WORKING GROUP ON CHEQUE TRUNCATION AND E-CHEQUES

PART-I

RESERVE BANK OF INDIA
MUMBAI

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Working Group on Cheque Truncation and E-cheques

Chapter 1

Introduction

1.1   Processing of paper based cheques constitutes an important segment of the payment and settlement scenario of the India. Settlement of cheques is arrived on the basis of the physical presentation of paper based cheques to the clearing houses of the country (currently 1047 in number) for transmission to the drawee banks and for payment thereafter. In view of the need to transport the paper based cheques and the time involved in their processing at various intermediary levels, the total time taken for realisation of cheques has tended to be rather long. The problem gets compounded when cheques are tendered for collection by customers at a branch in a city which is not the actual place of the drawee branch. These are called outstation cheques and these cheques typically take longer realisation periods especially in a geographically large country like India and cases of delays in credit – by more than a fortnight are not uncommon.

1.2   The entire processing of cheques and their payment are all governed under the covenants of the Negotiable Instruments Act, 1881, which necessitate that these instruments are in writing and have to be physically presented for payment in due course. The attendant delays on account of not being able to exploit technological alternatives available have been engaging the attention of the Reserve Bank of India for some time. After the passage of amendments to the Negotiable Instruments Act 1881 and the IT Act 2000 in the last quarter of 2002 to provide a legal framework for the implementation of cheque truncation and e-cheques in India, the Governor of the Reserve Bank of India, in the mid-term review of the Monetary and Credit Policy Statement of October, 2002 had suggested that a Working Group on Cheque Truncation be constituted to suggest an appropriate model suitable to Indian conditions, in view of various models of truncation available the world over.

1.3   These apart, it was also felt necessary to consider several operational aspects relating to the processing cycle, technology requirements and the approach to implementation for the introduction of cheque truncation in the country. Further, in order to facilitate debit transfers also in electronic mode, feasibility of e-cheques was also required to be studied.

1.4   In order to examine such issues closely, the Reserve Bank of India decided to constitute a Working Group. The composition of the Working Group is as under:

1. Dr R B Barman,   Chairman
    Executive Director,
    Reserve Bank of India

2. Shri N V Deshpande   Member
    Principal Legal Adviser,
    Reserve Bank of India

3. Shri M R Srinivasan   Member
    Chief General Manager-in-charge,
    Department of Banking Operations and Development,
    Reserve Bank of India

4. Shri Ashok Kini,   Member
    State Bank of India,
    Mumbai

5. Dr. D B Phatak,   IT Specialist
    K R School of Information Technology,
    IIT Powai, Mumbai

6. Shri S K Awasthi,   Member
    Punjab National Bank
    New Delhi

7. Shri Pravir Vora,   Member
    ICICI Bank
    Mumbai

8. Shri C N Ram,   Member
    H D F C Bank
    Mumbai

9.	Ms. U. A. Dharadhar, Saraswat Co-operative Bank Ltd Mumbai	Member
10.	Shri K C Chowdhary, Indian Banks' Association, Mumbai	Member
11.	Shri R Gandhi Chief General Manager-in-charge, Department of Information Technology, Reserve Bank of India	Member- Secretary

The Working Group was entrusted with the task of studying the various aspects of cheque truncation and e-cheques and work out the models which could be adopted for the country. The memorandum of constitution of the Working Group is given in Annexure 1.

As cheque truncation and e-cheques are two independent though related issues, the Group decided to offer their views and recommendations on these issues in separate parts. Accordingly, in this part (Part I), the Group examines the issues relating to cheque truncation and will address e-cheques in the subsequent part (Part II).

The Group is thankful to Shri S Ganesh Kumar, General Manager and Shri Vipin K Surelia, Asst General Manager, Dept of Information Technology, Reserve Bank of India for conducting extensive studies of the cheque truncation the world over, in performing various costing options and in various inputs to the Group. The Group acknowledges the inputs provided by NCR Corporation, Unsisys Ltd., and BCSIS, which provided insight into various options available from a technology perspective. The valuable inputs of the Sveriges Riksbank, Sweden and the Monetary Authority of Singapore, Singapore to the members of the study teams are also appreciated by the Group.

<div align="center">**Chapter 2**</div>

Methodology

2.1   The Group had deliberations on its terms of reference in the various sittings. Vendors who had experience in providing cheque truncation solutions and implementation exposure internationally were invited to make presentations to the Working Group. M/s. NCR Corporation, Unisys and BCSIS shared their implementation experience. In addition, two teams of the members of the Working Group visited Sweden (where cheque truncation had been in vogue for more than two decades) and Singapore (which is at the threshold of introduction of cheque truncation) for studying various facets of the processes, requirements and other issues including legal aspects; they their experience with the other members.

2.2   The deliberations of the Working Group focussed on the following issues in the context of its terms of reference:

- Point of truncation of the cheque
- Cheque Issuance or Generation Process
- Security Features required in e-cheques and e-cheque clearing and settlement process
- Defining Inter-bank Clearing and Settlement Process for e-cheques
- Conduct of e-cheque clearing with normal paper clearing with the data for the two consolidated or altogether a separate clearing
- Frequency of Clearing per day
- Centralised Clearing House for the entire country for e-cheques or e-cheque clearing to be the part of the local Clearing House Jurisdiction
- Cost Benefit Analysis for putting in place the infrastructure
    - At the customer and bank interface levels
    - Within Banks: at the branches and service branches
    - Between the Banks and the Clearing Houses
    - Between the Clearing House and the Settlement Banks

- o Roles and Responsibilities and Rights and obligations of various participants
- Legal framework required for enabling e-cheques
- The changes required in Uniform Regulations and Rules Governing Bankers' Clearing Houses (URRBCH) for implementing e-cheque clearing and settlement
- Return cycle to be a separate cycle or whether it can be merged with the subsequent settlement

Chapter 3

Cheque Truncation

3.1   The cheque is currently the most visible and significant mode of payment in India. In view of the importance of cheque to the retail segment, Magnetic Ink Character Recognition (MICR) technology was introduced by the Reserve Bank of India. MICR technology enabled the banking system to handle the growth in the cheque volumes and to provide faster and efficient clearing services to customers and to do straight through processing using MICR data. Over a period of two decades, a number of MICR Clearing Houses have evolved.

3.2   The entire clearing cycle is dependent on the movement of the physical paper cheque from the presenting bank to the drawee bank (branch) as was mandated by the NI Act prior to its amendment. This bottleneck had an overriding impact on any consideration for improvements or reduction in the cycle time for clearing.

3.3   Until very recently, legal covenants in India required the cheque to be presented to the paying branch for payment. The paying branch is the last node in the clearing cycle as it exists in the country, and thus the paper cheque is on the move through the entire cycle from the bank-branch of the collecting bank where it is first deposited to the service branch of the collecting bank, onward to the Clearing House, which acts as a focal point for the cheques of all the banks, and from the Clearing Centre to the paying bank service branch and lastly the paying branch. If the cheque is returned unpaid, it has to re-trace the entire path back to the presenting branch.

3.4   Cheque Truncation is one of the ways to compress the clearing cycle to provide faster clearances of local and intercity cheques. Cheque truncation, very loosely defined, is the process in which the physical movement of cheque within a bank, between banks or between banks and the clearing house is curtailed or

eliminated, being replaced in whole or in part, by electronic records of their content (with or without the images) for further processing and transmission.

Chapter 4

International Scenario

4.1   Truncation straddles many countries across the globe on either side of the hemisphere. These include countries like Denmark and Belgium which were the pioneers in the truncation process, having introduced complete cheque truncation *(dokumentiase clearings)* in the early 1980s itself to the island state of Singapore which is in the final phase of implementation.

4.2   Retail payment analysts make a two-fold classification – countries like England, US and France where cheque has always dominated non-cash payments on one hand and the others like Sweden, Norway where *giro* transfers have been the dominant modes of non-cash payments. Cheque volumes in the second group have historically been low and from the point of view of truncation, manageable, and these countries have been successful in introducing truncation in the clearing process. Sweden is the extreme example of achievement of complete truncation where all cheques can be presented and encashed at any bank branch, irrespective of the bank on which they are drawn.

4.3   Secondly, the implementation of truncation has invariably been preceded by either the amendment of the existing laws governing cheques and other payment instruments or by the introduction of new laws.

4.4   Many countries such as Spain, Italy and Luxemburg have an amount ceiling for the cheques that can be truncated. Cheques which are considered *low value* are eligible for truncation whereas the higher value instruments still follow the traditional clearing route.

4.5   Under most implementations the cheques are truncated early on in the clearing cycle, typically at the collecting branch level or the collecting bank level. Ireland stands out as an example of late truncation, where 95% of the cheques are truncated at the paying bank stage.

4.6   International experiences with cheque truncation show that the geographically smaller countries are the ones that have been able to implement the process of truncation, be it Greece or Singapore or Belgium. Cheque truncation has been less than a complete success in larger countries. USA, for example, is still a laggard in this respect despite having the maximum number of cheques written (237 per head in a year). Nonetheless, it is making progress towards implementation of cheque truncation.

Chapter 5

Cheque Truncation Model for India

5.1   The Group deliberated on the point in the clearing cycle, where the movement of the physical paper should be stopped i.e. - whether cheques should be truncated at the Presenting Bank, the Clearing House or the Drawee Bank. The Group is of the view that full benefits of truncation will be available only when the truncation takes place at the Presenting Bank; otherwise, the clearing process will again be slow and the clearing cycle will be inefficient to that extent. Within a bank, the Group is of the view that the bank should have a choice, depending upon its individual efficiencies, resources and cost considerations, where it wants to truncate the cheque. Whether a bank wants to truncate the physical cheque at its' service branch or whether it wants to truncate it at the branch of the first deposit or even outsource the truncation process should be left to the decision of the bank concerned. Truncating the cheque after the Clearing House does not entail any advantage to the current clearing process and therefore, truncation at the drawee bank is not suitable. Therefore, **the Group recommends that in India the cheques should be truncated at the Presenting Bank itself and within the Presenting Bank it should be left to the individual banks whether cheque is truncated at the branch or at the service branch or whether the truncation process is outsourced, depending upon the individual efficiency, resources, facilities and cost considerations of the bank.**

5.2   The Group deliberated on the mode of truncation i.e. whether the truncation is to be based on electronic image of the cheque or based on the MICR code line only. However, the amendment to NI Act facilitates payment on the basis of an image of the cheque only. **As payment based on the MICR code line exchange would not provide opportunities for signature verification (which is a legal requirement as on date), the Group recommends electronic image based cheque truncation.**

5.3   The preservation period of the physical cheques was considered by the Group. Presently, the preservation period of the physical cheque leaves is eight year as mandated by the "Banking Companies Preservation of Records" Rules 1985. Under the amended Negotiable Act, the certificate from the drawee bank on the print out of the image of the physical cheque is a proof of payment. Therefore, the Group debated whether the present period of eight years is suitable or whether it can be reduced. The Group was of the opinion that the preservation period should be governed by the reconciliation period between the customers and the banks. Large Corporates in the country take almost six months to reconcile the cheques issued by them and in the case of Government cheques the period is extensible up to a year. Therefore, the Group concludes that the even though the period for which the physical cheques should be preserved can be brought down below one year, in view of the reconciliation requirements, **the preservation period of paper instruments should be one year. The Group accordingly recommends that suggestion to change the existing statutory preservation period of eight years under "Banking Companies Preservation of Records" Rules 1985 to one year should be made to the Government.**

5.4   The Group considered the issue of the storage location of cheque images and the preservation period for the cheque images. On the storage location, the Group debated on the idea of the cheque images being stored at by a Central Image Warehousing Agency or by the presenting banks/drawee banks themselves. As per the amended NI Act, it is the drawee bank that has to certify the printout of the image of the cheque as a proof of payment. Going by this consideration, the images should be stored at the drawee bank. On the other hand, the physical cheques are with the presenting bank and it is the presenting bank which initiates the process of truncation and hence the images as well as paper instruments are available with it and the presenting bank should be responsible for storage of images. A third alternative that was considered by the Group was that of a Centralised Image warehouse. The drawee bank can always

request the central agency for any image and certify that image for the purpose of proof of payment. Also, having a Centralised Agency will give the member banks the benefit of having to approach a single agency in case it requires images of any instruments rather than to approach multiple presenting banks. **From the point of view of efficiency and control, the Group concludes that Centralised Agency per clearing location should act as an image warehousing facility for the banks. However, given the challenges involved in setting up a single agency in the Indian context, the Group recommends that the choice could be either a single agency or individual drawee banks as the points of storage.**

5.5   A concurrent question that was discussed was which entity should act as a Centralised Image Warehousing Facility or what kind of entity should be given permission to act as one. The Group considered various issues like the cost required to set-up such an agency, whether any existing agency or institution can set up an image warehouse, what will be considerations while setting up such an agency, how will vendor proposals for setting up such agency evaluated and against what benchmarks will they be compared etc. The group decided to lay down broad guidelines for the suitability of any entity to provide image warehousing facilities.   **The Group recommends that for the entity that will act as a Centralised Image Warehousing Facility should meet the following criteria:**

> **(i) The entity should have the technical competency**
> **(ii) The entity should have an efficiency orientation**
> **(iii) The entity should be sizeable in terms of resources**
> **(iv) If the entity is an existing organisation, it should be well reputed**
> **(v) It would be preferable for banks to have ownership stakes in such entities**
> **(vi) It should be subject to supervisory and regulatory controls of the Reserve Bank of India or any other agency that may be authorised for this purpose by the Reserve Bank of India.**

5.6   The Group also considered that storage requirement of the electronic image of the physical cheques and deliberated that technology places no limitation on the period the images can be stored. The Group recommends that **the preservation period of the electronic image of the cheque should be eight years. The Group also recommends that Government may be approached to amend the "Banking Companies Preservation of Records" Rules 1985 to enable image preservation for eight years.**

5.7   Imaging of cheques can be based on various technology options, the cheque images can be black and white, Grey Scale or coloured. The Group considered all the three options. Black and White images do not reveal all the subtle features that are there in the cheques. Coloured Images increase storage and network bandwidth requirements. Therefore, **the Group recommends that the Grey Scale technology which helps capture finer features on cheques and also have relatively lesser storage and network bandwidth requirements will be suitable for India.**

5.8   A question that arose was whether cheques should be standardised as has been done in Singapore from security and image friendliness perspective. In Singapore, a common format for cheque has been designed and is used by all the banks. The Group suggested that the same can be done but the introduction of truncation process should not be made to wait till the process is complete and old cheques are fully withdrawn. Also, it would entail a cost to the banks who have already printed large number of cheques and the withdrawal of old cheques is a time consuming process with non-MICR cheques still being presented by customers. **Therefore, the Group recommends that truncation and standardisation of cheque format should be independent initiatives with the latter being implemented after even after the introduction of cheque truncation.**

5.9   The Group also considered the issue of changes to the MICR line as has been done in Singapore. In Singapore, a check digit has been introduced in the

MICR line. This change enables verification of the genuineness of the cheque at the presenting bank itself and provides an additional level of control in case of image misreads. The Group was of the opinion that any change in the existing MICR line structure in a vast country like India will lead to a delay in implementation and additional costs as hardware and software changes will be required at all processing points in the clearing cycle-presenting bank/branch, clearing house and the drawee bank/branch, apart from printing costs of cheques to accommodate modified MICR Code line. **Therefore, the Group recommends that the truncation should be introduced in India for settlement to be generated on the basis of the current structure of the MICR fields.**

5.10   The Group also considered the issues related to the security requirements for the flow of cheque data and images over the network from the presenting bank to the clearing house and onwards to the drawee bank etc and the handling of data and images at the various processing nodes in the clearing cycle. The Group was of the view that digital signatures should be used but encryption may not be essential. The Group also deliberated on the security requirements during storage of the images of the cheques either by banks or at the Centralised Image Warehousing Facility and recommended that these should be in consonance with the requirements of IT Act 2000. **The Group accordingly recommends that use of Public Key Infrastructure (PKI) should be adopted to protect data and image flow over the network and to establish authenticity, non-repudiation, integrity etc and suggested that digital signatures should be used. The Group also recommends that the security requirements for the storage of images by the banks or the Centralised Warehousing Agency should be in consonance with the requirements of the IT Act 2000.**

5.11   Another question that arose and deliberated by the Group was whether various participants in the truncation process should be subjected to a certification process and based on that certification process they should be allowed as members in the truncation process. The members were of the opinion that the certification process would ensure that the participants adhere to the

minimum requirements of security and efficiency and recommends that **the members in the truncation based clearing system should be subjected to a certification process based on prevalent Information Security Audit Guidelines of the Reserve Bank of India.**

5.12   On the issue of implementation, the Group considered two approaches - big bang versus phased approach to implementation. The advantage of the big bang approach is that once a cut-off date is decided for truncation at a centre, all the processes and members will be geared towards meeting the date. If a phased approach is adopted, full benefits of truncation will not be available. Also, the group was of the opinion that if truncation process is to be phased out, say, for ready banks by one cut-off date and remaining banks by a second cut-off dates, there will be duplication of efforts and confusion and operational issues like sorting out and transportation of cheques for banks which are not ready and imaging and transmission of cheques for banks which are truncation ready. Therefore, the group recommends that **truncation should be introduced for all banks and all clearings at a centre from a cut-off date for all participants at that centre.**

5.13   A related question that arose was whether truncation should be based on a cut-off amount as is a practice prevalent in some countries. The Group felt that truncation should not be based on amount as it will require cheques to be sorted out at the presenting branch itself and there will be two separate channels and two separate clearing requirements both in terms of infrastructure required and process definitions. Therefore, the Group recommends that **there should be no amount based cut-off for truncation and all cheques should irrespective of value, should be truncated.**

5.14. The Group also considered the issue of from which city the city cheque truncation should be commenced. Should the centres with lower volumes be targeted first, where implementation process will be smooth in view of smaller number of cheques, smaller number of participants etc. or should the efforts be

concentrated on centres with large cheque volumes where the efficiency and customer service impact will be much larger? The Group recommends that the truncation initiatives should be targeting larger cities viz. the four metros which account for the major chunk of the cheque volumes in India and once the truncation process is established in these centres, rolling it out to the other centres will be a relatively easier task. Therefore, the Group recommends that **in view of large number of cheque volumes and the benefit derived by introduction of truncation the four metro centres should be targeted first in the first phase. Before that, pilots at two small centres near the metros will be done within a time frame of one year.**

5.15   The issues relating to the countermanding and stop payments were discussed by the Working Group. The Group recognised that in clearings based on cheque truncation, the cycle time for the entire process will be compressed, compared to the clearing based on physical movement of paper cheque, especially the inter-city clearing cycle. The Group felt that even in the context of the compressed clearing cycle, countermanding payments and stop recordings should be allowed till the time payment has been made as is the current practice. **Therefore, The Working Group recommends that countermanding payments and recording stops should be allowed till the time of payment as is the existing practice.**

Chapter 6

Risks in Cheque Truncation

6.1   The introduction of the truncation process will change the roles and the responsibilities of the various participants in the truncation process and may lead to introduction of certain risks that will have to be mitigated. These are documented below.

6.2   At the presenting bank level, the responsibility to verify the genuineness of the cheque based on the apparent tenor or the visible features of the cheque presented for collection may lead to banks refusing to accepting a genuine cheque or accepting a forged cheque based on a manual scrutiny. Images and MICR data to be sent to the clearing house have to be matched before they are released to the Clearing House.

6.3   The Clearing House will have to assume that the data given by the banks is the data meant for that day's clearing and will have to arrive at the settlement based on this assumption. If the MICR data given by the bank is not that matching with the day's image the bank has sent for collection, it may lead to erroneous settlement and large returns.

6.4 Truncating cheques entails additional operational risks. Banks will have to take adequate measures to ensure that all necessary safeguards are provided for – in consonance with legal requirements and banking practice while making payments, especially for high value instruments.

6.5   The drawee bank has to verify the signature on the image of a cheque. If a drawee bank chooses to verify signatures on the images of cheques above a cut-off amount only, then it runs the risk of paying some forged instruments.

6.6   The Warehousing Agency for images and physical storage of cheques might not be able to produce the image or the physical cheque demanded by the bank. This may lead to legal complications and assignment of liabilities. These

will have to be covered by suitably drafted agreements and service level agreements between the banks and the Warehousing Agency.

Chapter 7

Legal Issues

7.1 The Working Group also examined the major recommendations that had been made by an earlier Working Group on legal issues in cheque truncation chaired by Shri N V Deshpande, Principal Legal Adviser, Reserve Bank of India.

7.2 The recommendation made by the above mentioned Working Group that institutions will have to obtain Reserve Bank of India approval to ensure uniform standards/practices are implemented in India is also being recommended by this Group by way of members in the truncation process being subjected to a certification process as per the IS Audit Guidelines of Reserve Bank of India.

7.3 On the additional responsibility on the collecting bank under a truncated environment, to verify the genuineness of the cheque based on visible features, the same has been assigned as per the amended NI Act and the drawee bank will continue to verify the signature, availability of funds.

7.4 The Deshpande Group had also recommended that the Clearing House cannot be held responsible for fraud, forgery etc. As per the recommendations of the current Working Group, the Clearing House will be doing settlement based purely on MICR data and will act as a pass through for the images. Therefore, the Clearing House cannot be held responsible for the fraud, forgery of cheques as it cannot even open the images sent in by the banks.

7.5 On the issue of the earlier recommendation, on drawee bank having accepted the image in case no protest is lodged within 24 hours, the Group clarified that it will be as per the timings of the existing return cycle.

7.6 On the right of the drawee bank to seek further information on the veracity/genuineness of the cheque, the amended NI Act already provides for the same. The drawee bank can seek not only further information but can also seek

the physical instrument for verification and can retain it if the payment has been made accordingly.

7.7   The earlier Group had recommended an eight year period for retention of the images and the same is being recommended by the current working group.

(R B Barman)
Chairman

(N V Desphpande)   **(Ashok Kini)**   **(M R Srinivasan)**
   Member   **Member**   **Member**

(S K Awasthi)   **(D B Phatak)**   **(Pravir Vora)**
   Member   **Member**   **Member**

(C N Ram)   **(Secretary, IBA)**   **(U A Dharadhar)**
 Member   **Member**   **Member**

(R Gandhi)
Member Secretary

 Mumbai
July 26, 2003

Reserve Bank of India

DEPARTMENT OF INFORMATION TECHNOLOGY
MEMORANDUM
<u>Working Group on Cheque Truncation and e-cheques</u>

The current process of reforms in Payment and Settlement Systems in the country is aimed at ensuring the establishment of a safe, secure, efficient, robust and Integrated Payment and Settlement System, with thrust on electronic modes of payment and settlement. Presently, the paper based cheque clearing system is the most predominant system in the country. In addition to the international sound practices in the form of the "Core Principles" of the Bank for International Settlements and technology being at the base of improvements in payment and settlement systems, various legal requirements provided for in the form of amendments to the Negotiable Instruments Act, 1881 have further speeded up the reforms. These initiatives have heralded new processes to ensure, safe and secure payments. Cheque truncation is one such facility, while e-cheques could replace paper based cheques.

2. Cheque Truncation reduces the physical movement of cheques and consequentially, the dependence on the infrastructure therefor, facilitates shorter clearing and settlement cycle through straight through processing, despatch of the cheque images and the associated data electronically and faster realisation of funds. With the accordance of legal validity to an electronic cheque as a negotiable instrument, the introduction of Cheque Truncation in the cheque clearing process can now become a reality in the country. In the Mid-term Review of Monetary and Credit Policy for the year 2002-2003, the Reserve Bank announced that it would form a Working Group to suggest an appropriate model of Cheque Truncation, suitable to the Indian conditions. Cheque Truncation can happen at the presenting bank branch level, presenting bank service branch level, Cheque Processing centre or the clearing house or at the drawee bank service branch level.

3. E-cheques reduce the dependency on paper based cheques for transfer of money. They provide for electronic presentment, endorsement and delivery-subject to adequate security and other requirements being put in place.

4**.** In order to examine the various aspects pertaining to cheque truncation and e-cheques and their implementation in India, a Working Group for Cheque Truncation and e-cheques is being constituted with representation as under:

1. Dr R B Barman,   Chairman
   Executive Director,
   Reserve Bank of India, Mumbai

2. Shri N V Deshpande   Member
   Principal Legal Adviser,
   Reserve Bank of India, Mumbai

3. Shri M R Srinivasan   Member
   Chief General Manager-in-charge
   Department of Banking Operations and Development
   Reserve Bank of India, Mumbai

4. Shri Ashok Kini,   Member
   Deputy Managing Director,
   State Bank of India,
   Mumbai

5. Shri S K Awasthi,   Member
   General Manager
   Punjab National Bank,
   N Delhi

6. Shri Pravir Vora,   Member
   General Manager
   ICICI Bank,
   Mumbai

7. Shri C N Ram,   Member
   H D F C Bank,
   Mumbai

8. Ms. U A Dharadhar,   Member
   Saraswat Co-operative Bank Ltd,
   Mumbai

9. Shri K C Chowdhary,   Member
   Indian Banks;' Association,
   Mumbai

10. Prof. D B Phatak,   Member
    Head,   (IT-Specialist)
    K R School of Information Technology
    Indian Institute of Technology,
    Mumbai

10. Shri R Gandhi   Member- Secretary
    Chief General Manager-in-charge,
    Department of Information Technology
    Reserve Bank of India, Mumbai

5. The terms of reference of the Working Group are as follows:

(i) Cheque Truncation:

(a) To examine the existing models of cheque truncation in other countries, review the same and recommend the optimal model for the Indian context.

(b) To assess the infrastructural requirements, including the hardware and software for cheque truncation, for all participants including the cheque processing centre / Clearing house.

(c) To lay down the standards and procedures for cheque clearing in a cheque-truncated environment, including a uniform procedure for cheque truncation.

(d) Applicability of the provisions of the IT Act, 2000 to cheque truncation

(ii) E-cheques:

(e) To examine the existing models of e-cheques in other countries and other experiences in India and to recommend a model for India.

(f) To lay down the standards and procedures relating to e-cheque-both from a technology and an operational perspective apart from security and other aspects.

(g) Applicability of the provisions of IT Act, 2000 to e-cheques.

(h) To provide for broad rules and regulations for issue of e-cheques, processing, clearing and settlement, and other related issues.

The Group may co-opt members from the industry, depending on their areas of expertise as and when necessary or arrange for interactive sessions with such industry members. The Working Group may submit its report within 3 months.

Sd..

(Vepa Kamesam)
Deputy Governor

Place : Mumbai
Date : 10thJanuary, 2003

<div align="center">**Synopsis of Vendor Presentations**</div>

NCR Corporation

Mr. Anthony Lau of NCR made a presentation on models of cheque truncation available in different countries. The salient features of the presentation are as under:

(a) There are three generic models of truncation – in the first, Image Cash Letters flow from the collecting bank to the paying bank. In the 'Image to Follow' model, data flows to the paying bank and the images follow later. In the 'Image on Request' Model, payment is based on data and the paying bank can selectively request images of the cheques.

(b) For data and image exchange three models viz. Peer to Peer Model, Clearing House Model and Hybrid Model are in existence. In the Peer to Peer Model, cheque and image data moves bilaterally between collecting and paying banks. In the Clearing House Model, the Clearing House acts as an intermediary for data and image flow between the collecting and the paying bank. The Hybrid Model is a combination of above models.

(c) For Archive purposes, three models are prevalent viz. Distributed, Centralised and Hybrid. In Distributed Model, the cheque data and images are archived at the collecting and the paying bank. In a Centralised Model, Clearing House acts as a Hub. In Hybrid model, the archive is available at the collecting bank, the Clearing House and the paying bank.

BCSIS

Mr. Jimmy Quek and Mr. Sam Tan of BCS made a presentation on model of cheque truncation that BCS is in the process of implementing in Singapore. The salient features of the presentation are as under:

(a) The truncation exercise in Singapore was initiated sometime in the year 1999 and will be implemented by the end of first quarter of 2003. The average volumes

are around 3,00,000 cheques per day and the peak volume has been 5,00,000. Three banks account for more than two-third of the total cheque volume.

(b) In the proposed Cheque Truncation System for the city state of Singapore, MICR data and images are to be transmitted to the Clearing House. The cheque can be truncated either at the presenting branch, bank or can be done by an independent third party service bureaus. The front end system allocates a unique identifier to each document that is used for tracing the document in the entire life cycle. The Clearing House does a bitonal or a grey scale Image Routing and Processing for inwarding images to the drawee bank. Drawee Bank and branch will follow an Image based Inward System and Outward Return System. In the Outward Return, the returned instrument is allocated a fresh unique identifier and a return reason. The document capturing these two has been given a legal sanctity and is referred to Image Return Document. The IRD can be used by the customer to represent the cheque again. The Clearing House sorts the data and images to the presenting banks in the return cycle.

(c) There is a separate Warehouse where the physical cheques are moved after the image has been captured by the presenting bank. The issues related to the period of preservation of the physical instruments are still to be crystallised.

(d) At the Clearing House, MICR data in electronic format is proposed to be stored online for a period of 7 years, and images are online for a period of 2 months.

(e) A Real Time Position enquiry system is also available which is primarily to be used for knowing the funds position, status of the batches submitted for clearing and for reconciliation of exception items (e.g. items with either image missing or MICR data missing).

(f) Security Infrastructure is based on Public Key Infrastructure and cheque (watermark, check-digit in the MICR field, standard size) and Image Quality Controls (e.g. dpi to be greater than 100) have been defined for the purpose of standardization.

Unisys

Mr. Paul King of Unisys made the presentation. The salient features of the presentation are

(a) He defined truncation as dematerialization/ destruction of the paper instrument at the most **effective point** in the processing cycle.

(b) There can be three broad models of truncation- at the presenting branch, bank or the Clearing House.

(c) The presentation covered a number of countries across the globe with focus on the cheque processing and the stages they are in- manual, MICR, electronic or truncated.

(d) The presentation identified a number of pre-requisite and issues for truncation which are summarised:

      (i) Image Ready Documents

      (ii) Improved and efficient work-flows

      (iii) Optimisation of system storage

      (iv) Cost Considerations

      (v) High Bandwidth and secure Network Infrastructure

      (vi) Interoperability issues

Committee on Cheque Truncation – Study Visit – Singapore

I.   Discussions with the officials of the Monetary Authority of Singapore (MAS)

Rationale for Cheque Truncation

-   Government of Singapore, being the big user of payment system, decided 10 years ago to bring in electronic mode of payments. A Committee on Electronic Payments, headed by the Government charted a plan and monitored the implementation of it. The country achieved 80% of the target two years ago.

-   The same Committee was reconvened to bring efficiency in the GIRO System. Consequent to its recommendations, EasyLink Cards(a kind of contact less cards) and CashCards have been introduced.

-   Though the volume of cheques in Singapore(300,000 a day) is not growing and the stated objective is to move towards more electronic mode of payments, the Committee recognised that cheque usage is likely to be one of the preferred mode of payment and therefore the Committee also made recommendations for improving efficiency in the cheque processing systems by way of cheque truncation.

-   The business case for Cheque Truncation was a difficult one as it is a high cost affair. Investments required at the SCH and the preferred security features(viz., the PKI) meant high costs.

-   The real benefits were seen to come from leveraging the electronic structure created for the cheque truncation for other strategic and economic benefits.

-   For the customers, immediate benefit will be the cut-off time for presentation would be elongated from the current 2.00 pm to a later time. Though currently the value is on T+1 basis, later this could be brought down to T+0.

-   For the Singapore USD Cheque Clearing, the clearing cycle will be reduced to T+1 from the current T+2.

Model Adopted

-   Singapore studied cheque truncation models around the world and decided for truncating the cheques at the presenting bank level, as it brings ultimate efficiency.

- Imaging, as an optional feature, was already available in the country and three large banks have the experience of clearings based on images.

- As for the exact location of truncation, Singapore has adopted a flexible model. Most of the small banks, having one or a few branches, truncate cheques at the branch level using a desk-top reader-scanner. Big banks truncate cheques using a service bureau either in-house or outsourced.

- All the cheques are to be truncated irrespective of value. (Hong Kong and Canada have adopted truncation up to a cut off value only)

Challenges faced

- A Big-bang approach was adopted for implementation. (Hong Kong has adopted an incremental model). Therefore, the project moved as fast as the slowest member.
- New specifications for cheques (both for quality of paper and format) meant elaborate arrangements for manufacturing and printing of new cheques and lead time(6 months) for replacing old cheques. Banks had to resort to some kinds of incentives or the customers to return the old cheques in their possession.

Technical Standards

- SCH determines the technical standards for cheques(paper and format), imaging equipments, image quality, connectivity and archiving.

- There is a certification process. Banks will have to get their systems at branches and service bureaus and the operator of the clearing house have to periodically get their systems audited by the approved information systems auditors like PWC, KPMG and Deloitte.

Return of unpaid images

- Image return when unpaid is valid.

Warehousing of physical cheques

- Centralised warehousing of physical cheques was adopted as a convenient mode and to have common industry practice.

- Charging mechanism has been adopted to discourage demands for physical cheques by the paying bankers.

- Currently decided to warehouse the physical cheques for one year. Intends to bring it down later to 6 or even 2 months.

Legal aspects

- Laws amended to legalise cheque truncation.

- Images of cheques valid for payment and return.

- Image processing is to be certified.

- Liabilities for verification of cheques truncated will be with the presenting banks.

Archiving of images

- Centralised archiving has been adopted.

- Images to be available for 7 years.

II. Discussions with BCSIS Ltd., the operator of the Singapore Clearing House

Rationale for Cheque Truncation

- Inefficiencies in collection of cheques are bankers' delight(because of availability of float funds) and customers' nightmare.

- Cheque Truncation is a logical progression/evolution of cheque processing from hand sorting to MICR to Imaging.

- e-Cheque is a technology driven project whereas cheque truncation is customer-oriented project.

- Expected savings(as per a 1998 study) is Singapore Dollars 70 million a year.

Model & Features Adopted

- Covers all the four clearing legs viz., Outward Presentation, Inward Presentation, Return Outward and Return Inward.

- Unique Identifier(25 character including date, bank, machine id and serial number) for each truncated cheque printed on the backside while reading-scanning.

- Common Physical Cheques' Warehouse

- Image Return Document(IRD) a legal instrument

- National Image Archive

- Broadband connectivity and VPN adopted. Dial-up, Leased Line and Asynchronous Transmission Mode(ATM) for transmission of MICR Codeline and images.

- Operator's Data Centre General Controls, network architecture, server and OS controls and penetration testing verified/audited through approved IS Auditors.

- Shoe-box desktop reader-scanners or Reader-scanners, Front end, Backend and Archival Web applications at banks' end; CTS host system and National Image Archival system at the CH end.

- Cheques redesigned and reformatted to suit imaging. Common Watermark on the cheques.

- MICR line redesigned to include a check digit to facilitate better quality reading/verification of MICR line despite low-end desktop reader/scanners.

- Cheques scanned on both sides in a single pass.

- Grey Scale image(100 dpi) good for human eye; but adopted Bitonal scale(200 dpi) to facilitate automated signature verification.

- Contingencies whether of single bank or multiple bank failure to be tackled through images on CDs with the help of friendly/guest banks/service bureaus and at CH. For operator, through DRS Site.

- Certified authority to review the entire process right from capture to archive including transmission.

- A Steering Committee, an Operations and Legal Committee and an IT and Security Committee.

III   **Discussions with the Operations and Legal Committee of the SACH**

- Presenting Bankers' new liabilities/responsibilities include verification of physical cheques for apparent alterations, modifications and cheque quality.

- Cheques were redesigned to suit truncation. Design includes equality of paper, watermark, restricted zone for date, amount and signature, and check digit on MICR line.

- Security features on cheques include quality of paper, watermark and cheque digits.

- Empanelled vendors for paper manufacturing, cheque printing and reader-scanners

- Truncation process auditing to include control exercised, machine specification and calibration, no image-change capability and network control.

- Cheque Warehousing charges to be paid by the Paying bankers as the cheques are their property.

- Account opening terms and conditions modified to facilitate truncation, Image Return Documents.

- Images can be retained by the presenting and paying bankers, but for their own internal use; have no legal validity post payment/archiving.

- Post payment/archiving, only a certified image from the NIA has legality. Images from the National Archive can be requested for by the presenting and paying bankers. Certified images will be on security paper with watermark.

- Warehousing is merely a safe custody. Only the presenting banker can make a request(only they know the unique cheque).

- Bilateral image exchange was rejected because of problems of sorting physical cheques and images, archiving at multiple locations and certified images from multiple locations.

Members of the Study Team

1. Shri R Gandhi	CGM-in-Charge, RBI, DIT, Mumbai
2. Dr D B Phatak	Professor, IIT, Mumbai
3. Shri Awasthi	GM, PNB, New Delhi
4. Shri Sunil Kumar	DLA, RBI, LD, Mumbai

Institutions and Officials met during the visit to Singapore

Monetary Authority of Singapore

1. Mr Terry Goh Ping Hwee	Head, Payments and Infrastructure
2. Mr Leo Mun Wai	Director, External Department
3. Mr Derek Chan Wai Hoe	Associate, Payments and Infrastructure

BCSIS Ltd, the operator of Singapore Clearing House(SCH)

1. Mr Wong Nang Jang	Chairman
2. Mr Jimmy Quek	General Manager & COO
3. Mr Kannan Krishnan	Director
4. Mr Arthur Lee	Project Director – Cheque Truncation

The Operations & Legal Committee of the SCH's CTS

1. Ms Christine Tham Yock Ying	VP, United Overseas Bank Group
2. Ms Lucy Lim	VP, OCBC Bank
3. Ms Irene Liu	Dy Manager, DBS Bank
4. Ms Teo Siew Hang	Manager, HSBC Ltd

WORKING GROUP ON CHEQUE TRUNCATION

SALIENT ASPECTS OF THE STUDY VISIT TO SWEDEN

Members of the Study Team:

- Dr. R B Barman, Executive Director, Reserve Bank of India
- Shri Ashok K Kini, Deputy Managing Director, State Bank of India
- Prof Deepak B Phatak, Director, Kanwal Rekhi Institute of Technology, Indian Institute of Technology, Powai, Mumbai
- Shri S Ganesh Kumar, General Manager, Department of Information Technology, Reserve Bank of India

Major Features of the payment systems in Sweden

- Swedish payments function under the overall aegis of the central bank of Sweden – Svergis Riksbank, which has as its main objectives the following:
  - Safeguarding the value of money – which is achieved through inflation targeting and the effective use of the Repo rate
  - Promoting a safe and efficient payment system
- The Payment Systems Division, functioning under the Market Operations Department of the Riksbank looks after payment systems in general; specifically the following:
  - Customer support and sales development
  - Monitoring of payment operations, including the RTGS operations
- Supporting functions are provided by the Financial Stability Department, which looks over the analysis and assessment over banks and financial institutions. The IT department looks is responsible for the computer systems of the Riksbank including the IBM-S/390 mainframe system which is the backbone for the RTGS system of Sweden.
- The entire RTGS system of Sweden – called the RIX System (comprising of two systems – the K-RIX for settlement denominated in Swedish Kroner, and the E-RIX System – for settlement denominated in Euro) was

developed in house by the Riksbank which also has dedicated staff for the management and maintenance of these systems. Operating in the mainframe, the RTGS system which was developed in COBOL and using DB2 as the database, with CICS as the transaction handler, MQ Series for the messaging middleware and IBM's MERVA for interfacing with banks has the following major features:

- o Membership is restricted to participants as listed below:
    - Banks – Swedish owned banks   - 8
    - Banks – branches of foreign banks   - 7
    - The Postal Giro Bank (since taken over by Nordea Bank)   - 1
    - The Riksbank as a participant   - 1
    - The National Debt Office (Govt Debt)   - 1
    - Clearing Institutions – Bank Giro Centre   - 1
        Swedish Central Securities System   - 1
        OM Stockholm (Derivatives Clg)   - 1

- Other banks settle their transactions through these participants
- The E-RIX has 16 participants which has cross border transaction flow through the European TARGET system
- All participants maintain a settlement account with the Riksbank – which is used for K-RIX; a separate account exists for the E-RIX system
- Connectivity to the RIX is
    - o either through the RIX On-line system which comprises of leased line connectivity between the participants and the Riksbank – in vogue since 1990
    - o or through the SWIFT FIN Y-Copy – in use since 1997
    - o The first option constitutes the first generation RTGS system developed in house by the Riksbank, while the second option is a relatively costlier option for participants since it involves payment to SWIFT also.

- Settlement takes place on the FIFO principle; participants can assign priorities to their transactions

- Participants can view both their inward and outward queues

- Collateralised liquidity support is provided by the Riksbank – on the basis of approved securities – both Government and from the primary market, as also from the Scandanavian Cash Pool comprising of investments made by banks in Denmark, Norway , Finland.

- Specific transaction codes are assigned to each transaction type, and the Riksbank gets the complete transaction information for each transaction

- Specific code of conduct (copy enclosed) governs the RIX transactions

- The operating hours of K-RIX is between 7:00 a.m. and 17:00 hrs.

- The operating hours of E-RIX is between 7:00 a.m. and 18:00 hrs.

- Time bound settlements – such as the securities clearing settlement, Dataclear Settlement (Truncation clearing) etc., are booked as K-RIX transactions

- The average daily volume of RTGS transactions is about 5000, with most of the transactions taking place between 9 and 10 a.m. (80%)

- Liquidity support is provided by the Riksbank – intraday for all participants and overnight for banks alone.

- The full cost of RTGS transactions are recovered from the participants in the case of K-RIX and best possible cost recovery for E-RIX, based on a model developed by the ECB. The cost components taken into account include the capital costs, overheads, development costs, long term investment costs and operational costs.

- The charging pattern is as follows (copy enclosed):
  - o A new entry fee of SEK 75,000
  - o An annual fee – based on number of transactions – between SEK 225,000 and 850,000
  - o Per transaction fee of SEK 4

- Fee for intra-day liquidity in Euro is 10 basis points on EUR.

- All messages are encrypted during transmission

- Backup is provided in the form of systems (situated at a distance of 4.5 km) with DB2 replication, which takes place every 15 seconds on to a Sybase data server. The time for recovery is 2 hours from the backup site which is actually an unstaffed site, Testing from the backup site is done twice a year.

- The message formats in use for SWIFT FIN Copy are
    o Bank to SWIFT – MT 100/103/202/205
    o SWIFT to Riksbank - MT096
    o Riksbank to SWIFT – MT097
    o SWIFT to beneficiary bank – MT100/103/202/205

- The legal base for the system consists of :
    o Rules and Regulations in the form of a contractual agreement which include agreement for credit and deposits and pledge for credit in RIX

- Admission of members is based on the adequacy of financial capital and stability of the bank apart from conformity to Capital Adequacy norms; membership to SWIFT, risk management in the organisation, etc.

- The role of the Riksbank relates to:
    o Promotion of safe and efficient payment system (cf. Ch1, Art 2 of the Sveriges Riksbank Act)
    o Lender of the last resort function (cf Ch 6, Art 8 of the Sveriges Riksbank Act)
    o Oversight of the financial infrastructure and its operations
    o International co-operations for co-operations – CPSS of BIS etc
    o Crisis management, under the Financial Stability Department

- The other Systemically Important Payment Systems (SIPS), apart from RIX are the VPC (securities settlement) and OM (Derivatives trading and settlement).

- Retail payments are centred around the operations of the Bank Giro Centre (BGC) and on the basis of payment instruments which comprise of cash, cards, giro and e-money.

- Cash constitutes the largest retail payment mode in terms of volume, closely followed by GIRO which leads in terms of value. Cards – both credit and debit have a significant proportion (smart cards are at a stage of infancy), while e-money transactions are at a nascent stage of introduction.

- Cash constitutes 90% of the number of payments. Among the non-cash payments, 45% of the payments are effected through cards while Giro payments account for 55% of the non-cash payment transactions.

- The Swedish Bankers' Association (SBA) has a prominent role in payment systems and works closely with the Riksbank.

- Membership of the SBA is comprise of:
    - Domestic Banks   :   15
    - Foreign Banks   :   10
    - Financial Institutions: 15
    - Mortgage companies: 6

- A big chunk of banking business and payment transactions are accounted for four major Swedish banks – Handelsbanken, SEB, Nordea and Swedbank,

- With 70% of the Swedish population having access to Internet and 90% to mobile telephony, internet and mobile banking are dominant. More than 6 million account holders (out of a country population of 9 million) have inter bank accounts.

- Internet banking which commenced in 1996, has witnessed
    - Reorganisation of banking operations
    - Consolidation of small bank operations
    - Centralization of banking functions – the largest bank, however, has a large degree of decentralised branch based operations which cover even credit and business decisions based on profitability objectives.
    - Automation of cash distribution services

- o Outsourcing of delivery functions – such as ATMs to shops, Post offices etc., with ownership of these outlets resting with such outlets
- o Presence of 2500 ATMs and a large EFTPOS structure
- o Differential charging for cheques with an incentive to migrate to non-cheque based transactions
- o Automation of payment functions including STP, with banks becoming more consultancy oriented for their customers

- Operationalisation of the Bank Giro system for many years and clearing based on data – called Data Clearing, instead of with cheques.

- The standards for the systems and the procedures for Giro clearing are finalised by the SBA and are generally market driven and based on customer requirements.

- Cheques – as a proportion of the total non-cash payments, was 15% IN 1990; this has reduced to 0.2% in 2000.

- Cheque truncation was introduced in Sweden in the seventies, with data based processing of the cheques and the generation of the settlement thereof.

- Banks had migrated to the process of 'universal' payment processing – whereby a customer could present a cheque at any bank in Sweden and receive payment. This is facilitated by means of
  - o A unique identification for each account holder, related to the national id for people (banks were the conduit for issue of national ids)
  - o Verification of the presentor details at the bank of payment for amounts up to SEK 2500, with telephonic confirmation on funds availability from the drawee bank for amounts greater than SEK 2500.
  - o The details of the cheque are then converted into data – by keying in at the paying bank and then the data is sent for clearing and settlement.
  - o All banks enter into the agreement for 'universal' processing

o The fees for such transactions are low and each bank is free to decide its own fees for its customers,

o The cheques are stored at the paying bank – for a period of ten years as required by law. The data is also preserved for the same period.

- With the development of technology, the data acquisition process has been shifted to the customer, with a substantial reduction in costs for banks. The internet based banking transactions provide for such data to be keyed in by customers – by resorting to credit transfers. Such data are switched to the BGC for processing, generation of the settlement and its accounting at the Riksbank.

- Interchange of data across banks is a process common for banks – since 1975, While initially data transfer was based on paper based records, this has now been possible through Data Clearing. Credit transfers – such as for payment of salaries, individual customer cheques and even corporate customer funds transfers.

- To provide for anonymity in respect of details relating to credit transfers, the BGC allots – through banks – a unique number called the Bankgironumber (which is similar to the proposed UPIC of Euroclear). The cross-relation of the giro number to the account number at a bank is maintained by the BGC which performs its operations using an IBM-S/390 mainframe computer system. Changes in bank / account number can be easily effected without any change in the GIRO number. Credit transfers are effected into this GIRO number when customers send internet based messages which are switched to the BGC for generation of settlement. Such data could be sent by individual banks in batches - either at many times or at the end of the day. Generally, there is a file received from a bank / branch once every three banks.

- Corporate customer payments constitute part of the Electronic Bill Presentment and Payment (EBPP) which has been in vogue in Sweden since 1998, More than 800,000 corporate participate in the BGC's activity.

- The BGC generated multiple settlements for data clearing – four times a day, apart from other settlements, as per the following details:
    - Settlement Time - 07:30   Funds Availability - 09:30
    - Settlement Time - 10:30   Funds Availability - 12:30
    - Settlement Time - 13:05   Funds Availability - 15:05
    - Settlement Time - 15:20   Funds Availability - 17:20
- A facilitating aspect for data based clearing is customer attitude in Sweden which has been towards credit transfers, which has been built over many years. The result was the setting up of the Bank Giro Centre (BGC), as early as in 1959. 22 member banks participate in the BGC system, which processes about 375 million transactions a year.
- An average of a million payment transactions are settled through BGC each day; peak volumes – such as on the last and first day of a month – range around 5 million transactions.
- The BGC provides digital certificates for large payments
- Settlements generated by BGC are bilateral i.e. across two banks only. These bilateral settlements are then forwarded to the RIX system.
- There is no Grid Lock monitoring / resolving tool at the RIX – mainly because such situations are not envisaged since settlement information received from the BGC are bilateral settlements.
- BGC generates the following settlement:
    - Data Clearing   :   4
    - Notes and Coins settlement   :   6
    - EURO settlements   :   3
    - Securities / Derivatives / ATM etc :   11
- BGC has adequate disaster recovery capabilities – with a system at the same location, but not manned; in the event of an eventuality the staff at the main centre could make the backup system operational.