Abstract

Reserve Bank of India collects data pertaining in connection with its wide spectrum of responsibilities in the areas of regulation and supervision of financial system, formulation of monetary policy, managing external value of Rupee, issue and management of currency etc. As a result, it also forms part of the official statistical system, being primary source of monetary, financial and external sector statistics. The different types of data collected may also be classified as (i) aggregated data, (ii) distributed data aggregates, and (iii) granular data depending on the relevance of data for different operational needs. The system of information management in the Reserve Bank has evolved over the years in order to keep in pace with the emerging needs of the Reserve Bank and changing structure of the Indian economy.

Setting up of a data warehouse, for internal decision support and for dissemination of statistical data to the external users was one of the major steps in modernising information management. Migration from paper-based reports to electronic data gathering, initially through magnetic media, and subsequently through e-mail and further through online platforms cut down the time lag in data compilation and improved the data quality. Further technology infusion was through adoption of a modern technology solution in reporting, in the form of the eXtensible Business Reporting Language (XBRL). The information is disseminated through an online portal with flexible report generation facility for various users, including general public. Data are shared with international organisations through standard platforms such as SDMX, as per their prescribed standard procedures. Further the integration of data acquisition, validation and processing and dissemination through an integrated platform brought about increased efficiency in information consumption and management. Internal users and other stakeholders have been immensely benefitted by improvement in statistical infrastructure for monitoring the economy in general and financial sector in particular. The paper outlines the architectural features of the Reserve Bank’s information management system and its important role in effective utilisation of data by all stakeholders.
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II. Introduction

The Reserve Bank of India, in its role as central bank, collects data required for discharge of responsibilities in the areas of regulation and supervision of financial system, formulation of monetary policy, managing external value of Rupee, issue and management of currency etc. As a result, it has become an important part of the official statistical system, being primary source of monetary, financial and external sector statistics. The information management in the Reserve Bank has evolved in response to the emerging structure of the Indian economy. Technology based information management solutions have been implemented from time to time, consistent with the technical maturity of the responding institutions, and have helped the Reserve Bank to cope with its information needs.

The Reserve Bank collects and disseminates statistics as a part of the various functions and has an elaborate mechanism to collect, compile and disseminate these data. Data are collected as part of its business in its operational and policy departments and also at the back-end in statistics and economics departments as part of providing information support for operations and policy. Internal transaction systems for carrying out banking, reserves management, payment systems and debt management activities also feed the information systems of the Reserve Bank. The returns and large volume data sets submitted by regulated institutions are an important source of data, along with a number of surveys that are conducted for policy support activities.

The present paper discusses the statistical system at the Reserve Bank, information challenges that have emerged in the recent period and the initiatives for modernisation of the information acquisition and management infrastructure for improving the effectiveness and efficiency of the statistical function. The paper is organised as follows.
Section 2 discusses the role of the Reserve Bank in the statistical system. Section 3 enumerates the challenges facing the data compilation and section 4 elaborates the statistical infrastructure and initiatives for its improvement. The benefits to the policy inputs and public availability of economic statistics are discussed in section 5. The final section gives concluding observation.

III. Statistical System at the Reserve Bank

A. Role of the Reserve Bank of India in Statistical System

1. Monetary and Financial Statistics
   The Reserve Bank has been compiling and disseminating monetary statistics since July 1935. The monetary statistics with respective to the Reserve Bank comprises of the balance sheet of the Reserve Bank and the balance sheet of the banking system. Various important statistics are revealed from this, for instance the notes in circulation, reserve funds, deposits (loans and advances) from (to) different financial institutions. In India, the central bank is primarily responsible for compiling and disseminating the monetary aggregates.

   Further, comprehensive data on deposits, credit and investments are collected and released as a part of the Basic Statistical Returns (BSR) system. This data collected from individual bank branches on a census or sample survey basis depends on the nature of the return.

2. External Sector Statistics

   The compilation and dissemination of Balance of Payment (BoP) data is the prime responsibility of the Reserve Bank. Commercial banks are required to report purpose, country, currency and other details of their foreign exchange transactions through an Electronic Reporting System to the Reserve Bank since 1997. The coverage of Foreign Exchange Transactions - Electronic Reporting
System (FETERS) was recently extended to all transactions, including small value transactions, and purpose codes were modified in line with the latest BoP Manual. The resultant transition helped India in becoming one of the pioneering countries to implement BPM6 for BoP compilation. Also, the Reserve Bank also disseminates data relating to foreign exchange (forex) reserves based on its internal records.

3. **Financial Sector Stability**

As part of its core responsibility of maintenance of stability of financial system of the Reserve Bank, collects considerable information to ensure compliance with statutory regulations, solvency of individual financial entities and overall stability of the financial system, including financial markets. Data on several indicators of performance, health, soundness, management, etc. are obtained from the banks covering variables such as deposits, credit, other assets and liabilities, capital structure, asset quality, exposure of banking system to various asset classes and geographies and also the risks that the banks face as part of their operations. The Off-site Surveillance and Monitoring System (OSMOS) supplements the on-site supervision by the Reserve Bank.

As the money market is regulated by the Reserve Bank, it collects, compiles and disseminates regularly the information relating to the money market. The Reserve Bank also releases data on the market borrowings of the Central and State Governments, secondary market transactions, its open market operations and Repurchase Agreement (repo). These activities are carried out as part of liquidity and debt management functions.

4. **National Accounts Statistics:**

The Reserve Bank is involved in national accounts compilation, including savings estimation and flow of fund compilation. The Reserve Bank provides information
on household and corporate savings to the Central Statistical Office for preparing the final estimates. The Reserve Bank is entrusted with the compilation of the annual Flow of Funds (FOF) accounts on a ‘from whom-to-whom’ basis (RBI 2015). In addition to balance sheets, data for the FOF accounts are also collected through special returns from the institutional units/regulators. Reserve Bank prepares the estimates of savings and investment for the non-Government non-financial, financial and investment companies (excluding commercial banks) in India. Such estimates are compiled at all-industries level and also for specific industry-groups. These estimates are based on the results of the analysis of balance sheets and profit and loss accounts of select companies.

5. **Surveys:**

The Reserve Bank conducts a number of surveys for policy inputs and statistical compilation. The important surveys conducted by the Reserve Bank include:

a) **Surveys Related to External Sector:** (1) survey of foreign liabilities and assets for corporate, insurance & mutual fund sectors, (2) coordinated portfolio investment survey, (3) survey on software export, (4) unclassified receipt survey used for BoP, (5) survey on balances in Nostro / Vostro account used in BoP, and (6) survey on non-resident deposits;

b) **Surveys Related to Banking Sector:** (1) survey on distribution of credit, deposits and employment in banks, (2) survey on composition and ownership of deposits with scheduled commercial banks, (3) survey on investment portfolio of scheduled commercial banks, (4) survey of debits to deposit accounts with scheduled commercial banks, and (5) survey on international assets and liabilities of banks;
c) **Surveys Related to Corporate Sector**: survey of performance of private corporate business sector;

d) **Surveys Related to Monetary Policy**: (1) industrial outlook survey, (2) inflation expectation survey for households and (3) survey of order books, inventories and capacity utilisation; (4) credit conditions survey, (5) Consumer Confidence Survey (CCS) and (6) Survey of Professional Forecasters (SPF).

**B. Challenges to the Statistical System**

The statistical system faces continuous demands from its users, both in terms of improvements in timeliness, quality and also in terms of new types of data. The first set of challenges are addressed using technological and logistic improvements to the data gathering mechanism and appropriate changes to the statistical business process. On the other hand, new data needs require development of new methodologies and identification of data sources for collecting and compiling the data as per emerging requirements.

1. **Infrastructural challenges:**

   With growth in the economic activity, the volume of data has been growing continuously. At the same time, economic reforms, liberalisation and resultant down-sizing of manpower has also affected resources of the statistical machinery adversely. Fortunately, absorption of technology by the business and government alike, has enabled moving over to newer methods of data gathering and processing. At the same time, easing of controls in several areas, which hitherto required licenses, have made administrative data sources unavailable. However, mechanism for reporting of transactions for monitoring purpose has ensured appropriate alternatives for data compilers. In fact post facto reporting and easier
formats (devoid of control related fields) have made reporting simpler and compliance has improved in some of the areas.

The data required for different purposes within the Reserve Bank differ somewhat from each other, even for very similar concepts, on account of coverage in terms of types of sub-concepts or institutions, reference dates. Often the provisional data submitted for policy purpose with limited scrutiny at the submitting institutions also differ significantly from the final audited data. For example, data on bank credit may differ on account coverage (i) credit within the country, (ii) gross credit, (iii) net credit after deducting loan losses / provisions, (iv) credit including or excluding the credit to banking system, etc.

While banking system is relatively more structured and almost fully computerised in operations, data inconsistency problems arise due to inadequate capture of various dimensions, which are “informative” and “policy related” but are not “essential” for carrying out transactions. Borrower’s country of residence or institutional category are required for proper classification, but may not be properly captured by the banks’ at the branch / operational level. Further, multiple information systems provided by different vendors may not be fully compatible and prevent timely extraction / aggregation of data in the required layouts. This not only creates time-lags but also inaccuracies in the data, when the respondents look for quick-fix solutions to the reporting system deficiencies. Instances of fixing the data deficiencies for the latest time point, but not carrying out the corrections in source systems have also been noticed repeatedly.

2. **Changing Regulatory Requirements:**

The monetary statistics have undergone several improvements on the basis of the recommendations of various groups set up within the Reserve Bank. The banking regulation has also undergone considerable changes in response to
Baseline regulations (Bank for International Settlements) and in response to the various international initiatives (such as Financial Standard Board).

3. **Changing economic, business and technological environment**

With the expansion of the banking network in the country, and increase in the number of bank branches, the Reserve Bank started the maintenance of a database of the vast branch network of commercial banks. The Reserve Bank has provided on the website a facility of Bank Branch Locator, which is a dynamic tool providing information on various aspects of bank branches. This includes detailed information like location, type of business on branches of commercial banks. This helps banks in accessing locational information for branch expansion and financial inclusion.

4. **Addressing the Data Gaps**

India is currently compliant with the IMF Special Data Dissemination Standard (SDDS). The Ministry of Statistics and Programme Implementation (MoSPI) is responsible for the real sector, Ministry of Finance (MoF) is responsible for fiscal sector statistics and the Reserve Bank is responsible for financial and external sector statistics.

The quarterly BoP data are now available with time a lag of a quarter, which also meets the standards of SDDS of the IMF. The standard also calls for the compilation of the International Investment Position (IIP) in accordance with the fifth edition of the IMF’s Balance of Payments Manual.

In the context of the G-20 data gap initiative (DGI), the Reserve Bank reports data on 12 core and 13 encouraged financial soundness indicators (FSI) for banks. Information on International Investment Position, Co-ordinated Direct Investment Survey (CDIS), Co-ordinated Portfolio Investment Survey (CPIS) (for
Mutual Funds, Insurance and Private Corporate Sector) are disseminated as a part of conforming to the SDDS framework of IMF and G-20 data gaps initiatives.

C. **Statistical infrastructure at the Reserve Bank**

The present system of data and information management in the Reserve Bank has evolved over the years in order to keep in pace with the emerging needs of the Reserve Bank and to disseminate quality information. Some of these methods of data acquisition have been customised to take care of the nature of the data being captured.

RBI (2014) noted that the data collected at the Reserve Bank may be classified as (i) aggregated data, (ii) distributed data aggregates, and (iii) granular data depending on the relevance of data at different operational hierarchies.

1. **Evolution of Data Collection Processes**

The data collection process at the Reserve Bank has seen considerable evolution over the years from paper based reporting to soft data reporting. Initially the electronic data collection was in the form of magnetic and other media, in formats which were tied to a particular software or generated by a specific data entry / compilation software. Subsequently, standard file formats, either text or CSV were prescribed, which the banks could generate from their internal systems.

Subsequent transition was implemented by the Reserve Bank mainly with a view to bring sophistication and automation in the form of online submission of data through secure website. At the same time, Reserve Bank has strived to implement the best available practice which subsequently resulted in the adoption of the XBRL standard.
The following section discusses the various methods of data acquisition that have been used in the Reserve Bank, in the recent period.

a) **Online Return Filing System (ORFS):**

   This can be considered as an important step in automating regulatory reporting. Here, the reporting entities log into the secured web server. Reporting entities have an option to either manually fill the returns on-line or update the same from the pre-prepared XML format files. Later the data is received at the database server. The online validation checks improve the quality of information to a large extent. It also resulted in considerable reduction of the time lag between the time of data submission by banks and the time required for data processing by user departments of the Reserve Bank.

b) **Direct Data Upload:**

   This may be considered as a variation of the ORFS based data submission system. A web based portal has been developed for some returns which enables banks to upload and monitor their data directly into application with proper authentication and validation in the system. Here the reporting entities are provided with a web interface to upload the data. A naming convention for these text files have been provided and may consist of Bank Code, Name of Return etc. The online validation checks will indicate the errors which will help them in correcting the data immediately. The offline validators provided will enable the reporting entities to validate the data at their end before uploading it on the web portal. On successful submission, banks will get acknowledgment immediately.
c) **Using Magnetic / Optical Media:**

In case of bulky data, which are too voluminous for e-mail, the data is forwarded using Optical media like CDs or even pen drives today. These contain zipped files and these files are uploaded in the Reserve Bank's system. These validations may include checking for consistencies with the summary table, validating the unique identifier etc. Such media based systems are being phased out.

d) **Standard Based-Using XBRL:**

XBRL (eXtensible Business Reporting Language) is an XML based reporting platform, primarily designed for reporting of financial statement to various regulatory agencies. Reserve Bank started using XBRL, on a pilot basis in 2008, for reporting of regulatory data by banks, owing to its similarity to the financial statements and the flexibility provided by the language to take into account the emerging changes in the reporting requirements. After initial success, the Reserve Bank has extended the XBRL based system for substantial portion of regulatory reporting and for off-site supervision of Commercial Banks and other segments of the financial system, including Urban Co-operative Banks, non-bank Financial Institutions, and Primary Dealers in Government securities. The adoption of the XBRL standard has enabled standardisation and rationalisation of elements across different reporting formats (returns). The language enables defining the data element, its label, relationship with other elements, validation checks etc., as part of system readable specification. This facilitates proper communication between the data seeker and data provider and also validation of data, before the same is loaded into the regulator's database. One of the most important benefits
provided by XBRL based reporting is data quality improvement in terms of consistency of data within a particular return and also with other related returns. The automated data submission platform also enables automated data receipt monitoring and follow up with non-responding institutions.

2. **Data Management:**

The data management system is a combination of centralised data warehouse and a number of small departmental systems. The Enterprise Data warehouse has been in existence since 2002 and has been used to disseminate data on Indian economy through website, since 2004. After initially serving as an archival and dissemination system, it has become active decision support system in the last few years, with integration of several departmental systems, with direct data receipt using the XBRL based reporting system and also with the internal transaction systems, such as core banking system, payment systems etc.

3. **Data Dissemination:**

Current data dissemination of the Reserve Bank encompasses not only the traditional paper based publications, but also high frequency data through the website and Press Releases.

The following section discusses the various methods of data dissemination done adopted by the Reserve Bank.
a) **Paper Based Publication:** The Reserve Bank has been collecting the data and disseminating through various publications, historically. The most important publication is Handbook of Statistics on India Economy, besides Statistical Tables related to Banking in India, Annual Report of RBI, Report on Trends and Progress of Banking in India, Monthly Bulletin and the Weekly statistical Supplement.

b) **Publication through the website:** Earlier in the 90s due to the growing popularity of the internet, the Reserve Bank started releasing the publications through the website of the Reserve Bank. Initially, these publications were published as PDF files. Later on, the data were released as Excel files also, so that the users can download and use the data.

c) **Dissemination through Data Warehouse:** Initially, a Centralised Database Management System was set up by the Reserve Bank for dissemination of data to its internal users. Later, a public interface was developed for disseminating the data to the general public referred to as the Database on Indian Economy (DBIE). The important benefits of the DBIE include the near real time generation of the major macro-economic / financial data and the integration of regulatory, supervisory and market data. The dissemination is done through static reports as well as through dynamic query based reports.
d) SDMX based report: The Reserve Bank of India being the primary source for generating banking and financial statistics is required to disseminate the same to the public and share it with international institutions such as the BIS and the IMF. For efficient and effective sharing of information with international institutions, a separate web portal has been set up based on the SDMX (Statistical Data and Metadata Exchange) standard. At present 178 series are reported to BIS using Statistical Data and Meta Data exchange (SDMX) on daily, weekly, Monthly quarterly and yearly frequency on fortnightly basis for the following subject area:

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<th>No. of Series</th>
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<td>47</td>
</tr>
<tr>
<td>2</td>
<td>Bank assets and liabilities</td>
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<td>3</td>
<td>Domestic interest rates and bond yields</td>
<td>14</td>
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<td>Exchange rates</td>
<td>7</td>
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<tr>
<td>5</td>
<td>Foreign trade</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Government finance and public debt</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>Monetary aggregates and counterparts</td>
<td>6</td>
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<tr>
<td>8</td>
<td>National Accounts</td>
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<tr>
<td>9</td>
<td>Prices and earnings</td>
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</tr>
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<td></td>
<td><strong>Total Count</strong></td>
<td><strong>178</strong></td>
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</table>

D. Initiatives at the Reserve Bank to Improve the Statistical Infrastructure

1. Overview of the XBRL System at the Reserve Bank:

   XBRL based data submission application software has been provided with facilities like off-line data entry, data upload, view, print, save and validate. The XBRL templates for each of these returns are available online and can be downloaded in Excel format for offline data entry. The XBRL taxonomies and
validation rules (xsd files) have been made available to the public so that the
bank level aggregates could be submitted through XBRL instance documents.
Any change in these templates/taxonomies is notified immediately to the users.
The excel template has an in-built validation facility, to generate XBRL instance
document and enable encryption. The encrypted XBRL instance document is
then uploaded on the XBRL site after proper user authentication. The XBRL
system can also accept XBRL instance document generated directly from the
source system of the reporting entities (i.e., without using Excel template) and
upload the XBRL instance document on the XBRL site. The validated XBRL data
is moved to the Data Warehouse (DW) at the Reserve Bank and reports are
generated from DW database.

2. Importance of Taxonomy:

The standardisation of data elements has been achieved in the XBRL based data
submission system by defining a set of ‘taxonomies’. The taxonomy files consist
of schema and link bases. Schema contains the data definitions and their
properties, while linkbases are the interrelationships between the data defined in
schema. The taxonomy is designed and created by considering the principle of
reusing the existing elements wherever possible

For the taxonomies of the Reserve Bank, following set of files would be created

a) Schema : Contains element and the properties as per XBRL
   specifications

b) Presentation linkbase: The display format for the elements. The recent
taxonomies developed across the globe for regulatory reporting which are
dimensional in nature normally does not include presentation linkbase.

c) Calculation linkbase: The mathematical relationship between the
   elements. It should be noted that due to limitations of calculation linkbase,
certain type of mathematical relationships cannot be defined and hence only in the circumstances where calculation linkbase can be built, it would be created.

d) Definition linkbase: The dimensional relationship between concepts. It should be noted that data structures which do not require dimension, definition linkbase is not required, and hence would not be defined.

e) Label linkbase: The human readable names to the concepts defined in schema

f) Reference linkbase: The links to the regulatory literature based on which the disclosure requirements arise. The latest circulars/notifications as applicable would be required to create reference linkbase

g) Formula Linkbase: The formula linkbase is used to define advanced mathematical and logical checks which cannot be taken care of by calculation linkbase and other business or validation rules as required. Creation of this linkbase require interaction with concerned departments of the Reserve Bank to understand the rules and checks done currently and additional rules that can be defined.

3. Important Returns under XBRL

Under the XBRL project, 97 returns have been developed so far. Majority of the returns pertaining to the regulation and supervision done by the Reserve Bank is already under the XBRL system. Some of the important returns under the XBRL system include: Financial accounts of the banks, Regulatory monitoring like, Cash Reserve Ratio, Statutory Liquidity Ratio, Unclaimed Deposits, Gap, Positions and Balances (GPB), Capital Adequacy(designed as per Basel II guidelines) etc. The OSMOS system, a principle vehicle for banking supervision
is now under the XBRL system. The Reserve Bank is in the process of bringing
the returns pertaining to Risk Based Supervision under the XBRL system.

4. **CRILC and CFR:**

CRILC (Central Repository for Information on Large Credits) was introduced by
the Reserve Bank with a view to provide credit information of large borrowers to
the banks as well as the regulator and reduce the level of Non-Performing Assets
(NPAs). The CRILC module has been developed under the XBRL system. The
repository serves as a platform for the Reserve Bank to collect, store, and
disseminate data on large borrowers’ credit exposures.

CRILC return captures credit exposure details of large borrowers based on
reporting by different banks / Financial Institutions/ Insurance Companies /Non-
Banking Financial Companies.

The Reserve Bank of India has put in place a Central Fraud Registry (CFR),
which is a searchable database to help banks detect instances of fraud by
borrowers early on. The CFR has been developed on the basis of the returns
relate to frauds submitted under the XBRL system.

5. **Core Taxonomy and Its Role in Harmonisation of Statistics**

The core taxonomy formed the basis of the harmonisation of statistics project
that was underway at the Reserve Bank. The core taxonomy which is the basis
of XBRL, defines each tag (data item) with hierarchy (parent child relationship
among tags) and related definitions, interrelationships among various tags with
formulae involved and also the related references (metadata). The XBRL data is
submitted along with the tags which facilitates validation of data by linking the
same to taxonomy.

The keys step in the harmonisation project is agreeing common definitions of the
information required across returns owned by different departments of the
Reserve Bank. While the XBRL project has provided a kick start to the harmonisation project, the latter will now strengthen the XBRL system by (a) providing a base for defining all data elements required for XBRL taxonomy, and (b) deleting existing duplicate/ creating new data elements, as the case may be.

6. **Automated Data Flow (ADF)**

The ADF is an initiative taken by the Reserve Bank in order to ensure accurate and consistent flow of data to the Reserve Bank without any manual intervention. The ADF approach mandates all banks to have a Centralised Data Repository (CDR), which forms the reporting database for all filings. The CDR also requires a ‘Zero Touch’ reporting approach. The ADF Approach Paper released by the Reserve Bank in 2010 stresses that in order to achieve the objective of automated data flow and ensure uniformity in the returns submission process there is a need for a common end state which the banks may reach. The common end state is broken down into four distinct logical layers i.e. Data Acquisition, Data Integration & Storage, Data Conversion and Data Submission. The Data Acquisition layer should capture data from various source systems and the Data Integration & Storage layer is expected to extract and integrate the data from source systems with maximum granularity required for Reserve Bank returns and ensure its flow to the CDR.

The harmonisation project will also help the banks in framing the aggregation rules required for the ADF system. Banks will be able to generate consistent and uniform data through their ADF system and seamlessly report through XBRL.

E. **System Level Benefits:**

The Reserve Bank has always strived to implement the best available technology. The Reserve Bank has adopted the best-in-breed solution by
advocating the use of XBRL for data submission, and disseminating data from the data warehouse using ETL and BI tools. The Reserve Bank is also exploring the use of open source data warehousing solutions like Hadoop in related areas such as data quality, big data analytics etc.

The data management system in place at the Reserve Bank is beneficial to both the users and the information managers. By promoting the use of open source platforms and providing feasible transparency of related information, the Reserve Bank is for the reduction of dependence on the vendors by the reporting entities. The Reserve Bank does not advocate the use of any particular platform for complying with the reporting prescribed and the choice of softwares for creating the necessary platform is at the discretion of the reporting entities. Also, the data disseminated through the DBIE are downloadable in different formats like .pdf, .xls, .csv which aids in the easier manipulation of data by the user.

Ultimately, the Reserve Bank aims at bringing all the returns under its XBRL system and disseminating the various related statistics through DBIE. This will allow better integration of data from various sources and will give a better picture by performing cross-return analysis.

IV. Conclusion

In view of the responsibilities of Reserve Bank for regulation, supervision and development of financial system, management of foreign exchange reserves and also for monetary policy, the Reserve Bank comes in possession of large amount of data on financial, external and monetary sectors. While the primary objective is its use in operations and policy, a significant amount of statistics is compiled and published by the Reserve Bank, and thus it becomes an important component of the statistical system in India. The changing business environment has called for rapid and information based
policy responses. This has necessitated almost near complete migration towards online information gathering and implementing centralised solutions for information management. While amount of centralisation is still under progress, important systems such as banking regulation, supervision (including off-site supervision), compilation of balance of payments statistics and statistical information system on bank credit, deposit and other parameters are now covered by centralised data management.

The implementation of XBRL based returns has enabled the Reserve Bank to standardise the reporting platform and also to effectively monitor the data submission. Data warehouse has evolved into an effective report generation system with modern reporting tools, which provide pre-formatted and ad-hoc reports. The general improvement in Statistical Infrastructure has helped the Reserve Bank in handling the increasing complexities in area of monetary policy, Regulation and Supervision. Such measures have resulted in improving the data quality and reducing the processing and dissemination time.

Over the time, the Reserve Bank has been working to improve the statistical infrastructure and continue to work in this direction. This will result in removing the data inconsistency and thereby further improve the information and analytics availability for decision makers and researchers.

V. References

