchain', which possess characteristics to be able to emerge as a better alternative to the existing centralized record keeping technique. This system works in combination of components including peer-to-peer networking, distributed data storage, and cryptography that, among other things, can potentially change the technology of storage, recordkeeping, and transfer of assets are done today.

Blockchain is an application based on Distributed Ledger Technology (DLT) where the solution is designed to work in open source and in a distributed mode and enable nodes (i.e. computer systems) in a network to securely store records collectively, propose new changes (i.e. transaction), validate changes, synchronized and store records among the nodes. In a DLT environment, the financial records are housed in decentralized ledgers that are jointly administered by all members of the network. Computer coding and algorithms enable a transaction to be aggregated in 'blocks' and are added to a 'chain' of existing blocks using cryptographic signature. There is no possibility to post illegitimate transaction in a blockchain environment, if anyone wants to manipulate a block, s/he would be required to manipulate previous blocks, those are the basis for the current one and the manipulation needed to be done to all or maximum number of nodes simultaneously.

In recent years, especially in developed world, digital transaction has grown exponentially and the use of fiat currency has shrunken. Therefore, general people are increasingly depriving of using central bank's money. This phenomenon spurs the possibility for the introduction of a central bank issued digital currency. Scandinavian country like Sweden is in the forefront in this endeavor of issuing Central Bank Digital Currency (CBDC). CBDC or Digital Base Money scheme may be compared with current banknote system which is a claim on the Central Bank. This proposition has two major implications. On one hand, it would make the digital money (i.e. deposit) safer and therefore preferable however, the depositors' may be deprived of the incentive (i.e. interest). On the other hand, it will make central bank a competitor to commercial banks and could affect commercial banks' deposit base adversely and thereby its ability to make loans and advances. Impact assessment of a free-floating digital currency on the economic stability requires further examination. On technical side, caution should be taken while designing, implementing the new platform and integrating the same with legacy systems considering all associated risk elements.

- Government to person payments. e.g. elderly allowances, social safety net.
- Person to Government Payments e.g. Tax, Levy payments.
- Person to Person Payments (One registered mobile account to another registered mobile account).
- Other Payments like microfinance, overdrawn facility, insurance premium, DPS, etc.

As of June 30, 2018, a total of 830 thousand agents are serving 61.08 million registered customers with a continuous growth in number and in geographical location (Table 12.1). Chart 12.5 describes the position of market share of different types of Mobile Financial Services during FY 2018.

National Payment Switch Bangladesh (NPSB)

12.9 In order to facilitate interbank electronic payments originating from different payments channels like Automated Teller Machines (ATM), Point of Sales (POS) and Internet etc., Bangladesh Bank introduced National Payment Switch Bangladesh (NPSB) on December 27, 2012. The main objective of NPSB is to act as a mother switch and to connect all child switches owned or shared (owned and operated either by bank or non-bank entity) gradually, to create a common electronic platform for the switches in Bangladesh. At present, 53 banks are operating card business in Bangladesh. Among those, interbank ATM transactions of 51 banks and POS transactions of 50 banks are being routed through NPSB. Moreover, Internet Banking Fund Transfer (IBFT) has been started

in November, 2017. Now, NPSB is processing IBFT transactions of 13 banks. In addition, other banks are also likely to join IBFT transactions through NPSB soon. The number and volume of the interbank ATM, POS transactions and Internet Banking through NPSB are growing fast. Chart 12.6 and 12.7 show the trends of NPSB interbank ATM and POS transaction number and associated amount till 30 June, 2018.

Payment Systems Department (PSD) of Bangladesh Bank is working closely with all banks and stakeholders towards digital payment systems as well as digital Bangladesh. NPSB is contributing to popularize card based electronic payment in Bangladesh. As a result, number of cards and several card based payment terminals are growing very fast. Table 12.2 shows Growth of card, ATM and POS in Bangladesh.

To ensure safe, efficient and digital payment system, PSD is also working to formulate and publish national chip specification, NPSB Operating Manuals, ATM Operating Guidelines and other regulatory frameworks.

Real Time Gross Settlement (RTGS)

12.10 By introducing BD-RTGS in October 2015, BB has opened a new horizon in the payment ecosystem accommodating instant settlement of large value and time critical payments in the country. The system is designed to settle high value (BDT 1, 00,000 ≤) local currency transactions as well as domestic foreign currency transactions. More than 7,000 online branches of 55 scheduled banks are now connected to this system out of existing 11,000 branches of 57 schedule banks. The system is currently handling only local currency transactions. Domestic foreign currency

transactions are expected to be included soon. Trend of the transactions with RTGS in FY 2018 is shown in chart 12.8.

Payment Systems Operator (PSO) and Payment Service Providers (PSPs)

12.11 Internet payments and e-commerce are gradually getting popular in the country. Payment System Operator (PSOs), especially those who offer merchant aggregation and payment gateway services play crucial role for settling payments for e-commerce transactions. Considering the market demand, Bangladesh Bank has permitted 05 (five) non-bank entities to work as PSO while BB licensed a PSP to provide e-wallet services in the market.

Legal and Regulatory Frameworks

12.12 BB published a number of legal and regulatory guidelines to support the electronic transaction in the country. Existing legal and regulatory framework of payment and settlement systems of Bangladesh are mentioned below:

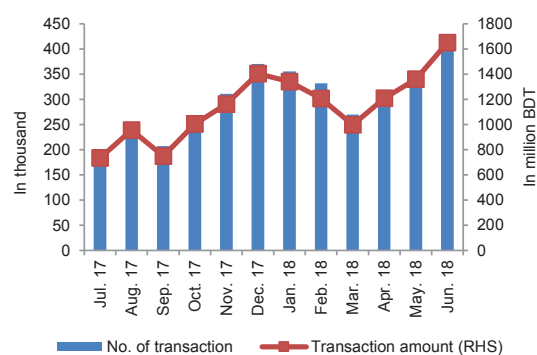
- “Bangladesh Automated Cheque Processing Systems (BACPS) Operating Rules and Procedures” was published on January 11, 2010.
- “Bangladesh Electronic Funds Transfer Network (BEFTN) Operating Rules” was published on Aug.10, 2010.
- “Guidelines on Mobile Financial Services for the banks” was published on September 22, 2011.
- “Bangladesh Payment and Settlement Systems Regulations (BPSSR), 2014” was published on May 15, 2014.
- “Bangladesh Real Time Gross Settlement (BD-RTGS) System Rules” published during September 2015.

Table 12.2 Number of Card, ATM and POS in Bangladesh

| Terminal | As on 30 June 2017 | As on 30 June 2018 | Growth (%) |
|----------|--------------------|--------------------|------------|
| Card | 11,943,650 | 13,734,605 | 15.0 |
| ATMs | 9,246 | 9,747 | 5.4 |
| POS | 36,288 | 41,130 | 13.3 |

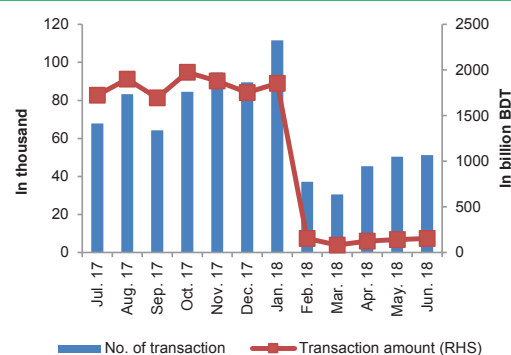
Source: Payment Systems Department, Bangladesh Bank.

Chart 12.7 Trends in Interbank POS Transactions



Source: Payment Systems Department, Bangladesh Bank.

Chart 12.8 Trends in RTGS Transactions



Source: Payment Systems Department, Bangladesh Bank.

Other Payment Systems Initiatives

12.13 In order to fulfil the ever-growing demand for faster and efficient payment methods, Payment Systems Department (PSD) has been working closely with the international organizations to develop safe, secured and efficient national payments infrastructure conforming to the international best practices.

Bangladesh Bank has finalized the draft National Payment and Settlement Systems Act 2018 which is now under review of the concerned ministry. In addition, PSD is working closely with the government to automate various kinds of government payments and receipts including payroll, social security payments and receiving of VAT, Tax, Customs duty, etc.

Payment System Oversight

12.14 Oversight is a form of Payment System surveillance. This specialized function ensures safety and efficiency of national payments infrastructures and induces change(s) where necessary. Bangladesh Bank emphasized on monitoring and assessment of current systems, participants and instruments. As part of monitoring, information is being collected from payments platforms and participants on a regular basis. In parallel BB collects template-based onsite data and conducts inspections as well. Assessment is done on the basis of collected data where various analytical tools are being used and reports are being prepared thereby.

Awareness Campaign

12.15 Bangladesh Bank took various initiatives for raising awareness on the new

electronic payment systems introduced in the country. BB has organized seminars and workshops for officials of commercial banks, Government offices and industry alliances. Besides, BB has been working to popularize electronic payment among the stakeholders like Chamber of Commerce, Stock Exchanges, Bangladesh Security and Exchange Commission, National Board of Revenue, etc. BB has arranged several seminars, rally and road-shows at different divisional cities as a part of this awareness campaign.

12.16 Electronic payment and settlement systems has already proved its potential by offering fast, secured and cost-effective financial services. Especially, paper-less electronic transactions are gaining popularity among the corporate bodies, stock exchange members and industry alliances. The mobile financial services have significantly changed the financial services landscape of the country and contributed toward financial inclusion. NPSB is expected to increase end-user centric electronic payments and broaden the horizon for digital financial transactions in the country. Implementation of BD-RTGS has taken the country's Payment and Settlement Systems into new height. These electronic modes of payments have already improved operational efficiency, increased transaction frequency and brought stability and flexibility in all spheres of the financial market.