# Business Intelligence and Analytics: Paving way for Operational Excellence, Quality and Sustainability in Indian Banks

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## Abstract

India's banking industry is undergoing through a phase of major transformation, with entry of more players in an already competitive environment and as a result one common theme being seen across banks in India is increased adoption of business intelligence (BI) and analytics to drive their overall profitability. Can Business Intelligence and analytics assist in resolving some of the issues faced by modern day banks in India? This study explored Business Intelligence and Analytics application in Indian Banks using focused interviews, press release, bank website review and case study analysis. The study found tools and technologies being used and various areas of BI application in banks. It also found the areas in need of improvement, issues and challenges faced by Indian Banks in their BI and analytics implementation agenda. It is hoped that this study will serve as a knowledge base about BI and analytics in Indian bank and would assist managers, decision makers and researcher in making better informed decision. The study also provides the scope for further research in the role of Business Intelligence and Analytics in Indian Banking system.

## Keywords

Indian Banks, Business Intelligence, Analytics, Inclusive

## 1. Introduction

India's banking industry is undergoing through a phase of major transformation, with entry of more players in an already competitive environment. Also due to increase in the pressure on banks' especially due to the rise in Non-Performing Assets (NPA) across various sectoral lending, one common theme being seen across banks in India is increased adoption of business intelligence (BI) and analytics to achieve their overall profitability. Can Business Intelligence and analytics assist in resolving some of the issues faced by modern day banks in India?

### 1.1 BI in Banking

As per Negash S.(2004), Business intelligence systems couple operational data with analytical tools to produce information of competitive value for planners and decision makers. These systems can handle huge amounts of information and are capable of identifying information to develop new opportunities. Thus competitive market advantage and effective strategy insight are gained by implementing BI based systems.

BI main focus is on three core areas; that is ensuring competitive advantage, operational efficiency improvement and gaining profitability which are achieved through data collaboration and analysis systems found as the intermittent layer between the business process and data collection. BI applications make use of several technologies, such as data mining, data warehousing, Online Analytical Processing (OLAP), periodical business reports, business performance management, etc. to manipulate organizational data and provide information and insight to its stakeholders Chaudhuri et al. (2011), as shown in Figure 1.
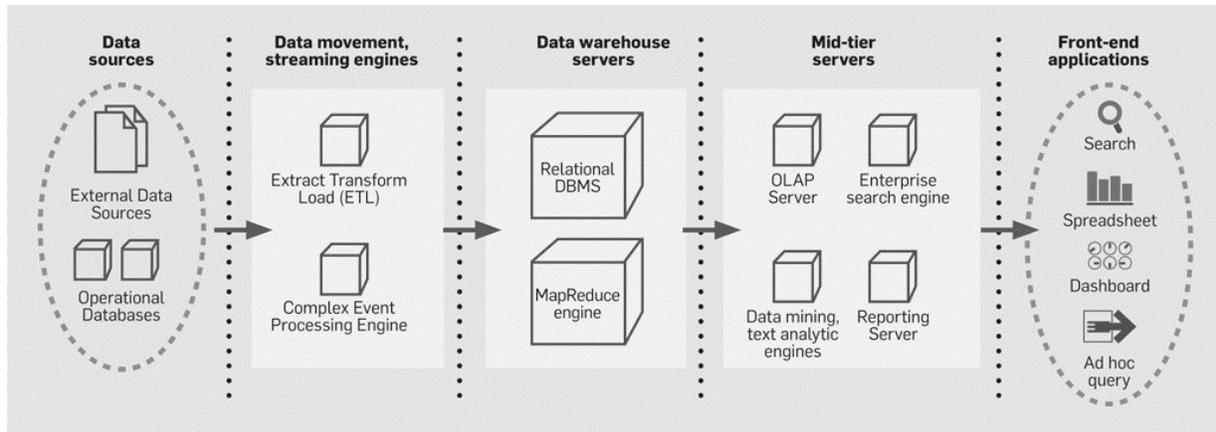


Figure 1. A typical BI Architecture

BI tools have been used by banks for past data analysis, business performance analytics, employee performance measurement, performance budgeting, management dashboards, product innovation, customer profitability, marketing and sales automation, regulatory compliance and risk management, BIIF (2011).
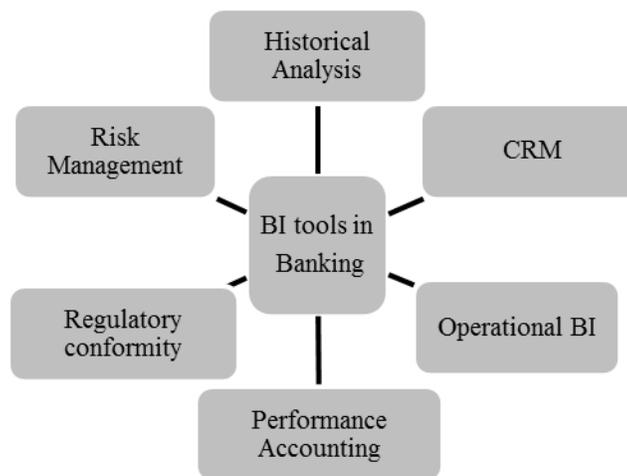
## 1.2 BI analysis tools in Banking



Figure 2. BI analysis tools in banking

BI tools enable bank to analyze their historical or time series data to strategize for their future. A time series data is an array of data points, consisting of successive measurements made over a time interval. Several dimensions like the time dimension, control structure, geography, products, Income, expenses, customer types or segments are also required for this analysis. Some of the derived indicators also evaluated over time include profitability, business per employee, product profitability etc. Due to the presence of number of business critical dimensions such analysis are

best handled by multi-dimensional databases also called is hyper cube, TDWI (2012). Nevertheless analyzing, interpreting information for implementation purpose is still dependent on individual discretion.

CRM applications make use of several techniques and tools that enable them to manager their customer management and engagement. Activities for this objective include promotional activities, services and sales directly to the clients and reveal associations in adequate detail so that administrations, salesmen, service providers and even clients can avail the data and combine it with customer requirements. Banks can also plans the release of product and other offerings give a reminder to its clients of service needs and monitor imbursement accounts, BIIF (2011).

Operational BI merges analytical and operational processes to provide an environment for almost real-time decision making and collaboration. This can be valuable in many areas of the business, for example to reduce fraud, decrease loan processing times, and optimize pricing. BI enabled banks to enforce regular audits and evaluations to curb discrepancies in accounting and thus resort to remedial measure on time, BIIF (2011).

BI applications have enabled banks to analyze information related to regulatory changes and market violations to assist them with compliance and implement and enforce regulatory controls. Example of some regulatory conformity needs in Indian banking sector include, information centric regulatory needs which comprises Stock Exchange Bord of India (SEBI) clause 49, Basel II, Basel II, etc. that enforces the value of treatment, chief information officer (CIO) appointment and chief executive officer (CEO) who are individually accountable for the accuracy of the assessments, BIIF (2011).

Risk management is of prime concern to banks today. BI application provide such statistical business models that enable assessment of various risk such as fluctuation in interest rates etc. BI tools enable removal, cleansing and transformation of data to enable risk assessment.

Due to impact of globalization there has been an increase in the complexity of decision making process in banking sector. Business Intelligence solutions assist the decision makers to make the best possible decision by taking advantage of analytical tools, which can test and verify various alternatives before applying it to the decision making process. The Indian economy has been heavily dependent on its banking system. Advances in the field of information technology, has enabled the use of business intelligence practices in banking sector has increased in multifarious ways, Miesrwa I. (2014). Figure 3.

## 2. Objective

The objective of this study was to explore how Business Intelligence and analytics is being used in Indian Banks; what are the various tools and technologies being used for this purpose; what are the various areas in banking sector where BI and analytics is being applied; what are the various issues and challenges being faced by banks in implementing and using BI and analytics in their environment; how are banks using BI to achieve their sustainability agenda. And also to analyze what the various research gap in this areas to provide an idea about scope for further research and a knowledge base in the application of Business Intelligence and analytics in Indian Banking sector.

## 3. Research Methodology

Case studies, press releases, white papers and websites of various Indian Banks were analyzed to understand how banks are using BI and analytics to better their operations, design strategy and also target their sustainability agenda. Finally five prominent banks of India that is HDFC bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank and SBI bank were selected to study further for analysis. We reviewed and compared the website of these bank to understand the various feature provided by them and the role of BI and Analytics behind these features. We then visited branch of these banks and had one to one discussion with the branch managers using unstructured questionnaire to get better understanding of the BI tool & technology and processes behind various features and services provide by the banks.

## 4. BI and Analytics in Indian Banking system: Findings

Following one to one discussion, and analysis through available and supporting literature; the findings for each bank were summarized into a short case as follows. This information and work is work in progress, we still in the process of getting more details regarding how Indian banks are implementing BI and analytics for their purpose. This paper summarizes the information gathered so far.

## 4.1 HDFC Bank

HDFC Bank has been a pioneer in implementing analytics in banking sector in India. The analytics engine in HDFC bank enabled them to track customer's financial habits and thus were able to get an insight into customers purchase, saving behavior and then use this insight to promote their offering to their customers. The Bank has made a huge investments in best of technology available to build the infrastructure for a world class bank. Their Corporate Banking business is supported by Flexcube, while the Retail Banking business by Finware, both from i-flex Solutions Ltd. The systems are open, scalable and web-enabled. Analytics at HDFC was also used to monitor money laundering activities such as transfer of money to several accounts, huge cash deposit in a single day, opening of many accounts in short duration or sudden activity in an account which was not active for a long time. BI and analytics also enabled bank to track the credit history of their customers and thus enable loan sanctioning decisions by bank. HDFC Bank want to take its analytics driven approach to next level by utilizing it in analyzing its decision at various other front like strategic, measurement or resource allocation for optimum utilization, channel efficiency and geographical expansion, SAS (2015).

## 4.2 ICICI Bank

BI and analytics has been frequently use in ICICI Bank for its Debt Collection process by assisting in the selection of right customer approach channel. The BI solution in place make use of host of tools and technologies for example SAS, Posidex, TRIAD, Data Clean and Sybase that analyzed various points of customer information like risk behavior, profile, and efficiency of data collection. Debt collection as a customer retention tool was completely transformed by them, by using a centralized debtor's allocation model that assigns correct set of delinquent cases to collection channel that is most efficient for that case, D'Souz (2011). The entire process is managed by the rules run on SAS BI. The process help to produce a reverse up loadable file that helps to track delinquent cases and identifies the channel to which they need to allocated for resolution. Several non-intrusive methods like SMS, reminder calls, e-mails, IVR, and dunning letters are being adopted to manage early delinquencies by the bank. Analytics usage throughout bank's offerings has ensured numerous efficiencies in the process and has enabled sound understanding of the allocation logic across the country, and thus enabled devise a framework for smooth allocation of activities. BI and analytics is also being used by bank to assess performance and prioritization of collections, D'Souz (2011).

## 4.3 Axis Bank

In Axis Bank, analytics is omnipresent due to its usage in almost every sphere and the bank has witnessed fivefold increase in sales staff performance for over five years. Wide usage of analytics enabled Axis Bank to ensure reduced loan prepayments and increase in customers. The BI solution in place uses SAS for providing customer intelligence throughout the organization. Improve risk management across the organization is also one benefit provided by the tool used in the bank, Earnix (2013).

## 4.4 Kotak Mahindra Bank

Kotak Mahindra Bank, uses SAP BO based BI solution to manage its timely and accurate reporting goals. The bank has also deployed a tool to Anti Money Laundering (AML) agenda and thus ensuring compliance to guideline for fraud analysis. The tool make use of advanced scoring model to detect a pattern in customer behavior and assigns a risk score to each activity thus helping to detect the level to risk associated with each customer activity. Machine learning concepts are being used by this tools to understand the customer behavior thus provide an interface to analyses similarities and deviation from normal in a customer activity; leading to detection of possible fraudulent transactions and high risk activities. BI and analytics has also helped the bank in achieving their financial inclusion agenda in huge way, Jansen (2012).

## 4.5 State Bank of India (SBI)

SBI recently hired several statistician and economist to build around 60 models to manage its varied operations. The models in particular would be developed to apply to their various loan management activities to minimize the percentage of turning into bad loans, Mendonca (2015). For example to manage education loan, data from their bad loans is viewed in association with data from income tax departments and credit rating agencies to identify the defaulting candidate and then brief them with a reminder message on Facebook. Studies are also being undertaken to spot the colleges that have most delinquent cases and what measure should be taken to manage the growing risk. SBI host a huge data warehouse of over 120 TB and receives around 4 TB of data every day. It is no wonder that BI and analytics is of immense use and importance to SBI.

## 5. Challenges to Effective use of Business Intelligence and Analytics in Indian Banks

As seen above BI have a huge role to play in banking operations but all this is not possible without leaping over the various hurdle like technological, infrastructural, training and skilled resource crunch encountered in the path to BI success. Following are some of the challenges faced by banks in this process.

- First and foremost the need is to identify what is relevant and meaningful to the business by monitoring and analyzing the measures that improve decisions and actions, which contribute to better business results requires identifying the right metrics to measure. The state of BI maturity in different departments of the various bank is not same. Figure 3. Highlights the current state of the same in Indian banks, EY (2014).
- Ensuring the availability of clean data regarding the existing customers in all its branches is one of the most critical task that bank are being faced with currently. Like in any other data warehousing and BI project this issue have been a big challenge for usage of BI in banks in India.
- The processes required collaborative effort development between HR, Finance, and IT with significant input from line managers and executives.
- Surveys have shown that BI applications are being mainly utilized mainly by the top management only in the bank, as they facilitate their needs better. Whereas the need is to equip the line managers also with operational business intelligence to assist them in their work.
- Bank professionals are required to have quantitative skills and also be tech savvy.
- Strong communication and change management plan is required for creating a culture which promotes use of analytics, EY (2014).
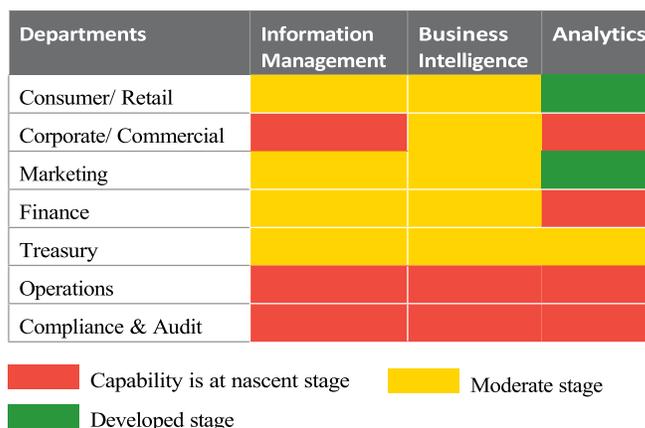
| Departments | Information Management | Business Intelligence | Analytics |
|---|---|---|---|
| Consumer/ Retail | Moderate | Moderate | Developed |
| Corporate/ Commercial | Nascent | Moderate | Nascent |
| Marketing | Moderate | Moderate | Developed |
| Finance | Moderate | Moderate | Nascent |
| Treasury | Moderate | Moderate | Moderate |
| Operations | Nascent | Nascent | Nascent |
| Compliance & Audit | Nascent | Nascent | Nascent |

■ Capability is at nascent stage   ■ Moderate stage
■ Developed stage

Figure 3. Heat map of the current maturity state of some key departments

## 6. BI and Analytics for Inclusive Financial System

Availability of financial services to all sections of society helps to accelerate economic growth in society and also goes a long way in minimizing income inequality. But to achieve inclusive agenda banks need to understand the needs and peculiarities of customers at grass root level and improve its operation Inclusive Finance India (2015). Using Business Intelligence and predictive analytics banks can work on catering to the needs of all the sections of

society and thus help create an inclusive financial system. Robust data collection, Business Intelligence and analytics capability is helping many Non-Banking institution and Micro financing institutions to serve the specialized need of customer at lower strata of society and thus aiding Government of India in achieving its agenda of financial inclusion as soon as possible, Microfinance Institution Network (2015).

## 7. Scope for further research

An empirical study could be undertaken to assess the impact that Business Intelligence and Analytics has on various objectives of Banks. An empirical study can also be undertaken to create a BI model that would best serve the various goals of the Banks and would assist in overall value creation.

## 8. Conclusion

Though Indian Banks have been adopting BI and analytics for their operations and strategy design for over a decade now they have yet a long way to go in meeting more specific needs of its customers and to attract new customers from all sections and strata of society. They also need to pace up and employ processes and mechanism they enable them to use the data effectively through smart use BI and analytics in bank and leverage the power associated with it for profit, competitive edge and also sustainability.

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