

Payment Systems in India: A Silent Revolution

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**The views expressed in this article are that of the author and not necessarily of the organization he represents.*

Prior to his present assignment as Director of IDRBT, Dr. Ramasastry has been in-charge of information technology at Reserve Bank of India. He led some of the national level payment system initiatives like next generation RTGS and adoption of international messaging standards.

Payment systems are the plumbing to the financial system, and any leaks and clogs would be catastrophic. It is, therefore, very important to build an efficient payment system. Oversight of payment systems is recognized as a central bank function whereby the objectives of safety and efficiency are promoted by monitoring the existing and proposed systems, and catalyzing change wherever necessary. Payment systems in India have witnessed a silent revolution, and the Reserve Bank of India (RBI) has been playing a very important role in leading this silent revolution.

1. The Story So Far

Dr. Raghuram Rajan, Former Governor, Reserve Bank of India, while emphasizing the need for efficient payment systems, said [1] that the payment systems are the plumbing to the financial system, and cautioned that leaks and clogs would lead to a catastrophic situation quickly.

It is, therefore, very important to build an efficient payment system and in most of the countries, central banks have been entrusted with the responsibility of creating the necessary institutional setup and core infrastructure for payment systems. Mr. Gynedi Srinivas and Mr. Harish Natarajan wrote [2] that oversight of payment systems is recognized as a central bank function whereby objectives of safety and efficiency are promoted by monitoring existing and planned systems and where necessary, by inducing change. The Reserve Bank of India, the central bank of the country, has been very effectively carrying out this function.

In a very revolutionary move, the Reserve Bank of India introduced the then state-of-the-art technology in the form of Magnetic Ink Character Recognition (MICR) based clearing system way back in mid-1980s. Since then, the central bank has been playing the twin roles of development and regulation of payment systems in India.

Mr. Rama Subramaniam Gandhi, Former Deputy Governor, Reserve Bank of India, said [3] that the payment systems in India have witnessed a silent revolution. While making the distinction between evolutionary changes and revolutionary changes, he mentioned that the payment systems in India had been continuously changing over the past thirty-five years, and therefore, hinted that the changes were of the nature of silent revolution.

The Reserve Bank of India has been playing a very important role in leading the silent revolution. It has been instrumental in either building or enabling the three essential ingredients, the 3 Is, for an efficient payment system viz. institutions, infrastructure, and instruments.

1.1 Institutions

In the year 2005, the Reserve Bank of India set up the Board for Payment and Settlement Systems and also formed an internal department for exclusive regulation and supervision of payment and settlement systems.

The Payment and Settlement Systems Act was passed in the year 2007 – legally empowering the Reserve Bank of India to regulate and supervise the payment systems. While recognizing netting as a legal process, the Act also made bouncing of electronic payment transactions equivalent to bouncing of cheques, a criminal offence.

Once the institutional strengthening was done at the central bank level, the National Payments Corporation of India (NPCI) was set up in 2010 to introduce and implement cashless electronic payment systems in the country.

Even prior to it, Clearing Corporation of India Limited (CCIL) was set up to provide guaranteed clearing and settlement functions for transactions in Money, Govt. Securities, Foreign Exchange, and Derivative markets.

In addition to setting up of such national level institutions,

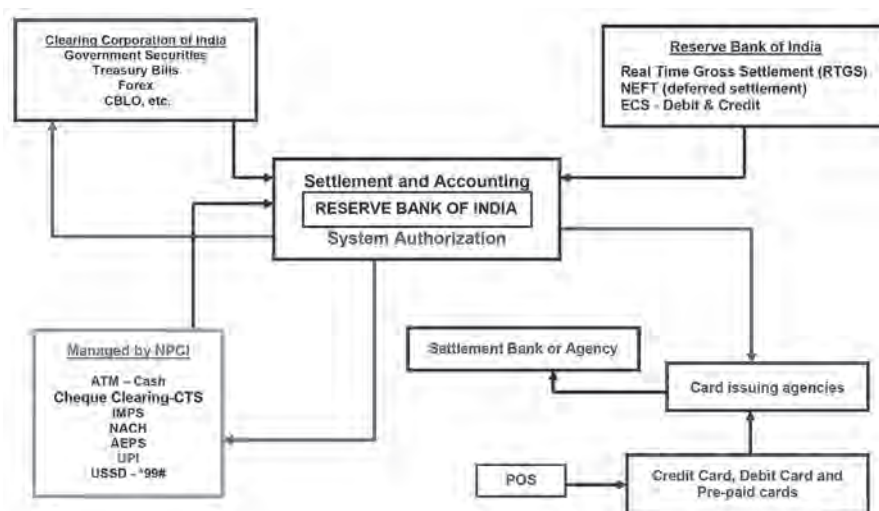


Figure 1 Payment Systems in India

the Reserve Bank of India has given licenses to selected participants for providing prepaid payment instruments (PPIs). The guidelines to PPIs have been periodically revised to ensure greater participation on one side, and safe and secure systems on the other.

Payment banks have been very recently brought in as new entrants into the payments space in India. Payment banks are expected to provide very focused, highly digitized fast and reliable payment options to customers across different sectors and segments.

It is not out of place to mention that the Reserve Bank of India established an Institute exclusively for development and research in banking technology (IDRBT) way back in 1995. It is a unique institution of its nature with no similar organization anywhere else in the world. Living up to the expectations, the Institute did pioneering work in building some of the critical infrastructure for payment systems.

1.2 Infrastructure

An efficient payment system is based on a safe and secure network. The Indian Financial Network (INFINET) was commissioned by IDRBT towards the end of 1990s. The network has been serving as backbone for the critical payment systems like RTGS and NEFT. It is a closed user group, whose membership is restricted to only payment system participants.

IDRBT has also developed standard messaging system for financial messages in the form of Structured Financial Messaging System (SFMS). The SFMS has been serving as the messaging platform for pushing financial transactions

across banks and with the central bank.

Another basic infrastructure developed by the Institute was the National Financial Switch (NFS), which enabled switching of the cash transactions from any ATM to any card-issuing bank.

NPCI, an organization established exclusively for promoting payment systems in India, has taken over the NFS infrastructure. Usage of ATMs and cards has increased manifold since then. True to the purpose for which it was established, NPCI has been building infrastructure for payment systems across banks, non-banking financial companies, and other participating entities.

A few of the major infrastructure related initiatives of NPCI have been Cheque Truncation System (CTS), Immediate Payment System (IMPS), and Unified Payment Interface (UPI).

Creation of the institutions and common critical infrastructure as discussed above led to several products and instruments very useful to customers.

1.3 Instruments

There has been move towards less cash society globally and India has been in the forefront of providing required products and instruments in moving towards it. Further, there has been a greater recognition in the country that the design of products and instruments should be such that they serve the financially excluded section of the society. In other words, they should serve the national goal of financial inclusion.

As continuation of the technology based payment system initiatives started with MICR, the Reserve Bank of India

implemented two very important payment systems – Real Time Gross Settlement System (RTGS) and National Electronic Fund Transfer (NEFT) in the early years of the present century. Though RTGS is primarily for high-value inter-bank real-time fund transfers, there is a provision for customer fund transfers whereas NEFT is mainly for customer fund transfers. Both the systems are run by the Reserve Bank of India, with INFINET and SFMS providing the backbone infrastructure. Interestingly, during the recent enhancement of RTGS, ISO 20022 messaging standards have been fully adopted, may be the first-of-its-kind in the world.

Instrument	2010-11	2013-14	2016-17
RTGS	51.00	83.70	111.50
NEFT	132.30	661.00	1622.10
IMPS	-----	15.40	506.70
NACH	-----	86.50	2057.30
Credit Card	265.10	509.10	1087.10
Debit Card	237.10	619.10	2399.30
PPI	-----	133.90	1963.70

Note: NACH means National Automated Clearing House, the clearing service provided by NPCI

Source: Reserve Bank of India

Table 1 Trends in Volume (millions) of Transactions in various Payment Systems

In addition to the central bank managed RTGS and NEFT, NPCI introduced Interbank Mobile Payment Service (IMPS), which enabled 24x7 fund transfers. The service was subsequently made channel independent and rechristened as Immediate Payment Service, retaining the acronym IMPS. A sender can affect an immediate fund transfer through IMPS anytime during the day, without actually knowing the account number of the receiver as the account is linked to the mobile number of the receiver.

NPCI has further put in place a very useful system called Unified Payment Interface (UPI), which resulted in convenience of operations through virtual addresses instead of account numbers. UPI, which is app-based and usable on smartphones with internet access, has revolutionized the mobile payments arena.

Bharat Interface for Money (BHIM) is an app implemented by NPCI over the IMPS infrastructure. The distinct feature of it is that it can be used on all mobile devices. There has been an unprecedented download of the app during the first few months of its launch itself.

In addition to the above products and instruments supported by RBI and NPCI, the PPIs have been serving the

customer by providing features like filling the wallets and using them for payments.

RuPay Card is an Indian card promoted by NPCI to reach people across geographies and social / economic backgrounds. As part of the Government of India's People's Money Scheme, called the Jan Dhan scheme, 200 million RuPay cards have been issued, with a large number being to those who had not hitherto the privilege of using a card.

2. Recent Developments

Payment systems are so critical to financial system, that the innovations so far have been generally incremental and not very disruptive. Further, innovative products need to be such that failure of some of them do not lead to systemic risk. The Government, regulator, banks, and other participants have been treading the innovative path very carefully.

However, there are a few developments in the recent past and a few in the pipeline that might remarkably, or even radically, change the payment systems scenario in the country. These include the National Digital Identity program, the emergence of FinTechs, and the Blockchain technology.

2.1 Aadhaar – National Digital Identity

The initiative of the Government of India of unique identification of all citizens of the country through Aadhaar is unprecedented. The sheer size of Aadhaar makes it a gigantic exercise with possibly no parallel anywhere in the world. Aadhaar ensures unique identification, which can be used by most of the sectors in the country, and more so by financial sector as financial address. A unique system called Aadhaar Payment Bridge System (APBS) has been created on this concept and Government benefit transfers are paid through it. Further, an Aadhaar-enabled payment system (AEPS) has been developed leveraging Aadhaar online authentication, which enables anytime-anywhere banking by the marginalized and financially excluded segments of society through micro-ATMs.

2.2 FinTechs

FinTechs are emerging rapidly in the country. Both the Central Government of India and State Governments are playing a major role in encouraging FinTechs to come out with new innovative products. FinTechs are growing in cities like Delhi, Bengaluru, and Mumbai that may be seen as Innovation Hot Spots. The Reserve Bank of India

has recently brought out a report [4] on the regulation of FinTechs. Some of the recommendations of the report like regulatory sandbox can pave way for the growth in the number of FinTechs and their products. Academic institutions are building incubators, which are very helpful for start-ups to emerge successful. There is a whole ecosystem getting developed for FinTechs and a healthy collaboration among academia, banks, and FinTechs is emerging, auguring a new realm of technology innovation as illustrated in Figure 2.



Figure 2 FinTech Ecosystem

2.3 Blockchain Technology

One of the most discussed technology developments today is the Blockchain technology (BCT) or what is also described as distributed ledger technology. A possible reason for interest in BCT is its use for cryptocurrencies. Central banks all over the world have been carefully studying the implications of cryptocurrencies.

However, rapid changes in the landscape of the payments industry along with factors such as emergence of private digital tokens and the rising costs of managing fiat paper/metallic money have led some central banks to explore the option of introducing central bank digital currencies (CBDCs). The Reserve Bank of India has constituted an inter-departmental group to study and provide guidance on the desirability and feasibility to introduce a central bank digital currency [5].

BCT is not necessarily only for currencies. There have been several areas in banking and financial sector, especially the payment segment, where the technology can be used. However, unlike technological innovations so far, blockchain technology, which is foundational, has the potential to be destructive. IDRBT brought out a white paper on use of BCT [6] in the financial sector in India and identified a few

feasible areas where it can be used.

Banks have formed consortiums to experiment and even expedite adoption of BCT for some of the applications like trade finance. It is to be seen over the coming years how payment system scenario will undergo changes due to these developments.

3. Looking Ahead

India has been pioneering the use of technology for payment systems. Even State governments are now moving in this direction, e.g., Telangana has launched its official T Wallet for digital payments.

In its Payments Vision Document 2018 [7], the Reserve Bank of India identifies the broad contours of its vision to revolve around the 5 Cs:

- **Coverage** – by enabling wider access to a variety of electronic payment services
- **Convenience** – by enhancing user experience through ease of use and of products and processes
- **Confidence** – by promoting integrity of systems, security of operations and customer protection
- **Convergence** – by ensuring interoperability across service providers
- **Cost** – by making services cost effective for users as well as service providers

For safe and stable payment systems, technological innovations may revolve around the above-mentioned principles.

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