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PAYMENT SYSTEM VISION DOCUMENT

VISION 2012-15
(July-June)

RESERVE BANK OF INDIA

Payment System Vision Document (2012-15)

Mission Statement

To ensure payment and settlement systems in the country are safe, efficient, interoperable, authorised, accessible, inclusive and compliant with international standards.

Vision

To proactively encourage electronic payment systems for ushering in a less-cash society in India.

The Mission statement indicates RBI's renewed commitment towards providing a safe, efficient, accessible, inclusive, interoperable and authorised payment and settlement systems for the country. Payments systems will be driven by customer demands of convenience, ease of use and access that will impel the necessary convergence in innovative e-payment products and capabilities. Regulation will channelise innovation and competition to meet these demands consistent with international standards and best practises. The overall regulatory policy stance is towards promoting a less cash/less paper society, the "green" initiative, and hence the increased emphasis on the use of electronic payment products and services that can be accessed anywhere and anytime by all at affordable prices. Embracing new technology and innovation to unveil a bouquet of simple[1], low cost, easy to use modern payment products and services would be the corner stone of this endeavour. The Reserve Bank recognises that building dexterity of payment systems through standardisation and a broad consultative process is a continuing agenda.

In light of the above, the Vision statement sets out the roadmap to ensure benefits of a structured modern payment and settlement systems, including innovative products, to reach out beyond the currently served target groups thereby facilitating greater financial inclusion. This is to be achieved by nurturing a payment system that adequately serves the national and international needs of the nation.

[1] Simple bouquet of e-payment products – start to end (for customer), Real Time Large Value Gross Transfers , Real Time Small Value Gross Transfers, near real time batch processing systems (hourly from 8.0 am onwards to 8.00 pm), 24x7 small payment systems.

Abbreviations used in the document

ACH	Automatic Clearing House
ASSOCHAM	Associated Chambers of Commerce and Industry of India
ATM	Anytime Teller Machine
BBAN	Basic Bank Account Number
BCs	Business Correspondent
BSR	Basic Statistical Return
CCIL	Clearing Corporation of India Ltd.
CCPs	Central Counterparties
COD	Cash on Delivery
CPSIPs	Core Principles for Systemically Important Payment Systems
CPSS	Committee on Payment and Settlement Systems
CSDs	Central Securities Depositories
CTS	Cheque Truncation System
DNS	Deferred Net Settlement
ECCS	Electronic Cheque Clearing Services
ECS	Electronic Clearing Services
FMI	Financial Market Infrastructure
IAMAI	Internet and mobile Association of India
IBA	Indian Banks Association
IBAN	International Bank Account Number
IDRBT	Institution for Development and Research in Banking Technology
IFSC	Interbank Financial System Code
IMPS	Interbank Mobile Payment System
KYC	Know Your Customer
LVPS	Large Value Payment System
MICR	Magnetic Ink Character Reader
MNOs	Mobile Network Operators
NECS	National Electronic Clearing Services
NEFT	National Fund Transfer System
NFC	Near Field Communication
NPCI	National Payments Corporation of India Ltd.
ORFS	Online Return Filing System
OTC	Over the Counter
P2B	Person to Business

P2P	Person to person
PCI	Payment Card Industry
PFMI	Principles for Financial Market Infrastructure
PoS	Point of Sale
PPIs	Prepaid Payment Instruments
RCCP	Recommendation for Central Counterparties
RECS	Regional Electronic Clearing Services
RSSS	Recommendations for Securities Settlement Systems
RTGS	Real Time Gross Settlement System
SFMS	Structured Financial Messaging Solution
SoA	Service Oriented Architecture
SSS	Securities Settlement System
SWIFT	Society For Worldwide Interbank Financial Telecommunication
TR	Trade Repository

Chapter-1: Introduction

1.1 The previous Vision Document ‘Payment Systems in India - Vision 2009-12', sought to reflect the change in the entire gamut of the payment systems, post-legislation of the Payment and Settlement Systems Act, 2007. The Mission Statement accordingly reflected the public policy objectives of the Reserve Bank "*to ensure that all the payment and settlement systems operating in the country are safe, secure, sound, efficient, accessible and authorised*" and contained both short and medium term plans along with a slightly longer term perspective to achieve those goals.

1.2 Notwithstanding the accomplishments, cash remains the predominant payment mode used in the country. Reflecting this tendency, the value of banknotes and coins in circulation as a percentage of GDP (12.04%) is very high in the country when compared to other emerging markets, like Brazil, Mexico and Russia. Similarly, the number of non-cash transaction per citizen is very low in India when compared to other emerging markets. While no specific study has been carried out, the presence of a well established network of treasuries/currency chests and over 1100 clearing houses across the country may have contributed to the slow turn around to and adoption of modern payment products.

1.3 The payment system initiatives taken by the Reserve Bank of India have resulted in deeper acceptance and penetration of non-cash payment modes. Albeit, cheque continues to be a dominant mode in retail payments constituting 54 percent in terms of volume and 82 percent in terms of value (2011-12), with retail electronic payments lagging behind.

1.4 A SWOT analysis reveals that while the growth of electronic payments including RTGS transactions has been impressive, the benefits of modern electronic payment systems are yet to reach all sections of society and accepted across the length and breadth of the country. Current experience and evidence indicates that the penetration and success of modern electronic payment products and services is concentrated to a large extent in the tier-I and tier-II locations of the country and to those citizens who already have access to the formal banking channels. The analysis also pointed out that the existing “fit for current purpose” payment system infrastructure needs to be transformed into a state of "ready for future challenges" infrastructure. This can be achieved through standardisation, interoperability, consolidation, common infrastructure creation and sharing intertwined with innovations in product and delivery channels. To drive this process forward, further capacity building in terms of both systems and human resources in the industry and the Central Bank (RBI) is essential. Also requiring special attention relate to managing cyber crime and security threats and the need to ensure seamless business continuity plans.

1.5 To elaborate, the segment of the population which has missed out the bandwagon of modern electronic payments are the unbanked and under-banked population of the country which constitute a significant portion of the population.

1.6 Indian payment systems thus pose significant challenges and opportunities in the coming years. An indication of the scope of the challenges and opportunities can be gathered from the following few pointers:

(i) Of the six lakh villages in India, the total number of villages with banking services stands at less than one lakh villages as at end March 2011 and nearly 145 million households are excluded from banking. This 'bottom of the pyramid' presents a large untapped market.

(ii) With financial inclusion gaining pace and the number of bank accounts increasing at a sustained pace (64.1 million accounts were opened through BCs in the recent past), the number of transactions is likely to increase further as citizens start using the banking channel and the payment and settlement infrastructure.

(iii) There is a huge potential of migrating government transactions (payments and receipts) to electronic mode. It is estimated that Government subsidies alone constitute more than Rs. 2.93 trillion and if these payments are effected electronically, it may translate to 4.13 billion electronic transactions in a year[2].

(iv) A fraction of the 10 million plus retailers in India have card payment acceptance infrastructure – presently this number stands at just 0.6 million.

(v) The e-commerce and m-commerce platforms are poised for a big stride in coming years. As per the report on E-commerce released by the Internet and Mobile Association of India (IAMAI), internet commerce industry in India is expected to be Rs.465.20 billion by end of 2011. Similarly, electronic bill presentment and payments involving insurance, utility bills, taxes, school fees, etc. pose a huge opportunity.

(vi) Currently the number of non-cash transactions per person stands at just 6 per year. If the efforts of financial inclusion bear fruit and if each citizen of the country undertakes a minimum of one transaction in month, the total transactions in the country would reach an astronomical 12 billion transactions per annum.

1.7 Additionally there are other developments on account of new technologies, new business models, changing demographic profiles and societal factors which are of relevance to the payment and settlement systems of the country.

1.8 Accordingly, the main focus of the Vision Document is to provide a thrust to modern electronic payments that are safe, simple and low-cost for use by all. Innovation will continue to be encouraged to foster this vision. This will increase the share of electronic payments and lead to an increase in the number of non-cash transactions per user in the country. Modern electronic payment systems will also meet the payment needs such as remittances under the overall ambit of financial inclusion.

1.9 In this endeavour, the role of the Government would be very crucial and significant. The intention of the Government to effect subsidy payments electronically, rather than through cash transfers, is a major step in this direction. As indicated above, the continued year-on-year growth in electronic transactions is likely to encounter a huge exponential rise in volume when electronic benefit transfers and direct transfers of subsidies from the government to the beneficiaries take place in an electronic mode. The systems have to be geared up and the reach expanded to serve the growing payment needs which would arise from this concerted move towards electronic payments.

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[2] Report of the Task Force on Aadhaar-enabled unified payment infrastructure http://finmin.nic.in/reports/Report_Task_Force_Aadhaar_PaymentInfra.pdf Page 63

1.10 Given the above, the Vision Document 2012-15 focuses on the ways and means to achieve the above goals of increasing the share of electronic payment transactions and taking measures towards moving to a less cash society and customer convenience.

1.11 The rest of the document has been organised into four broad chapters. Chapter 2 focusses on increasing the efficiency of the payment systems; while stressing on standardisation, portability and inter-operability and highlights the need for developing an integrated payment infrastructure. Addressing the risks in payment systems and ensuring compliance with international best practices through oversight are covered in Chapter 3. Chapter 4 is devoted to promoting access and inclusion and efforts towards improving Payment System Literacy and visibility. The role of innovation and the move towards a less-cash society is covered in Chapter 5.

1.12 Each chapter highlights the key focus areas. Each focus area has an objective, a descriptive approach and a proposed course of action. The action points have been consolidated and classified as short, medium and long-term in Annex I. The Annex also lists out measures which are being reviewed on a continuous basis.

Chapter-2

Key focus area

- ✓ ***Efficiency enhancement in the payment systems***
- ✓ ***Standardisation, portability and inter-operability***
- ✓ ***Development of infrastructure and integrated payment system***

2.1 **Efficiency enhancement in the payment systems**

Objective: To provide agility and dexterity - the combination of speed, efficiency, interoperability - to payments systems which would enable all stakeholders (users and providers) to realise their respective needs without compromise to quality of service through a proactive regulatory and policy framework.

Approach: While the long term goal would be to achieve standardised, interoperable and integrated payment systems, the continuing agenda would be to preserve and induce efficiency gains in the existing payment systems.

2.1.1 Cheque Clearing**:** Over the years efficiency in Cheque clearing has been brought by way of introduction of MICR processing, computerised clearing using the Electronic Cheque Clearing System (ECCS) which also facilitates speed clearing and introduction of cheque truncation system (CTS). Both these projects have been entrusted to NPCI – the umbrella retail payments organisation in the country.

2.1.2 The focus of cheque clearing operations in the coming years would be consolidation, rationalisation, centralisation, through the implementation of grid-based CTS solution (which is Information Technology Act compliant) across the country by NPCI. The grid-based CTS will usher in a standardised cheque clearing scenario across the country. The issuance of CTS 2010 compliant cheques will facilitate this process. Dialogue with the Government will continue to be pursued for issuance and adoption of CTS 2010 compliant cheques at the earliest and discontinue the existing practice of "paper to follow" in CTS by seeking amendment of the treasury rules. Notwithstanding the above, the policy disposition will continue to be biased towards electronic payments and products in terms of a more efficient clearing and settlement cycle as compared to that of the paper-based instruments.

2.1.3 The cheque clearing process is currently operated in more than 1100 clearing houses spread across the country. The need for standalone clearing houses (CHs) would be reviewed with the implementation of grid based CTS Grid across the country by NPCI. The cheque clearing in the entire country would be centralised into 3 to 4 grids (from existing 1100+ clearing houses) with the clearing houses/banks linked to the CTS grids by leveraging technology/ clearing house infrastructure. In smaller centres the clearing house or one of the banks could transform itself into a Service Bureau[3]offering scanning and transmission

[3] Central locations which will scan the cheques and present the same to the clearing house as also receive it and forward to the banks who avail its service.

facilities to member banks on a pay-per-use basis. The grid-based CTS project is expected to be made fully operational by NPCI by June 2013.

2.1.4 ***National Electronic Funds Transfer System (NEFT):*** Given the reach of the system and increasing volumes being handled every day, the system has become an important payment system. Introduction of user / customer friendly features and increasing the number of settlement cycles in NEFT would be further examined. The scope of NEFT in terms of access to non-bank authorised payment system operators who achieve a critical mass in terms of the volume and value of transactions being handled through a Sponsor Bank arrangement would also be examined.

2.1.5 ***National Electronic Clearing Services:*** Currently there are many avatars of ECS operating in the country with ECS on a standalone mode available in 81 centres. The way forward would be to consolidate local ECS and RECS into NECS.

2.1.6 Redesigning ECS suite of products to function as an Automated Clearing House (ACH) for bulk transactions including both credit and debit, is an option that needs further examination. However, this needs to be weighed against the roll out of ACH by NPCI as also the need to provide a backstop in the event of failure of any system.

2.1.7 One of the major challenges faced in the ECS schemes relate to mandate management and the ease with which the customers can manage their mandates. Efforts would be made to rationalise and strengthen the mandate management systems. This could be achieved through business process re-engineering resulting in an electronic (centralised/ decentralised) mandate management system.

2.1.8 In addition an electronic GIRO[4] instrument for effecting credit transfer by the payor from any branch of a bank or from any other authorised non-bank would also be explored.

2.1.9 ***Other payment systems:*** RBI would strive towards building and preserving efficiency gains in the authorised payment systems through a proactive regulatory and policy framework. The policy framework would seek to encourage only serious payment system providers with a national level outlook and a long term vision consistent with clearly set out objectives. For instance, while endeavours are on to actively encourage less cash transactions, an anomalous situation is also emerging. Several studies have revealed that a significant percentage of e-commerce (32%)5 takes place through the system of "cash on delivery" (COD). The COD mechanism has several drawbacks such as costlier order fulfillment, risk of fraud by cash collection agents and high cost of cash handling. Therefore, there is a need to substitute the COD mechanism through various non-cash payment modes such as mobile wallets, cards etc.

2.1.10 **Regulatory and policy framework for inducing efficiency:** RBI has been taking a number of initiatives in its capacity as operator, overseer and catalyst of payment system to put in place an efficient modern payment and settlement infrastructure in the country covering both the retail and large-value payments. However, given the gargantuan task of reaching to the masses, it is essential that payment systems need to continuously innovate

[4] A GIRO transfer is a payment instruction from one bank account to another bank account which is initiated by the payer, not the payee. Equivalents in other countries are the United States 'Automated Clearing House' for direct deposit and the Australian 'Direct Entry' system.

[5] Based on I-Cube Survey for IAMI done in 30 cities among Active Internet users who make a transaction at least once a month (March 2012)

and reinvent themselves with new technologies and business models. The continuously evolving payment system dynamics posit that the regulators are continuously engaged in gearing up to provide safe, efficient, robust, accessible and affordable payment services to the citizens. The challenge before the regulators therefore, is to understand the various issues and the subtle nuances of this ever evolving payments landscape and devise appropriate regulatory and policy framework for the national payment system based on principles of transparency, fairness, accessibility in terms of reach and cost and equitable competition amongst various providers of payment services.

2.1.11 ***Rationalise the guidelines for payment systems:*** Developing a conducive framework for growth of payment systems by developing policy guidelines which are equitable, uniform and risk based, agnostic of products and channels. The focus would be to prescribe principles and do away with micro management. Some of the efforts in this regard would be:

(i) Review the guidelines for prepaid payment instruments: The prepaid payment instruments (PPIs) while being a new product was also thought of as a substitute for paper/ cash. The prepaid payments industry issues PPIs in the form of papercoupons, mobile wallets or electronic formats (internet and cards). However, the dominance of paper vouchers in the PPI domain is negating the above policy goal. Further, as the paper voucher is treated as a bearer instrument any loss of that instrument entails the holder loosing full value of the holding. Thus, even looking at it from a customer protection angle the paper voucher as a PPI substituting for cash should be discouraged. It would be in the fitness of things that more emphasis is hence laid on electronic PPIs and entities currently engaged in paper based PPIs be given sufficient time to move to the electronic PPI based issuance systems.

(ii) Review the domestic money transfer guidelines and further fine-tune the role of non-bank payment system operators in facilitating domestic remittances.

(iii) Review the extant guidelines for acquiring of PoS/ ATM transactions and consider the role of non-bank payment system operators; examine the feasibility of introducing white label PoS.

(iv) Monitor the progress of white label ATMs and enhance the services available at white label ATMs.

2.1.12 **Course of action**:

(i) Monitor and review the implementation of grid based CTS in the country. With consolidation of cheque clearing under grid CTS, the need for standalone clearing houses would be reviewed. (para 2.1.2 and 2.1.3)

(ii) Dialogue with the Government to issue CTS 2010 compliant cheques and to discontinue the existing practice of "paper to follow" in CTS by amending the treasury rules. (para 2.1.2)

(iii) Adopt Service Bureau approach for linking smaller centres/banks to CTS. (para 2.1.3)

(iv) Redesign ECS suite of products to function as an Automated Clearing House (ACH) for bulk transactions including both credit and debit taking into account the implementation of ACH by NPCI. Pursue development of an electronic mandate management system. (para 2.1.6)

(v) Implement an electronic GIRO system in the country. (para 2.1.8)

(vi) Develop a policy framework with a system of incentives to encourage payment system operators with a national level outlook and long term vision to enter into the payment system landscape. Review the systems working of which are inconsistent with laid out objectives of moving to a less cash economy(para 2.1.9)

(vii) Review the guidelines for prepaid payment instruments and consider mandating migration of paper vouchers to electronic mode. (para 2.1.11 (i))

(viii) Review the domestic money transfer guidelines and further fine-tune the role of non-bank payment system operators in facilitating domestic remittances. (para 2.1.11 (ii))

(ix) Review the extant guidelines for acquiring of PoS and ATM transactions and consider the role of non-bank payment system operators; examine the feasibility of introducing white label PoS. (para 2.1.11 (iii))

(x) Monitor the progress of white label ATMs and enhance the services available at white label ATMs. (para 2.1.11 (iv))

2.2 **Standardisation, portability and inter-operability**

***Objective*:** Development of common standards for payment systems and strive towards interoperability and portability of payment systems.

Approach: Payment systems in India have grown in terms of size (volume and value), technology, product offering, innovation, channels, etc. over the last three decades or so. For ensuring that future developments take place in a manner so as to facilitate integration and interoperability, it is essential to develop standards for payment systems in terms of design, technical specification, data structure, security, identification modes, processing requirements, sizing and other specifications.

2.2.1 **Standardisation of message format and interoperability:** Indian payment systems have different types of messaging formats (message formats for cheques, RTGS, NEFT, ECS etc are different) which are specific to each payment system. Though the message format for debit and credit cards have some level of standardisation through the PCI (Payment Card Industry) standards[6], the same cannot be said about the prepaid payment instruments, especially issued by the non-bank entities. Adoption of international messaging standards like ISO 20022 across all payment systems would be examined.

[6] The PCI Security Standards Council is an open global forum, launched in 2006, that is responsible for the development, management, education, and awareness of the PCI Security Standards, including the Data Security Standard (PCI DSS), Payment Application Data Security Standard (PA-DSS), and PIN Transaction Security (PTS) requirements. The Council's five founding global payment brands -- American Express, Discover Financial Services, JCB International, MasterCard Worldwide, and Visa Inc. -- have agreed to incorporate the PCI DSS as the technical requirements of each of their data security compliance programs.

2.2.2 RBI has ab initio focussed on the standardisation and interoperability in the mobile banking and payments sphere by prescribing message standards and interoperability as an objective. While this has enabled customers of a bank to perform mobile banking transactions irrespective of their mobile service providers the same needs to be replicated in the sphere of mobile wallets and interbank mobile payments.

2.2.3 Standardisation will lead to harmonisation of payments processing across payment systems and participants and would bring several long term benefits. In this process it is recognised that there would be initial costs. This would have to be weighed against the benefits of straight through processing (STP), flexibility to expand, meeting future needs, greater payment agility and improved service quality by enabling further value propositionsto be made available. To make such a process robust focused attention towards risk management is essential. Convergence of various payment systems could make payments truly channel agnostic. Hence a payment instruction in a standardised format and environment would be able to run as an instruction in any payment systems depending on the availability of system, customer preference or price consideration.

2.2.4 Similarly, message formats for Government payments to facilitate STP and faster reconciliation at both the Government and the banks' end is the need of the hour. Common standardised message formats for Person to Business payments (for example utility bill payments and government tax payments) also need to be developed to facilitate such payments.

2.2.5 Therefore, the initiative should be to develop standardised message formats facilitating Person to Person, Person to Business, Business to Person, Person to Government, and Government to Person across payment systems.

2.2.6 SWIFT has recently been permitted to offer domestic messaging for financial transaction. This would provide an alternate messaging network for domestic financial transactions in addition to the existing Structured Financial Messaging Solution (SFMS).

2.2.7 Standardisation of acceptance infrastructure has been an ongoing activity. One of the notable initiatives is the constitution of a committee by the Government of India to prepare the technical specifications for Micro-ATMs/PoS devices. The standards aim at interoperability and common security features amongst others. The Micro-ATM standards will be notified for implementation across the country.

2.2.8 **Harmonisation of routing codes:** Currently different payment systems use different routing codes. The MICR code is used for cheque clearing and ECS operations, the IFSC code is used for NEFT and RTGS operations and the BSR code is used for identification of a bank branch for submission of returns to the RBI and is now being used for reporting government business details to Government. Additionally, Aadhaar number is sought to be populated along with bank account numbers to enable electronic transfer of Government benefits. With the in-principle approval for using SWIFT for domestic financial transactions, the participants in the payment system should not be burdened with yet another routing code.

2.2.9 There is therefore a need to harmonise all these routing codes in co-operation and collaboration with the stakeholders' viz., banks, Government, IBA, IDRBT, NPCI, SWIFT, etc. and the departments concerned within RBI. Further, any such exercise would involve business process re-engineering at the application level for various payment systems as well

as the core banking solution of banks. While this has major cost implications the fructification of efforts towards a uniform routing code for both domestic as well as cross border transactions would deliver major cost savings in terms of enhancing STP and minimising operational risks.

2.2.10 **Standardisation of account numbers:** Currently the account numbers maintained across various banks are different based on their requirements and range from 10 digits to 17 digits. Lack of uniformity in account numbers hinders STP and banks have to either mask excess digits or add extra digits to facilitate this process. There is therefore a business case for examining the need for developing a common account number across payment systems.

2.2.11 In this regard, the adoption of International Bank Account Number (IBAN)/ Basic Bank Account Number (BBAN) could be explored. IBAN/BBAN provide a format for account identification and also contain validation information in the form of check digits which can be validated at source based on a prescribed single standard procedure. The IBAN/BBAN in itself contains all the routing information needed to get a payment from one bank to another.

2.2.12 **Standardisation of bill payments:** India has a diverse and a complex biller market structure which varies with national /regional players and private / state owned entities. It is estimated that the Indian bill payment market is a US$ 160 billion market. Indian households pay on an average 50 -55 bills a year. Among the electronic payments infrastructure, ECS occupies a 50 % share followed by cards and bank account funding. It is estimated that a large portion of the bill payments are done at biller's location (generally walk-in customers). Thus there is a huge opportunity for developing a bill payment system for payments towards insurance premia, utility payments, taxes, school fees, etc. Towards this end, there is a need for developing an electronic GIRO system. One of the prerequisites for developing an electronic GIRO system is the standardisation of biller information.

2.2.13 **Move towards electronic trade finance:** Worldwide efforts are underway for moving towards electronic trade finance. Electronic invoicing and electronic letters of credit are important components of this measure. The capability exists but has remained largely unutilized. In consultation with IBA and others, an appropriate roadmap for this would be put in place.

2.2.14 **Standard setting body:** Consider feasibility of forming a standard setting body under the overall guidance of RBI with representation from IBA, IDRBT and other stakeholders (including other experts) to formulate standards, for various payment systems including pan India electronic GIRO based bill payment system and standardisation of biller information. The proposed body would also formulate standards for migrating to a uniform routing protocol for payment systems.

2.2.15 **Portability**: Portability, i.e. a seamless switchover in the case of failure of one payment system into another would be achieved through the adoption of these measures. This would contribute to system efficiency and enable the optimal utilisation of resources and continuation of operations with minimal inconvenience to users.

2.2.16 **Payment Hub**: The concept of a "payment hub" is being perceived to allow consolidation of multiple payment systems into one centrally managed mid-office payment system. This would necessitate putting in a streamlined IT architecture which would eliminate point to point interfaces for various payment products. Such a "payment hub" with the latest technology would result in facilitating faster and smoother electronic payment

transfers as opposed to the current system of individual interfaces being responsible for inputting electronic payment instructions into various systems. Once a payment hub becomes functional an individual bank would simply need to input an electronic payment instruction to the hub which would then automatically route the instructions to various payment systems. The concept of payment hub is very much dependent on standardised message formats and uniform routing codes. This would also enable rationalisation of costs for the banks.

2.2.17 **Course of Action:**

(i) Review the need for standardising the payment instruments, message format, payment instructions in consultation with stakeholders. Examine the international messaging format like ISO 20022 for adoption across payment systems. (para 2.2.1, 2.2.4 and 2.2.5)

(ii) Strive towards interoperability and portability in all payment systems including mobile payments; Aadhaar based payments in consultation with stakeholders. (para 2.2.2, 2.2.7 and 2.15)

(iii) Monitor the progress of use of SWIFT as an alternate messaging network.. (para 2.2.6)

(iv) Notify interoperable standards for all payment systems and products starting with standards for Micro-ATMs. (para 2. 2.7)

(v) Review the feasibility of adoption of IBAN/BBAN for standardisation of account numbers. (para 2.2.10 and 2.2.11)

(vi) Examine the feasibility of forming a standard setting body under the overall guidance of RBI with representation from IBA, IDRBT and other stakeholders (other experts, if required) to formulate standards, for various payment systems. The proposed standard setting body would also formulate standards for migrating to a uniform routing protocol for payment systems. (para 2.2.9,2. 2.12 and 2.14)

(vii) Encourage electronic invoicing and electronic letters of credits in trade finance. (Para 2.2.13)

(viii) Aim for a streamlined IT architecture which will eliminate point to point interfaces for various payment products through a “Payment Hub”. (para 2.2.16)

2.3 **Development of Infrastructure and an integrated payment system**

***Objective*:** The payment system infrastructure in the country which is well developed and robust in terms of processing capability, scalability, reliability, resilience and availability to be further augmented to ensure safety, security, robustness for providing low cost transaction processing capability and flexibility to system participants.

Approach: Payment system infrastructure includes the entire gamut of arrangements that facilitate flow of payments in the economy. An efficient and robust payment system infrastructure contributes to the economic growth of the country. To this end, RBI has been

taking a number of initiatives for building the payment system infrastructure and furthering the growth of electronic payment systems in the country.

2.3.1 **Capacity building of existing payment infrastructure:** The rapid growth in e-payment transactions in recent years and the peak volumes currently being handled by some of the systems have resulted in these systems nearing their initially sized processing capabilities. This exponential rise in volumes in electronic payment systems is primarily stemming from that segment of population that has a bank account. But, given the continued emphasis on shifting cash transactions to non-cash modes, the on-going financial inclusion initiatives (64 million new accounts opened) and the efforts of the Government to transfer all social benefits electronically to the citizens, the volume of transactions in the electronic payment systems is expected to grow manifold. The enormity of the numbers can be gauged from the fact that if the present subsidy schemes of the Government are brought into electronic payment modes this alone would translate into approximately 3810 million transactions per year. This would in turn add 12 to15 million transactions to the interbank payment systems over and above the transactions already being processed on a daily basis. There is therefore an urgent need for augmenting the processing capabilities of the existing payment systems including RBI operated payment systems such as NECS, NEFT and RTGS. The last named system is already scheduled to be replaced by the nextGen RTGS with higher processing capabilities and several additional features. Further, it is necessary to continue to monitor the progress of existing/new payment systems such as ACH and IMPS.

2.3.2 The other aspect which merits attention is the processing capabilities of payment system participants to handle spurt in transactions on account of an increase in the customer base, product lines and increased usage of non-cash payments without compromising the safety and efficiency. Strengthening the payment system infrastructure at the centralised processing sites may not suffice until and unless the systems at the participants end also are in readiness to handle the increased volume of transactions. Anecdotal evidence indicates that system participants are already stretched as regards their processing capabilities of their systems and are fast approaching limitations in increasing the TPS (transaction per second) volumes. A few of the payment system participants find it difficult to maintain the same level of efficiency and speed in all the payment channels on high volume and quarter ends. The incremental explosion in transactions as and when it happens would further add to this processing load.

2.3.3 **Capacity building- human resources:** While the payment systems in the future would continue to be automated and technology driven, it is necessary to keep in sight the need for trained human resources to man, run and supervise the systems. Therefore, capacity building in terms of human resources should be seen as an essential ingredient for ensuring the safe and efficient operations of the national payment systems infrastructure. In this regard, a conscious endeavour towards creating a pool of human resources needs to be undertaken by way of identification, training, deployment and succession planning being put in place by all the stakeholders including the Central Bank. Creating this pool of expertise would require that payment systems are made part of the core corporate plans, with the proviso that while payment systems are present as a larger public good, they in turn provide a sound value added business proposition as well. Towards this end, a focused effort in

building a skilled pool of human resources through workshops, seminars, summits, with active industry participation is needed.

2.3.4 **Need for expansion of payment infrastructure:** India has one of the lowest numbers of ATMs and PoS terminals per million population[7]. The need is more acute in the under-banked and unbanked segments of the country. There is therefore an urgent need for expanding the acceptance infrastructure such as ATMs, PoS terminals, micro-ATMs, handheld devices etc. in the country. Initiatives such as WLAs would go a long way in increasing the acceptance network. However, a lot more is needed to be done. Cost considerations will drive these forward.

2.3.5 Further, the introduction of new payment products and new payment channels either call for linkages to existing payment infrastructure or need for setting up new payment infrastructure. To achieve a truly interoperable and integrated payment system it is necessary that the payment systems operated by the non-banks are also connected to existing inter-bank payment systems such as ATM switches, card networks, IMPS etc.

2.3.6 New market developments call for new types of market infrastructure. The G-20 reforms in OTC derivatives call for reporting of data/trades to trade repositories. The G-20 reforms also call for electronic trading and centralised clearing where possible. These developments warrant setting up of new market infrastructures.

2.4 ***Building an integrated payment infrastructure:*** Developing payment infrastructure has associated costs. Development in silos would be an inefficient way of building capacities. Real benefits could be achieved through cooperation. There is a compelling case for building shared infrastructure with involvement of all stakeholders for a cost effective, increased coverage, rapid sustainable roll out.

2.4.1 Some of the areas where benefit of shared infrastructure could be immediately observed are in the areas of ATMs, PoS, micro-ATMs, prepaid cards etc. Industry developing a common platform for certification, deployment and management of PoS terminals could also result in huge savings and synergetic benefits for all stakeholders. The shared infrastructure would go a long way in strengthening of the acceptance infrastructure both for person to person fund transfers and biller payments.

2.4.2 As indicated in section 2, the objective of standardisation, interoperability and portability could be achieved through creation of an industry wide body for standard setting and certification of standardised products and services under the overall guidance of RBI as laid down in the PSS Act, 2007. This body could also be entrusted with the responsibility for standards setting, centralised repository for all the unique identifications (barcode for merchants/card numbers for credit/debit/prepaid cards i.e. the payments effected through products which are developed based on the value stored by banks or non-banks.

2.4.3 Course of action:

[7] The penetration of ATMs is 63 per million population and that of PoS terminals is 497 per million population (Source*: Statistics on payment, clearing and settlement systems in the CPSS countries - Figures for 2010*, CPSS Publications No 99, January 2012, BIS, Basel)

(i) Augment the existing hardware and network resources, besides optimising the application software in the RBI operated payment systems like NEFT, NECS etc.; implementation of next generation RTGS. (Para 2.3.1)

(ii) Monitor the progress of existing/new payment systems such as ACH, IMPS etc. (para 2.3.1)

(iii) Assess the processing capabilities of system participants to handle the increased volume in consultation with the stakeholders and draw up a plan for augmentation of the processing capabilities. (para 2.3.2)

(iv) Focused efforts in building a skilled pool of human resources through workshops, seminars, summits, with active industry participation. (Para 2.3.3)

(v) Provide linkages between Payment systems infrastructures to encourage convergence, portability and interoperability. (para 2.3.5)

(vi) Develop the full functionalities of a trade repository consistent with international best practices. (para 2.3.6)

(vii) Engage with all stakeholders for building an integrated payment infrastructure. (Para 2.4, 2.4.1 and 2.4.2)

Chapter-3

Key focus areas

- ✓ **Risks in payment systems**
- ✓ **Compliance with international standards through oversight**

3.1 Risk Management in payment systems

Objective: The broad contours of risk management would be holistic, comprising risk identification, measurement and containment.

Approach: RBI is committed to risk-reduction by putting in place risk-mitigation measures and promoting appropriate risk-management practices across the various payment systems.

3.1.1 The central bank's interest in payment systems arises on account of critical roles played by payment systems with respect to (i) financial stability; (ii) economic efficiency; (iii) monetary policy transmission; and (iv) fiscal policy implementation. While efficient payment systems could promote financial stability and economic efficiency, they have the potential to induce and transmit risks in the financial systems. With growth in volume and value of transactions being processed in the payment systems (the Indian RTGS system turns around the country's GDP in approximately 16 days) it becomes essential that the risks in payment systems are properly managed.

3.1.2 Risk management in payment systems has assumed greater significance on account of high level of integration and inter-linkages in the Indian context. Thus, though each payment system may have its own risk management framework in place, it should be understood that risk management rules and regulations of each payment system would have an important bearing on the overall containment of risk in the system.

3.1.3 As part of the international payment systems standard setting body the Committee on Payment and Settlement Systems (CPSS), the Reserve Bank is committed to the adoption and implementation of the international standards and best practices in payment systems including, the new CPSS-IOSCO standards "Principles for FMIs" towards end 2012.

3.1.4 Settlement in central bank money is considered as the safest settlement asset.. As part of risk management framework, attempts would be made towards settlement of all payment systems beyond a threshold, whether operated by banks or non-banks, to be settled in RBI's books of accounts. For instance centralised settlement of clearing files emanating from CTS, MICR clearing, other settlement files originated by non-bank entities like card networks such as VISA, MasterCard etc in the books of RBI could be considered.

3.1.5 One of the issues that is being debated globally is central bank liquidity support , as the lender of last resort, to systemically important CCPs which are crucial to financial stability. Current legal framework does not enable RBI to extend liquidity support to CCPs. Keeping in view the global agreement toward central banks ensuring "no technical obstacles" in extending emergency liquidity support to CCPs, the objective would be to put in place an alternate backstop arrangement for extending liquidity support to CCPs within the existing regulatory framework.

3.1.6 CCIL has been permitted to act as a trade repository in Forex OTC derivatives[8]. However, trade repository which is a new category of FMI has its own risk areas, such as confidentiality, privacy, access to TR data and disclosure to markets. In Indian scenario the functions of CCPs and TRs are vested with one entity. The challenge ahead would be to ring fence the TR function through a separate ownership structure.

3.1.7 Principles for FMIs recommend a settlement guarantee mechanism for Multilateral Deferred Net Settlement (DNS) systems. As part of best practices the RBI has already put in place such settlement guarantee mechanism for systems such as IMPS. The RBI would introduce settlement guarantee mechanism for the DNS systems such as NEFT operated by it.

3.1.8 Further, as a member of the G-20 forum, all measures for strengthening payment systems including OTC derivative reforms[9] will be actively pursued. India has already embarked upon a number of measures towards meeting the G-20 requirements. For instance forward foreign exchange contracts are settled on a guaranteed basis while interest rate derivatives are settled centrally on a non-guaranteed basis. The proposal to start guaranteed settlement in interest rate derivatives is under consideration. Central clearing requirements for foreign exchange options would be brought about in a phased manner.

3.1.9 Another risk which needs to be recognised and mitigated is concentration risk in payment systems. In the Indian payment systems, concentration risk is evident with only a single CCP operating in RBI regulated markets. Concentration risk is also becoming evident with several retail payments under a single umbrella organisation. In terms of deployment of acceptance infrastructure such as POS terminals there again is a risk with only three banks in the acquiring space. Similarly, there is a near monopoly in terms of POS manufacturing capability in the country. Exclusivity or near monopolistic domination by any one or two stakeholders in the payment space is seen as a risk which needs to be addressed. Appropriate policy measures need to be taken in consultation with stake holders including adoption of new technology and standards to mitigate concentration risk. A comprehensive review of the concentration risks associated with multiple banks relying on one or two participants (mainly technology service providers) for operating certain payment systems viz. mobile banking/pre-paid would also have to be addressed.

3.1.10 The clearing member structure has been expanded in centralised payment systems (RTGS, NEFT) through the sub-membership route. Tiering is also visible in the designated settlement bank model of CCIL and in decentralised payment systems (cheque clearing and ECS). Tiering is found useful as it enables participants not fulfilling the access criteria norms to nevertheless use and benefit from the centralised payment systems at lower costs. However, in a highly tiered payment system direct participants internalise many payments of indirect participants in their own books (where such systems do exist, these are termed as 'quasi systems'). The operations of quasi systems could also pose increased risks as any credit or operational failure of a quasi system or its sub-member could disrupt the entire

[8] CCIL is already operating as trade repository in IRS and CDS.

[9] The reforms are oriented towards (i) electronic trading; (ii) standardisation and central clearing; and (iii) reporting to Trade Repositories. These reforms initiatives are required to be implemented by end of 2012. There are several work-streams of international standard setting bodies like FSB, CPSS, IOSCO, CGFS etc. which are in the process of providing the roadmaps for achieving the G-20 objectives which are to be put in place by end of 2012.

settlement process. Accordingly there would be a greater focus on quasi payment systems and the risk management processes adopted by them to contain risks.

3.1.11 It is imperative to leverage on the roll-out of CBS in RBI by enabling settlement in central bank money by all clearing houses in the country in co-ordination with DGBA by opening of current accounts and securities accounts for all banks. A single settlement account for each bank in CBS may obviate the need to have several settlement accounts with various banks managing Clearing Houses across the country.

3.1.12 **Safety and security of electronic transactions*:*** As customers continue to increasingly adopt electronic payment products and delivery channels for their transactional needs, it is necessary to recognise that security and safety have to be robust. Any security related issues resulting in fraud have the potential to undermine public confidence in the use of electronic payment products which will impact their usage. It is also recognised that while electronic transactions provide convenience to the customers, they should necessarily have adequate security features to prevent fraud and misuse. In achieving this objective the ease and efficiency in operations for the customers should continue to be retained. Accordingly payment product should be designed which encourage easy adoption by customers for their payment needs while at the same time assuring them a high level of security to prevent fraudulent usage. With this focus in mind, product design, implementation, availability and access to genuine customers should be aimed towards maintaining high security standards on par with not only domestic but international standards as well.

3.1.13 Increased fraudulent activities which include attacks on IT infrastructure and delivery channels (cyber attacks), also pose significant risks to payment system providers. Necessary measures to strengethen security have to be taken as such attacks are growing in scale and sophistication. This may also result in reputational risks to the payment system providers.

3.1.14 Accordingly, adoption of technology, authentication protocols, security features for safety and security of payment products and channels would be promoted. Steps would be taken to continuously engage in dialogue with the stakeholders viz. security, IT, legal experts and industry bodies and the government to ensure safety and security of payment products.

3.1.16 **Course of action:**

(i) Prepare roadmap for FMIs in India viz. CCPs, CSDs, SSS, LVPS etc. for adhering to the new FMI standards and monitor their compliance. (para 3.1.3)

(ii) Emphasise FMIs running systemically important payment systems and systems which are of system-wide importance to have an appropriate risk management framework and perform stress testing and back-testing on a periodic basis for ensuring the adequacy of the risk management framework. (para 3.1.3)

(iii) Promote funds settlement of all payment systems beyond a threshold, whether operated by banks or non-banks in RBI's books of accounts. (para 3.1.4 and 3.1.11)

(iv) Put in place an alternate backstop arrangement for extending liquidity support to CCPs within the existing regulatory framework. (para 3.1.5)

(v) Ring fence the TR function of CCIL through a separate ownership structure. (para 3.1.6)

(vi) Introduce settlement guarantee mechanism for the DNS systems operated by the Reserve Bank such as NEFT.. (para 3.1.7)

(vii) Support the G-20 initiatives for reforms in OTC derivatives[10] and implementation of these initiatives in the OTC derivatives markets by putting in place appropriate payment system infrastructure. (para 3.1.8)

(viii) Introduce CCP arrangements for OTC derivatives to mitigate the risks associated with OTC derivatives. (para 3.1.8)

(ix) Adopt new technology and standards to mitigate concentration risk. (Para 3.1.9)

(x) Focus on quasi payment systems and their risk management processes. (Para 3.1.10)

(xi) Adoption of technology, authentication protocols, security features for safety and security of payment products and channels. (Para 3.1.14)

(xii) Dialogue with the stakeholders viz. security, IT, legal experts and industry bodies and the government to ensure safety and security of payment products. (Para 3.1.14)

3.2 Compliance with international standards through oversight

Objective: Smooth operations of payment systems with focus on off-site surveillance, need based inspection of retail payments and annual inspections of FMIs.

Approach: The oversight of payment systems will continue to be based on the pillars of authorisation, safety, security, efficiency and accessibility.

3.2.1 The smooth operations of payment systems attains critical importance from a financial stability perspective. Accordingly, well-functioning payment systems not only are dependent on the 'risk mitigation measures' (covered in the above section on **Risk Management in payment systems**) but also on the safety and security of the system, the minimisation of operational risks, effective management of various services and technology providers.

3.2.2 Towards this end the Bank has taken a number of initiatives by way of putting in place a process of authorisation for operations of payment systems; monitoring the operations of the authorised payment systems including the risk mitigations measures for each payment system in operation; assessing the retail, large value, CCP and securities settlement systems against international standards. As part of its ongoing efforts in this direction, policy framework delineating the exit criteria for authorised payment system operators including guidelines for managing orderly winding down of operations would be laid down.

3.2.3 There is a need for consolidation of the instructions/guidelines issued for operations of various payment systems and products and simultaneously updating the procedural guidelines for various payment systems.

[10] The reforms are oriented towards (i) electronic trading; (ii) standardisation and central clearing; and (iii) reporting to Trade Repositories. These reforms initiatives are required to be implemented by end of 2012. There are several work-streams of international standard setting bodies like FSB, CPSS, IOSCO, CGFS etc. which are in the process of providing the roadmaps for achieving the G-20 objectives which are to be put in place by end of 2012.

3.2.4 Over the years 'intermediaries' especially in the e-commerce arena are playing a crucial role. Though these entities are currently not authorised, but have been advised to put in place customer fund protection measures, given their growing role there is a need for bringing these entities under the direct regulation of the Bank by prescribing standards and certain 'due diligence' criteria. Some of the areas which need focused attention are in providing complete transparent information to the customers on the success/failure of transactions; uniform and standard practice for refunds to the customers for failed/cancelled transactions and related customer service issues through dedicated customer service centres. Additionally the need to continue with the existing light touch regulations vis-a-vis a focused oversight including authorisation for such of those entities which have a significant presence in the market would be explored. Non bank entities would continue to receive focused oversight attention.

3.2.5 The current oversight framework is based on the CPSIPS, RSSS and RCCP. Self-assessment templates for retail payments based on the Core Principles for Systemically Important Payment Systems, as applicable to retail payments have been prepared and used by authorised entities and on-site inspections undertaken based on the same. The Oversight framework will now be drawn up based on the experience gathered as also taking into account the new CPSS standards, the Principles of Financial Market Infrastructures. RBI in-line with the international co-operative framework designed by CPSS for oversight of SWIFT and the domestic regulatory needs, will design an appropriate oversight regime.

3.2.6 Oversight of authorised payment systems is carried out through a combination of off-site monitoring and a need based on-site inspection. ORFS (Online Return Filing System) which uses structured templates for collection of data on various payment systems operated is used as part of the off-site monitoring process. The ORFS system would be further streamlined to capture data on products and systems.

3.2.7 **Course of action**:

(i) Draw up exit criteria for authorised payment system operators including guidelines for managing orderly winding down of operations. (para 3.2.2)

(ii) Issue master circulars providing a consolidated view of various guidelines / instructions issued. (para 3.2.3)

(iii) Update and review Procedural Guidelines for various payment systems. (para 3.2.3)

(iv) Dialogue with stakeholders with a view to introducing a direct regulatory framework including authorising intermediaries based on their turn-over and other parameters, with special reference to customer funds protection and refunds. (para 3.2.4)

(v) Focus attention on role of non-banks (including cross border inward remittance service providers) and the services that they offer, including their access to formal payment system networks; settlement in central bank money, and their risk management frameworks. (Para 3.2.4)

(vi) Rationalise self-assessment template for retail payments based on the new PFMI. (para 3.2.5)

(vii) Prepare a resolution framework for Financial Market Infrastructures in line with international initiatives. (para 3.2.5)

(viii) Put in place SWIFT– oversight framework in-line with the international co-operative framework designed by CPSS and the domestic regulatory needs. (para 3.2.5)

(ix) Ensure compliance with the new international standards Principles of Financial Market Infrastructures by CCPs, CSDs, Trade Repository and other systemically important payment systems. (Para 3.2.5)

(x) Operationalise the system for receipt of on-line data/information flow through the ORFS channel. (para 3.2.6)

Chapter- 4

Key focus areas

- ✓ **Promote access and inclusion**
- ✓ **Payment system literacy and visibility**

4.1 **Promote Access and Inclusion**

Objective: To provide access to payment services to all and promote financial inclusion.

Approach: Provide a conducive regulatory framework for the introduction of technology based innovative products for the use of all. Ensure the availability of low cost and safe domestic and cross border remittances.

4.1.1 The Bank is committed to ensuring the reach of payment systems at a reasonable cost to the people at large. RBI has so far played the role of an enabler in this regard by opening up the payment systems space to non-banks, liberalising the norms for issue of prepaid payment instruments, conduct of mobile banking and facilitating domestic money transfers with a bank account only at one end, relaxing the BC norms by not only allowing for-profit companies to be appointed as BCs but also permitting interoperability at the BC end.

4.1.2 It is a goal of the Reserve Bank to ensure that every Indian should have a bank account with savings, credit and payments products. To this end issues relating to identification documents and KYC norms need to addressed. Other issues which have a bearing in expanding the reach of payment systems are cost, geographical barriers and logistics. Such constraints could be overcome through deployment of modern technology, innovative payment systems and by deepening the acceptance structure for electronic payments.

4.1.3 To drive this process further it is necessary to create the acceptance eco-system for electronic products. This would involve devising an appropriate policy framework in which authorised private sector entities would play a significant role as in the case of White Label ATMs. Other initiatives in the directions could be revisiting the current KYC norms for various prepaid payment products and explore the feasibility of a single, rationalised norm for semi-closed prepaid payment instruments (which can be used only for purchase of goods and services).

4.1.4 In achieving the goal of inclusiveness and accessibility, both the banks and non-banks, need to play a complimentary role. Both banks and non-banks could continue to provide payment services with only the settlement of funds continuing to remain a purely inter-bank domain.

4.1.5 The G-20 initiatives on financial inclusion and government payments are part of the roadmap which the Bank will continue to actively fulfill..

4.1.6 **Course of action**:

(i) Address the issue of identification document especially in a country where large segment is non-banked. Examine/review the documents and identification requirements for carrying out payment transactions. (Para 4.1.2)

(ii) Devise a strategy for the creation of an acceptance eco system for electronic products in which authorised private sector entities would play a significant role. (Para 4.1.2 and 4.1.3)

(iii) Revisit the current KYC norms for various prepaid payment products and explore the feasibility of a single, rationalised norm for semi-closed prepaid payment instruments (which can be used only for purchase of goods and services). (Para 4.1.3)

(iv)Encourage induction of more merchants/retailers into the electronic payments platform. (Para 1.4)

(v) Continue to work actively to fulfill the G-20 initiatives on financial inclusion and government payments. (Para 41.5)

4.2 Affordability is key to inclusion and access

Objective: Develop a pricing strategy to foster access and inclusion

Approach: To encourage access to modern electronic payment systems to all, an appropriate pricing of payment products is necessary.

4.2.1 One of the dilemmas that a central bank like RBI faces is whether it should play an active role in pricing of payment products. The payment system providers may argue that pricing should be market driven and left to them. The public may expect the regulator to ensure a fair pricing structure. The difficulty for the regulator is in balancing these expectations.

4.2.2 Regulatory intervention becomes necessary when the industry behaves in a manner where the public policy objectives of affordability and accessibility to payment products are not being served. Intervention is warranted when customers shy away from using payment products on account of arbitrary fixation of charges that are unreasonably high. The rationalisation of service charges for paper and electronic products by the Reserve Bank was accordingly an attempt in this direction. However, regulatory intervention in pricing needs to be well thought out especially in a market like India where electronic payment eco system is yet to reach the desired level as compared to developed countries where the penetration of electronic payment eco system is quite high. This is on account of the unintended outcome that arbitrary regulatory interventions in pricing may make the business uneconomical for the service providers and which could come in the way of further expansion of the electronic eco-system.

4.2.3 The extensive use of technology enables significant cost reduction, increased convenience, service improvements, and risk mitigation, etc. Accordingly, payment service providers (both banks and non-banks) should necessarily share the benefits of modern technology with the customers in terms of reduced transaction costs.

4.2.4 Pricing of transactions should be based on determining factors such as: urgency of the transactions, mode of settlement (real-time vs deferred), mode of initiation of transaction by customer (electronic or paper), nature of transactions (financial market, corporate,

government, person to person, e-commerce etc.), risk premium etc. With this in mind, there is a need for reviewing the charge structure in cards.

4.2.5 From a customer's perspective, factors which weigh in choice of payment products are convenience, recipient beneficiary's choice and of course, the cost of transacting vis-a-vis transacting in cash. In order to make a decisive move towards a less cash society, it is imperative that transacting through electronic mode is as attractive as transacting with cash. For example, for the customers the direct cost for transacting in cash is cheaper than any mode of non-cash transactions in India. Further there is a need for designing the pricing strategy in a manner that would promote electronic payments over the paper based payments.

4.2.6 Further there is need for simplifying the pricing structure by removing the complexities and provide a transparent and uncluttered pricing structure to the end user.

4.2.7 Thus pricing of payment services need to be guided by the two parameters of (i) payment services being a "public good"; and (ii) self sustaining and viable business proposition. The role of central bank would be developing a suitable regulatory framework based on these two objectives.

4.2.8 Course of action: The pricing strategy, as part of access and inclusion efforts, would:

(i) Review the pricing structure in card payments. (Para 4.2.4)

(ii) Dialogue with stakeholders including the Government for making direct cost of transacting in electronic payments as attractive as transacting with cash. (Para 4.2.5)

(iii) Design a pricing strategy that would influence the payment behaviour of customers which encourages use of electronic products over cash and paper based products. (Para 4.2.5)

(iv) Draw up strategy for disincentivising usage of cheques above a certain threshold limit by customers and corporate. (Para 4.2.5)

(v) Simplify the pricing structure, by reducing the number of bands and providing a transparent and uncluttered pricing structure to the end user. (Para 4.2.6)

4.3 **Payment System Literacy and visibility**

Objective: The payment system literacy and visibility would be increased through electronic banking awareness training (eBAT). This will bring awareness of the various payment products and the ease with which they can be used to encourage the use of non-cash payment products and provide impetus to the move towards a less-cash society.

Approach: It is essential for the public at large to have access to "easy to understand" information on the various payment and settlement systems and options available to them for carrying out their payments in a safe, secure and efficient manner.

4.3.1 To this end, the Bank will continue to publish FAQs on the various payment systems on its website, prepare brochures (including in regional languages), participate in town hall events and outreach programmes. Additionally, the need for spreading awareness of various products through the electronic media is also needed. These measures are essential to

create awareness regarding the various payment systems amongst all citizens and across the length and breadth of the country.

4.3.2 **Course of action**: The eBAT initiative will include:

(i) Organise workshops, participate in outreach programmes, set up stalls at important melas /exhibitions. (Para 4.3.1)

(ii) Prepare videos for telecast at these events. (Para 4.3.1)

(iii) Release advertisement in newspaper and electronic media, including in vernaculars language in collaboration with IBA. (Para 4.3.1)

(iv) Reach out to schools and colleges across the nation. (Para 4.3.1)

Chapter-5

Key focus areas

- ✓ **Innovation and new product developments**
- ✓ **Move towards a less-cash society**

5.1 **Innovation and new product developments**

A number of innovative products for making payments have been developed in recent years, taking advantage of rapid technological progress and financial market development. Transactions made using these innovative products are accounting for an increasing proportion of the volume and value of domestic and cross-border retail payments. The possibility of electronic money taking over from physical cash for most small-value payments continues to evoke considerable interest among both the public and the various authorities concerned, including central banks. Although e-money has not been a very dynamic area in the field of retail payments recently, its development raises policy issues for central banks as regards payment system oversight, the possible implications for central banks' revenues and the implementation of monetary policy

Objective: The focus of innovation should veer towards convergence of products and services which should be available across all delivery channels to all in a low cost safe and efficient manner.

Approach: The regulatory stance would be to promote innovation to achieve the goals of inclusion, accessibility and affordability, while remaining technology neutral.

5.1.1 In the Indian context most innovations during the past few decades have been driven with the regulator at the helm and have taken place in a calibrated and gradual manner. We have now reached a stage where the payment systems are poised to jump into a higher trajectory which will be driven largely by new technologies, new business models and demographic factors and societal factors.

5.1.2 The new technology trends such as cloud computing, mobile telephony, Service Oriented Architecture (SoA), growing popularity of virtual world etc, are likely to bring about significant changes in the way payments would be processed in the future. With high tele-density, introduction of smart phones, new technology such as 3G, etc mobile telephony is well poised to emerge as a retail payment instrument of the future in terms of costs, convenience, speed and reach. The ASSOCHAM and Deloitte report 'Mobile Payments in India New frontiers of growth' April 2011 identifies the critical factors viz. mass reach, security, service provider agnostic, ease and convenience of operation, leverage on existing infrastructure and competitive pricing as critical factors for the success of mobile payments in India. The future of mobile payments in India will to a large extend depend on convergence of business models of banks, telecom operators and other stake holders.

5.1.3 Another technology which in conjunction with mobile phone is likely to drive the future payment mode is NFC. Use of NFC as a future payment technology is gaining attention worldwide with many technology providers who are experimenting with this technology.

Convenience and security rolled into one simple "tap and pay" process would drive this forward. In India there have been a few test runs with NFC payments but credible products are yet to be rolled out. Challenge with NFC is finding an ideal solution to host multiple cards in the same NFC handset. Further, use of NFC would require changes in payment processing, upgrading the PoS terminals at the merchant ends.

5.1.4 There is an urgent need for expanding the acceptance infrastructure such as ATMs, PoS terminals, micro-ATMs, handheld devices etc. A fraction of the 10 million plus retailers in India have card payment acceptance infrastructure – presently this number stands at just 0.6 million. Use of modern technology such as mobile PoS could be explored to cover the large base of retailers across the country. The suitability, adaptability, affordability of the newer technologies would continue to be explored.

5.1.5 As indicated elsewhere in this document, there is a business case for implementing an electronic GIRO system in India. The proposed system could be implemented by leveraging the existing and/or in-pipeline payment systems. The proposed system could also be leveraged for meeting the requirements of e-commerce and m-commerce and person to person payments.

5.1.6 RBI recognises that innovation is necessary to provide safe, secure, efficient low cost payment systems. Toward this end the ultimate goal is to strive towards a payment product which is channel and form agnostic. The regulatory bias would be to promote innovations in consultation with all stakeholders. Policy formulation would be to continue to encourage innovation while ensuring customer protection by balancing responsibilities of banks and customers and addressing risk in technology implementations. In this regard, feasibility of using Aadhaar as an authentication protocol for all payment systems transactions would be examined. Further, introduction of customer protection measures such as zero liability clause would be examined.

5.1.7 In the move towards less cash society, the Reserve Bank of India will continue to actively engage with the Government in promoting non-cash mode benefit transfers to the citizens and Government to business payments and person to Government payments.

5.1.8 **Course of action:** Convergence in innovation being the focus, the following innovations could be encouraged:

(i) Encourage further adoption of mobile banking and NFC in payment systems. To achieve this it is necessary that MNOs cooperate and collaborate with the banking sector through a centralised platform such as for example the IMPS of NPCI. (Para 5.1.2 and 5.1.3)

(ii) Promote mobile PoS to cover the large base of retailers across the country. (Para 5.1.4)

(iii) Implement electronic GIRO in India either by putting a new system or by leveraging the existing and/or in-pipeline payment systems. Increase the scope of GIRO for accepting e-commerce and m-commerce transactions and P2P transactions. (Para 5.1.5)

(iv) Draw up a policy framework establishing roles and responsibilities of banks and customers in electronic transactions to minimise fraud, fix responsibilities and zero liability protection to increase customer confidence in all electronic transactions. (Para 5.1.6)

(v) Examine the feasibility of using Aadhaar as authentication protocol for all financial transactions (Para 5.1.6)

(vi) Promote and facilitate electronic payments for various Government payment needs as a statutory banker tothe Government. Work in collaboration on pilots with the Government for using new technologies for collection of tolls on highways; integrated urban transport etc. (Para 5.1.7)

5.2 **Moves towards less-cash economy**

Objective: Incentivise all segments of society to increasingly adopt non-cash electronic modes of payment in lieu of cash.

Approach: For non-cash payments to proliferate, they should be easy to use, readily available and accepted, should not impose any undue financial burden on the merchant and user, and should offer an appropriate level of security.

5.2.1 One of the biggest challenges towards a less-cash society is that dependency on cash is a deep rooted habit in India. From a customer's perspective cash is seen as a better mode of payment vis-a-vis non-cash modes from several aspects such as acceptance, cost, speed, anonymity, having a control of spending, familiarity, cash rebates etc. For non-cash payments to have wider acceptance there are several underlying factors which need to impact the behavioural traits. For non-cash payments to proliferate, they should be easy to use, readily available and accepted, provides the same degree of comfort, should not impose any undue financial burden on the merchant and user, and should offer an appropriate level of security in its repeated and regular usage with a zero-fail rate. Therefore a marked change in the behavioural patterns of both customers and merchants is required for faster and greater adoption of non-cash payment modes. The success and speed of migration to non-cash mode from cash mode would require co-ordinated efforts from all stakeholders viz. RBI, Government, payment system participants and public.

5.2.2 The level of customer protection available in paper transactions and electronic transactions in India varies. In paper transactions in case of fraudulent/unauthorised transactions, the responsibility to prove 'good-faith' lies with the banks, whereas in electronic transactions, the onus mostly lies with the customers. In order to encourage electronic modes of payment, it is necessary that customers should enjoy the same level of protection as is available for paper-based transactions if not more.

5.2.3 **Course of action:**

(i) Enhance the availability and acceptability of alternate payment instruments in lieu of cash. (Para 5.2.1)

(ii) Promote convergence of mobile technology, and various form factors that could lead to mobile becoming a single instrument for carrying out financial transactions. (Para 5.2.1)

(iii) Incentivise payments to be made electronically. Possible scenarios include rebates when dues to the Government are paid electronically. (Para 5.2.1)

(iv) Put in place a transaction limit for payments made by cash and/or cheques (the Government has mandated that all payments by Government departments above Rs.25,000/- have to be made electronically). (Para 5.2.1)

(v) Promote use of prepaid payment instruments as cash substitute. (Para 5.2.1)

(vi) Implement customer protection for all electronic payments including a "Zero Liability" framework. (Para 5. 2.2)

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Annex-I

Roadmap for Implementation

The timeframe for reaching the various milestones is encapsulated below. The aspects which would be attended to on an ongoing basis are indicated under the 'Ongoing' category.

Ongoing (continuing activity)

Action Point	Para
Redesign ECS suite of products to function as an Automated Clearing House (ACH) for bulk transactions including both credit and debit taking into account the implementation of ACH by NPCI. Pursue development of an electronic mandate management system.	2.1.6
Focused efforts in building a skilled pool of human resources through workshops, seminars, summits, with active industry participation.	2.3.3
Engage with all stakeholders for building an integrated payment infrastructure.	2.4, 2.4.1 2.4.2
Support the G-20 initiatives for reforms in OTC derivatives and implementation of these initiatives in the OTC derivatives markets by putting in place appropriate payment system infrastructure.	3.1.8
Introduce CCP arrangements for OTC derivatives to mitigate the risks associated with OTC derivatives.	3.1.8
Adopt new technology and standards to mitigate concentration risk.	3.1.9
Focus on quasi payment systems and their risk management processes.	3.1.10
Adoption of technology, authentication protocols, security features for safety and security of payment products and channels.	3.1.14
Participation in international forums for sharing information on cyber security matters and dialogue with the stakeholders, viz. security, IT, legal experts and industry bodies and the government to ensure safety and security of payment products.	3.1.14
Focus attention on role of non-banks (including cross border inward remittance service providers) and the services that they offer, including their access to formal payment system networks; settlement in central bank money, and their risk management frameworks.	3.2.4
Put in place SWIFT– oversight framework in-line with the international co-operative framework designed by CPSS and the domestic regulatory needs.	3.2.5
Operationalise the system for receipt of on-line data/information flow through the ORFS channel.	3.2.6

Encourage induction of more merchants/retailers into the electronic payments platform.	4.1.4
Continue to work actively to fulfill the G-20 initiatives on financial inclusion and government payments.	4.1.5
Dialogue with stakeholders including the Government for making direct cost of transacting in electronic payments as attractive as transacting with cash.	4.2.5
Organise workshops, participate in outreach programmes, set up stalls at important melas /exhibitions.	4.3.1
Enhance the availability and acceptability of alternate payment instruments in lieu of cash.	5.2.1
Promote convergence of mobile technology, and various form factors that could lead to mobile becoming a single instrument for carrying out financial transactions.	5.2.1
Incentivise payments to be made electronically. Possible scenarios include rebates when dues to the Government are paid electronically.	5.2.1
Put in place a transaction limit for payments made by cash and/or cheques (the Government has mandated that all payments by Government departments above Rs.25,000/- have to be made electronically).	5.2.1
Promote use of prepaid payment instruments as cash substitute.	5.2.1
Implement customer protection for all electronic payments including a "Zero Liability" framework.	5.2.2

Short term (0-18 months)

Action Point	Para
Monitor and review the implementation of grid based CTS in the country. With consolidation of cheque clearing under grid CTS, the need for standalone clearing houses would be reviewed.	2.1.2 2.1.3
Adopt Service Bureau approach for linking smaller centres/banks to CTS.	2.1.3
Develop a policy framework with a system of incentives to encourage payment system operators with a national level outlook and long term vision to enter into the payment system landscape. Review the systems working of which are inconsistent with laid out objectives of moving to a less cash economy.	2.1.9
Review the guidelines for prepaid payment instruments and consider mandating migration of paper vouchers to electronic mode.	2.1.11
Review the domestic money transfer guidelines and further fine-tune the role of non-bank payment system operators in facilitating domestic remittances.	2.1.11
Review the extant guidelines for acquiring of PoS and ATM transactions and consider the role of non-bank payment system operators; examine the feasibility of introducing white label PoS.	2.1.11
Monitor the progress of white label ATMs and enhance the services available at white label ATMs.	2.1.11
Monitor the progress of use of SWIFT as an alternate messaging network.	2.2.6

Notify interoperable standards for all payment systems and products starting with standards for Micro-ATMs.	2.2.7
Examine the feasibility of forming a standard setting body under the overall guidance of RBI with representation from IBA, IDRBT and other stakeholders (other experts, if required) to formulate standards, for various payment systems. The proposed standard setting body would also formulate standards for migrating to a uniform routing protocol for payment systems.	2.2.9 2.2.12 2.2.14
Augment the existing hardware and network resources, besides optimising the application software in the RBI operated payment systems like NEFT, NECS etc.; implementation of next generation RTGS.	2.3.1
Monitor the progress of existing/new payment systems such as ACH, IMPS etc.	2.3.1
Assess the processing capabilities of system participants to handle the increased volume in consultation with the stakeholders and draw up a plan for augmentation of the processing capabilities.	2.3.2
Emphasise FMIs running systemically important payment systems and systems which are of system-wide importance to have an appropriate risk management framework and perform stress testing and back-testing on a periodic basis for ensuring the adequacy of the risk management framework.	3.1.3
Introduce settlement guarantee mechanism for the DNS systems operated by the Reserve Bank such as NEFT.	3.1.7
Draw up exit criteria for authorised payment system operators including guidelines for managing orderly winding down of operations.	3.2.2
Issue master circulars providing a consolidated view of various guidelines / instructions issued.	3.2.3
Update and review Procedural Guidelines for various payment systems.	3.2.3
Dialogue with stakeholders with a view to introducing a direct regulatory framework including authorising intermediaries based on their turn-over and other parameters, with special reference to customer funds protection and refunds.	3.2.4
Rationalise self-assessment template for retail payments based on the new PFMI.	3.2.5
Address the issue of identification document especially in a country where large segment is non-banked. Examine/review the documents and identification requirements for carrying out payment transactions.	4.1.2
Revisit the current KYC norms for various prepaid payment products and explore the feasibility of a single, rationalised norm for semi-closed prepaid payment instruments (which can be used only for purchase of goods and services).	4.1.3
Review the pricing structure in card payments.	4.2.4
Design a pricing strategy that would influence the payment behaviour of customers which encourages use of electronic products over cash and paper based products.	4.2.5
Draw up strategy for disincentivising usage of cheques above a certain threshold limit by customers and corporate.	4.2.5
Simplify the pricing structure, by reducing the number of bands and providing a transparent and uncluttered pricing structure to the end user.	4.2.6
Release advertisement in newspaper and electronic media, including in vernaculars language in collaboration with IBA.	4.3.1

Reach out to schools and colleges across the nation.	4.3.1
Draw up a policy framework establishing roles and responsibilities of banks and customers in electronic transactions to minimise fraud, fix responsibilities and zero liability protection to increase customer confidence in all electronic transactions.	5.1.6
Examine the feasibility of using Aadhaar as authentication protocol for all financial transactions.	5.1.6

Medium term (18-36 months)

Action Point	Para
Dialogue with the Government to issue CTS 2010 compliant cheques and to discontinue the existing practice of "paper to follow" in CTS by amending the treasury rules.	2.1.2
Implement an electronic GIRO system in the country.	2.1.8
Review the need for standardising the payment instruments, message format, payment instructions in consultation with stakeholders. Examine the international messaging format like ISO 20022 for adoption across payment systems.	2.2.1 2.2.4 2.2.5
Review the feasibility of adoption of IBAN/BBAN for standardisation of account numbers.	2.2.10 2.2.11
Encourage electronic invoicing and electronic letters of credits in trade finance.	2.2.13
Develop the full functionalities of a trade repository consistent with international best practices.	2.3.6
Prepare roadmap for FMIs in India viz. CCPs, CSDs, SSS, LVPS etc. for adhering to the new FMI standards and monitor their compliance.	3.1.3
Put in place an alternate backstop arrangement for extending liquidity support to CCPs within the existing regulatory framework.	3.1.5
Ring fence the TR function of CCIL through a separate ownership structure.	3.1.6
Ensure compliance with the new international standards Principles of Financial Market Infrastructures by CCPs, CSDs, Trade Repository and other systemically important payment systems.	3.2.5
Devise a strategy for the creation of an acceptance eco system for electronic products in which authorised private sector entities would play a significant role.	4.1.2 4.1.3
Prepare videos for telecast at these events.	4.3.1
Encourage further adoption of mobile banking and NFC in payment systems. To achieve this it is necessary that MNOs cooperate and collaborate with the banking sector through a centralised platform such as for example the IMPS of NPCI.	5.1.2 5.1.3
Promote mobile PoS to cover the large base of retailers across the country.	5.1.4

Implement electronic GIRO in India either by putting a new system or by leveraging the existing and/or in-pipeline payment systems. Increase the scope of GIRO for accepting e-commerce and m-commerce transactions and P2P transactions.	5.1.5
Promote and facilitate electronic payments for various Government payment needs as a statutory banker tothe Government. Work in collaboration on pilots with the Government for using new technologies for collection of tolls on highways; integrated urban transport etc.	5.1.7

Long term (to start efforts in this direction by close of 2015)

Action Point	Para
Strive towards interoperability and portability in all payment systems including mobile payments; Aadhaar based payments in consultation with stakeholders.	2.2.2 2.2.7 2.2.15
Aim for a streamlined IT architecture which will eliminate point to point interfaces for various payment products through a “Payment Hub”.	2.2.16
Provide linkages between Payment systems infrastructures to encourage convergence, portability and interoperability.	2.3.5
Promote funds settlement of all payment systems beyond a threshold, whether operated by banks or non-banks in RBI’s books of accounts.	3.1.4 3.1.11
Prepare a resolution framework for Financial Market Infrastructures in line with international initiatives.	3.2.5