

*Evolution of Payment Systems in India: Or is it a Revolution?**

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It gives me great pleasure and pride to be addressing at the Banaras Hindu University, an institution which has been in the service of the nation for 100 years; more so because this institution has been deeply intertwined with freedom movement and freedom leaders like Pandit Madanmohan Malaviya. I am thankful to the Vice Chancellor Prof Tripathi for giving me this opportunity.

2. Today, I intend to discuss with you all about a silent revolution that has been sweeping the country. It is about the payment systems in India. I said 'silent revolution'. That is because, the payment systems has been evolving and changes have been continuous over the last 35 years, it has rarely got noticed as a revolutionary change. Let us see how it evolved and beneficially impacted settlement of economic transactions of common persons and businesses and how it is now poised for still larger impact. I will narrate how the Reserve Bank brought in the evolution, or rather the silent revolution, of the payment systems and will also answer certain critique relating to our role.

What is a payment? What is a payment system?

3. When people or businesses enter into economic transactions, *i.e.* buy and sell goods and services, the value thereof needs to be settled. Before the concept of money came in, the settlement was through exchange of goods and/or services and it was called the barter system. With the concept of money, the sale and

purchase of goods and services are being effected or settled by payment of money.

4. The 'money' was in early days the precious metals like gold and silver. Later, the governments issued coins made of these precious metals as money; still later, the paper money, the currency, became the norm as the money. Thus people settled their economic transactions by paying in currency notes and coins.

5. As the banking system evolved, it became easier, safe and even remunerative to keep one's money in a bank account and it became still more easier and safe to use 'transfer of money in bank accounts' for making payments for the economic transactions. This was more so for large value transactions. Actually, it is now used equally for effecting low value transactions also.

6. For effecting this transfer of money in bank accounts, a payment instrument was needed to instruct the bank to effect that transfer. This instrument was the cheque for a very long period. Thus a system consisting of the cheque as the payment instruments and an infrastructure around the cheques consisting of the drawee bank, the drawer bank and the cheque clearing houses came on the scene and were known as the payment systems.

7. With the developments in the information and communication technology, world over, different kinds of payment instruments and innovations in the instruments and the payment systems evolved. It happened in India too and that's the story I will be narrating now.

8. Today we can boast of a strong retail payments framework in the country comparable to that of any advanced country, and perhaps even better than some of them in terms of the variety and efficiency. Various types of payment instruments exist to meet the

* Speech delivered by Shri R. Gandhi, Deputy Governor, Reserve Bank of India at the Banaras Hindu University, Varanasi on Oct 22, 2016. Assistance provided by Smt. C S Kar, General Manager is gratefully acknowledged.

requirements of different users in different circumstances – bank accounts, cheques, debit and credit cards, prepaid payment instruments, *etc.* There are various systems to meet the remittance requirements of users depending upon their time criticality and cost sensitivity – National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), Aadhaar Enabled Payment System (AEPS) and recently Unified Payments Interface. The need for making bulk and repetitive payments is met by systems such as Electronic Clearing Service (ECS), National Automated Clearing House (NACH) and Aadhaar Payment Bridge System (APBS).

9. Let us take a look at the path of 'evolution' of payment and settlement systems in the country:

10. The Reserve Bank took a studied stance with reference to ushering in changes to and in the payment systems. Periodically, it constituted various committees like the Rangarajan Committee I & II, Saraf Committee, Patil Committee, Burwan Working Group, *etc.* to guide use of ICT for the benefit of banking in general and particularly the payment systems. Further, from 1998 onwards, the Reserve Bank has been continuously bringing out a Payment System Vision document for every three years, enlisting the road map for implementation. The latest one is for the period 2015 -18.

11. For a long time the main payment instrument and payment system that existed in the country was cheque and cheque clearing systems. Even the cheque clearing systems have evolved from manual clearing system to MICR (Magnetic Ink Character Recognition) clearing systems in mid 1980s which brought in great level of automation in cheque clearing process besides standardising the cheque in terms of its physical dimensions.

12. After nearly twenty odd years of MICR clearing, the cheque truncation system (CTS) was introduced first in New Delhi in 2008 and now all the erstwhile 66 MICR centres have been subsumed into three grid-CTS systems. With this, a very large share of cheque clearing in the country takes place on T+1 basis as if they were being cleared as 'local' cheques. Further, standardisation of cheque features with built-in fraud prevention measures have also been brought in the form of CTS-2010 cheque standards. Apart from CTS, there are over 1200 smaller clearing houses mainly catering to local requirements of clearing small number of cheques and in most of these centres, depending upon the time of depositing the cheques at the branch for collection, the funds could be realised within the same day. For a country of our size, this is no mean achievement of having T or T+1 clearing of cheques and that too with certainty as funds are generally released to customers after the associated 'return clearing'. Not many countries can boast of this.

13. Though cheque clearing was made efficient through MICR clearing, the inherent issues with cheques posed challenges especially when they were being used for bulk and repetitive payments such as collection of utility payments, payment of dividends, *etc.* To address this growing need and also to reduce the use of cheques for such payments, the Electronic Clearing Service (ECS) was introduced in early 1990s, ECS Credit to facilitate one-to-many payments such as dividend, salary, interest payments, *etc.* and ECS Debit to facilitate many-to-one payments such as utility payments. ECS in itself has undergone many changes from being a local system to a regional system and then a national level system. These changes have been facilitated by the adoption of CBS in banks which has enabled straight-through-processing of payments. Further efficiency has been brought in this sphere with

the operationalisation of the National Automated Clearing House (NACH) by National Payments Corporation of India (NPCI). This is a pan-India system for processing bulk and repetitive payments and the ECS is gradually being subsumed into NACH.

14. Moving further along the path of non-cash, non-paper payments, over a period of time various systems have been put in place to meet the remittance requirements of different segments of users. The National Electronic Funds Transfer or NEFT as it is popularly known, is a pan-India system today. Though it began its journey a decade ago as a local EFT system, it later expanded to cover larger areas. There are not too many systems of comparison even in other countries. Our Vision -2018 envisages further efficiency enhancements in NEFT.

15. Apart from NEFT, the Immediate Payment Service (IMPS) and Real Time Gross Settlement System (RTGS) also facilitate funds transfer requirements of users. While the former is a 24x7 immediate funds transfer system the latter is essentially a Financial Market Infrastructure which processes large payments including customer payment transaction where value is above ₹2 lakh. In all these systems, a system of positive confirmation has been put in place whereby the sender is also advised or intimated about the credit accorded to the beneficiary.

16. With improvements in IT systems of banks and their core banking systems, integration of various delivery channels has been made possible. The banking facilities are now easily available online including for payment purposes. The ubiquity of mobile phones, combined with cost efficiency in their usage, has led to an increase in number of mobile internet users. Taking advantage of this, an increasing number of payment facilities are being integrated through the

mobile channel. For instance, customers can use their net banking application on their smartphone and send money on-the-go using IMPS or NEFT.

17. While all these changes have been taking place from the perspective of customer initiated transactions, a whole set of changes have also been introduced from the perspective of government payments. From financial inclusion perspective as well as digitising government payments thus enhancing efficiency and transparency, the use of Aadhaar for beneficiary identification and authentication in payments has played an important role.

18. Accordingly, to facilitate bulk and repetitive government benefit payments and subsidy payments to Aadhaar-seeded bank accounts of identified beneficiaries, the APBS *i.e.* Aadhaar Payments Bridge System has been put in place. NPCI manages this system with linkage to PFMS through accredited government banks and sponsor banks of NACH.

19. Similarly, the Aadhaar Enabled Payments System (AEPS) facilitates operations from Aadhaar seeded bank accounts using biometric authentication of customers. Today AEPS is being increasingly used for BC operations not only of own-bank customers but also customers of other banks, in an interoperable manner.

20. One other significant segment of retail electronic payments is that of cards. With addition of nearly 200 million RuPay cards issued under Jan Dhan accounts, with its associated benefits dependent upon usage of the card, this payment area gains further importance.

21. Over last 3-4 years many regulatory changes have been introduced to ensure safety and security both in terms of form factor as well as at transaction level of card payments. Some of these are briefly indicated below:

- Introduction of online alerts (through SMS mostly)
- use of PIN for successive ATM transactions
- use of additional factor of authentication for proximity (card present) in the form of PIN@POS for debit cards and online transactions (card not present) in the form of static passwords or dynamic passwords like OTP, etc
- mandate for securing the card processing infrastructure
- mandate for phased migration to EMV chip and PIN card issuance

22. Another important development has been the entry of non-bank players into the space of payments which has generally been considered as the impregnable domain of banks. We have actively introduced non-bank players in the issuance of prepaid payment instruments (PPI), including mobile and digital wallets, besides the setting up of White Label ATMs (WLA) to bridge the gap in ATM infrastructure particularly in rural and semi urban areas. While there are fewer players in the WLA space, the PPI space has seen an explosion with a large number of players (over 45) offering their stored valued services to customers. Non-bank PPI issuers are allowed to issue semi-closed PPIs which can be used for purchase of goods and services besides remittance requirements to some extent. However, given the nature of this instrument, there are certain restrictions that are placed for ring-fencing the risks while at the same time relaxing certain regulatory requirements in terms of their operations. In addition to these two segments, non-bank players are also playing a significant role in payment gateway and aggregation services, which is presently regulated only indirectly.

Recent & Current Initiatives

23. As stated earlier, apart from the traditional providers of payment services such as banks, increasingly the payment space is being influenced by the presence of non-bank players who are bringing in innovation and convenience to customers by leveraging on technological developments.

24. The increasing mobile density is being leveraged upon by payment service providers, both banks and non-banks, to offer the services using mobile as an access device as well as an access channel. In particular, banks are offering mobile banking services through all three channels – SMS, USSD (Unstructured Supplementary Services Data) and application. At present, there are over 67 banks actually offering mobile banking services to over 120 million registered customers, and these numbers are increasing.

25. The regulatory focus in this area has also been to ensure safety of transactions while at the same time facilitate convenience of transacting. Transaction limits are applied only where the channel used does not facilitate end-to-end encryption (such as SMS and USSD).

26. Mpesa from Kenya has become the 'poster instrument' for mobile payments. However, do you know that mpesa is offered through a single mobile service provider in Kenya while the *99# (which is based on USSD channel just like mpesa) National Unified USSD Platform (NUUP) for USSD based payments introduced in India offers the services by linking all the 11 telecom providers in the country with over 50 banks participating in the system and services being offered in 11 regional languages, besides English. Financial and non-financial transactions are supported on *99#.

27. With growing use of internet over the mobile phone, this medium is becoming a natural channel of choice for both customers as well as service providers. Hence, application-based mobile banking services as well as net banking services for mobile users are being offered by almost all banks. A large number of bank and non-bank PPI issuers (mobile wallet issuers) also leverage on this channel and have introduced their own mobile applications.

28. Till recently, the mobile banking applications were largely operating in silos, particularly for merchant payments (which had to be routed as P2B push payments), and generally not interoperable across merchants and customers of different banks. With the introduction of Unified Payments Interface (UPI), twin benefits have come into place for mobile banking – convenience of operations for customers (can provide just a registered virtual address instead of details of bank accounts *etc.* for making/receiving payments) and merchant 'pull' payments. The UPI, which is application-based and usable on smartphones with internet access, when fully operational across banks, has the potential to revolutionise the mobile payments arena.

29. There are many systems in the pipe-line which again have the potential to influence significantly the payment habits of diverse segments of users. The Bharat Bill Payments System, launched two months ago, caters to the requirements of 'anytime anywhere anyhow' bill payments in the country. The system, which operates under a set of standards will provide a platform for users to have a common experience in bill payments and supports all forms of electronic payments. Banks and authorised non-banks will operate as operating units under this system bringing interoperability in bill payments eco-system.

30. Segmental needs of the MSME sector for faster financing and liquidity is being facilitated through the setting up of the Trade Receivables Discounting System (TReDS) which will enable financing of invoices of MSME sellers drawn corporate buyers through multiple financiers.

31. Besides, our policy is also geared to ensure widening the infrastructure availability for card payments, for which we are proposing the setting up of an Acceptance Development Fund at industry level which can subsidise the cost of setting up the infrastructure.

32. Lastly, the large scale coverage of Aadhaar biometric identification and its increasing use in government payments (G2P) has also encouraged us to consider using it as a potential tool for payment authentication. Towards this end, banks have been advised to enable the infrastructure to use Aadhaar biometric also as a means of payment authentication.

33. Thus, the retail payments ecosystem has not only evolved over the last twenty five years but has also taken a revolutionary trajectory in many areas. Whether it is fast payments (IMPS) offered through multiple access channels (mobile, net banking, ATM, branch, IVR, BC, etc) or mobile banking/payments, cheque clearing or card payments security aspects, our systems are comparable with the best in the world, which is no mean achievement for a country like ours despite challenges in the form of migrating large segments of cash transactions to electronic, financial inclusion, awareness and financial literacy, customer protection, *etc.*

34. Further, in comparison to other countries, the changes in our payments eco-system have been fast-forwarded to reach the present stage in the shortest

possible time. Innovations in technology are pushing the boundaries of payment processes and the players are keen to adopt newer systems and adapt the older payment mechanisms in new avatars.

Some Concerns

35. Of course, we cannot rest on our laurels. Even as we pat ourselves on the back for our achievements, there are certain areas which demand urgent attention to ensure that we do not slip anywhere lest it harms the delicate balance of trust of users in the payment systems. A few issues are highlighted here along with certain policy challenges:

- Cyber security – media reports have indicated cyber security attacks in few banks' systems, including in ATM transaction processing systems. With growing dependence on online delivery of services, this becomes a serious concern and an area that has to be strengthened immediately and continuously as it also has the greatest potential to diminish the trust in electronic payments.
- Frauds – while we have secured the safety of transactions through use of additional authentication factors, fraudsters have been exploiting other weaknesses in customers to defraud them. For instance, there have been increasing number of social engineering and phishing frauds luring customers to part with their confidential bank account/card particulars. Combined with use of duplicate prepaid SIMs, the fraudsters have been able to build a conduit between cards/bank accounts and mobile wallets to dupe the users. It is ironical that the efficiency of interlinked payments also enable the fraudsters to make their getaway faster!
- Customer awareness – even as we strengthen the systems and processes, perhaps the greatest tool to fight the menace of frauds is building customer awareness. In addition, an 'aware' customer is able to make the right choices in using different systems taking into account the time criticality of the payment, the cost aspects and the risk aspects of exposing the underlying payment instrument. This is particularly important to ensure that the digital divide in payments doesn't further widen with faster adoption of technology and leap-frogging (for instance, leap frog from plastic cards to contactless payments through mobile phones; leap frog from financial exclusion to use mobile banking, *etc.*).
- Customer protection – hand-in-hand with customer awareness goes the aspect of customer protection and efficiency in dealing with customer complaints/grievances. Earlier, generally end-to-end payment services used to be offered by banks. Today's electronic payments are, however, made more complex (though not necessarily at customer level) with participation of other non-bank entities whose services may be used by banks in the form of outsourcing arrangements or through entities that offer specialised services integral to payment completion. Greater the number of players involved, more complex the process to address customer grievances within the shortest span of time. As a result, either customer complaints take a long time to resolve or remain unresolved, both of which situations needs to addressed in right earnest.

Some Criticism

36. We have been ahead of many countries worldwide, including even advanced countries, in the introduction of many efficiencies and safeguards in payment systems. Two Factor Authentication is a good example. The recent UPI, USSD and NUUP are further examples. Similar measures are being introduced by these countries now and we are being asked to share our experiences increasingly in international forums.

37. Despite this, we are said to be over-protective in some aspects as a payments system regulator. We are asked as to why there is a regulatory arbitrage in favour of banks and why non-bank entities cannot be given an equal footing in terms of access as well as activities they are permitted to undertake. There is a feeling that opening up the system to private players will bring in the payments revolution faster, similar to the telecom revolution which happened with the opening up of the sector to private players and giving a level playing field to all entities.

38. Let me first answer why there is primacy for banks in payment systems. As I mentioned right in the beginning, payments can be effected only in either of two ways – one you use cash to make payments and the other you transfer money in your bank account. There is no third method. Thus for the non-cash payments, the origination and ending places are banks only. Therefore, minus the banks, there is no non-cash payment instrument or system. Critics do not seem to have understood this.

39. As regards the opening up of access to various systems and activities for non-bank entities, we have been opening up the space and gradually allowing entry to non-bank entities. At origination, in between originating bank and destination bank and at the

receiving end, there is no restriction for a non-bank entity to be present. Examples include the PPI issuers, BBPS operating units, TReDS, WLAs, payment aggregators, *etc.*

40. Critics ask why a non-bank cannot be allowed to keep bank accounts. They quote the success of mPesa, a non-bank entity in Kenya in ushering payment revolution in that country. Our answer is simple. If you maintain a bank account, then you are a bank and you need a banking licence. When you keep the money of the public in account, you are a financial entity taking deposits and you must be public trustworthy and so be regulated as a deposit taking financial entity. Just because one country in the world failed to recognise such an entity as a bank and allowed it to function as a non-bank, we cannot follow such a wrong model.

41. Another criticism is that the Reserve Bank is too conservative in granting licences or registrations for payment systems and payment entities. It is said that this sector needs to be freed of licensing mechanism and once a set of criteria are fixed, any number of entities meeting those criteria should be allowed to function. We differ from this idea. Such a free entry may be appropriate for any other segment of goods and services, not for 'banking'. Every other good or service is primarily a one-off transaction, whereas banking is a continuing relationship, and therefore 'fit and proper' criterion is of utmost importance and consequently, 'free entry' based on tick-box exercise is totally anti public safety.

Conclusion

42. To conclude, India has been enjoying a very healthy evolution of payment systems over the past thirty years. In looking back, we can easily admit that

it had been a revolution, without being so realising. This has been the result of the measured road maps periodically adopted by the Reserve Bank, in the initial years as a developer and in later years as a catalyst and facilitator. Today, our systems are not only comparable

to any systems, anywhere in the world, our systems also do set standards and good practices for the world to follow. We remain vigilant for ensuring safety and soundness of the payment systems and are committed to customer safety and convenience.

43. Thank you for your patient attention.