Big Data Analytics – New Technology for Indian Banks

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Abstract

Big Data are said to be a huge amount of data with four V's known as Volume, Variety, Velocity and Value. Banks need to have a focus on their customers in the angle of 360 degrees to visualize their behavior patterns. Hadoop Ecosystem is a Big Data Software platform for analyzing the big data. Big data is said to vast amount of data measured in terms of terabytes that flows in various technological devices such as mobile phones and computers. Lack of abundant data is the major cause to manage risk in an organization like banking industry. Capgemini Consulting group has analyzed how banks maximize the value of their customer data.

KEYWORDS: Big Data Management, Business Value, Commercial Banks, Customer Segmentation, Fraud Detection, Risk Management

1. Introduction

Big Data are said to be a huge amount of data with four V's known as Volume, Variety, Velocity and Value. Any organization in the business field should follow certain strategies and technologies to handle and manage those data to increase the potential level of an organization. Hadoop Ecosystem is a Big Data Software platform for analyzing the big data especially for the service implementation[1]. Financial Institutions like banking industries are said to be more customer centric and every day it receives huge amount of customer data. Customers visit bank branches to make their investment, get loans and advances, either maintain a fair relationship with the banks or even do fraudulences. Banks are needed to have a focus on their customers in the angle of 360 degrees to visualize their behavior patterns, repayment habits and their financial needs. The Government of India focus on building a digitalized India by connecting all the people in the country including rural households, panchayat and Governmental departments through broadband highways. By analyzing the huge amount of data generated from these departments and people, the smarter villages can be created by solving the endless problems in rural areas[2]. In today's world banks need to identify and practice various sources of value to build the customer relationship and trust on its digital banking[3]. Therefore, big data analytical tools are said to be a biggest asset for the business organization like banking industry to handle the data extracted from social media websites. Big Data tools and techniques help the banks to detect the occurrence of fraudulences by highlighting the exact area, reduces the risk factors of the organization and to segment customers based on the dimensions of products and services.

2. Objectives

1. To analyze how big data are managed in Indian banks.
2. To analyze the factors that has high impact on banking industry for handling big data.

3. To examine how analytics creates value for the business.

2.1 Big Data Management in Indian Banks

Big data is said to vast amount of data measured in terms of terabytes that flows in various technological devices such as mobile phones and computers. Any organization or a firm could drive all those data to increase their busi- ness value with the right solutions. Today big data analysis tools and technologies can transmute any business organization especially the financial service sectors like banking industries. Lack of abundant data is the major cause to manage risk in an organization like banking industry. The study has also highlighted that 37% of the bankers has stated that they can't predict regarding the investment to be made for managing the risk to get the biggest return of the organization[4]. The top five big data use cases which are analyzed by SAP in banking and financial ser- vices are fraud detection and security, Compliance and Regulatory reporting, customer segmentation, risk management and personalized product offering. SAP software helps banking industry and financial services industry to keep up the expectations of the customers, increases the profit margins across all the gateways and also for shifting towards digital banking with a world class banking systems and technologies. Oracle Corporation in 2015 has driven an outline for the adoption of big data and ana- lytic capabilities as a part of next generation architecture that can meet the needs of banking industries and financial services such as Risk & Capital Management, Wealth Management & Customer Intimacy and also to improve fraud detection. Big data system helps the organization to obtain higher level of insight into data by an effective way that in turn enables the firm for a successful decision making. Cloudera has determined the three factors such as Prioritization & Competitive Advantage, Regulatory Compliance & recession recovery, customer profiling and segmentation establishes Big Data in financial services.

Capgemini Consulting group has analyzed how banks maximize the value of their customer data. The study has examined that only 37% of banks are utilizing big data whereas, the rest of the banks are still experimenting for adopting big data. Big data analytics helps the banks to tar- get the customer segments at micro levels by combining variety of data such as behavior pattern of the customers, demographic variables and analysis of sentiment from social media. Big data analytics helps the banks to maintain a strong customer relationship management this in turn increases the profitability and sales for the organization[7].The study has also highlighted that organization silos are said to be peak barrier for managing big data. Big data analytics in banking industry is said to be a biggest asset if the data are organized by appealing a right analytics. The study has highlighted that very few banks namely Citibank, Deutsche Bank and Bank of America have reached in depth for utilizing big data, especially to detect fraudulences and to offer customized services. The author has narrated that Propel Stream is said to be a real time analytics solution that extract data from various sources such as Facebook, Twitter and through different channels of social media. Figure1 shows that Propel Stream helps the banking industry to send the anticipating messages to the receivers or customers through various channels like mobile phone devices, pages of fraud detection and file systems. This Propel Stream Database also supports the banks to solve the organizational challenges such as managing huge volume, variety and velocity of data from various departments, data security, detection of fraudulences, managing risks, Customer Segmentation, Analyzing Customer Experiences and tracking regulatory compliances[8].

2.2 Factors that has a Greater Impact on Commercial Banks for Handling Big Data

2.2.1 Risk Management

Financial Institutions like banking industries should have a thorough knowledge about their customers since banks
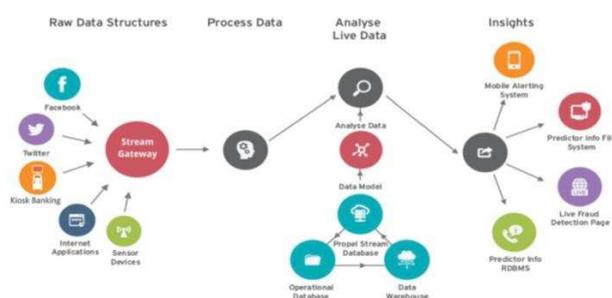

Figure1. Functions of Propel Stream analytics solution.
Source: Aspire Systems Consulting PTE Ltd

are said to be an industry which meets credit risks. Big data analytics helps the banks to develop many predictive indicators by extracting data from various data sources such as marketing databases and also from the social media web- sites. This predictive indicator helps the banks to visualize the behavior of the customers[9]. Banks has taken enormous steps to integrate systems by using big data analytical tools to extract customer data and this helps the organization to reduce the risk factors, which in turns helps the banks to visualize in depth relationship with the customers By synthesizing, correlating, scrutinizing and correlating the high volume of data big data analytics tools and techniques delivers the business value for the organization[10]. Banks are needed to have a view from an angle of 360 degrees towards each customer for targeting them with the correct products and to adapt based on the needs of the customers. Therefore, analytics helps the banks to understand and analyze the dimensions of risk involved much faster with- out amplifying the human resources[11]. Connecting data from various different systems is considered to be highly important for the banks to visualize the potential risk. Therefore, it is highly necessary for the banks to calculate risks by maintaining a common platform which connects the analytical tools and the risks involved[12].

2.2.2 Fraud Detection

Big data analytics platform is said to be a roadmap for the banks manage and analyze massive amount of data. IBM has highlighted that using such technologies banks could analyze the occurrence of transactions, detect the fraud and stop it before it generates significant dam- ages[13]. Financial institutions like banks started investing in perfect data analytics tools and technologies to spot the occurrence of fraudulences immediately. These data analytics helps the banks to increase the level of confidence and validity on fraud detection by generating huge volume and variety of data sets from various resources such as social media websites. This helps the bankers   in obtaining aggregate view of customers[14]. Detection   of frauds in banking industry is said to be a scatting activity that can spread a sequence of fraudulent schemes performed either by bank employees or customers such as Corruption, Cash transactions, Billing, check alteration, Skimming, Larceny, Reimbursement of expenses, Fraud on financial statements, Register Disbursements and Payroll[15]. The Big

data analytics tools helps the banks to understand to capture the area where the fraud has occurred, type of fraudulent activity and the indicators of the frauds has been tested by using data sources. Big Data analytics plays an important role for detecting the occurrence of frauds in the financial institutions like banking industries. Big data tools will scrutinize the data from different variety and huge velocity thereby pointing out the exact spot where the fraudulences have occurred without disturbing the customer services[16].

2.2.3 Customer Segmentation

Banks with the help of both internal as well as external data customize their products and services to each and every customer to increase the level of customer centric perfor- mance of the organization. This type of resource planning helps the organization to facilitate financial services based on the customer segmentation17. Big data analytical tools support banking industry for customer segmentation in various dimensions such as designing marketing programs for targeted customers, loyalty program creations for the habit of card usage, optimization of pricing strategies and building a strong relationship with the loyal customers18. Big data analytical tools and techniques help the banks to view the customer data from an angle of 360 degrees. Micro Segmentation and predictive analytics techniques of Accenture drags the data from real time feeds and merges the information to the historical data to create awareness. These tools help the bank operators to advance strategies to achieve escalating conflict of the consumers Adoption of Big Data Analytics makes the business organization to increase the potential growth for new business value cre- ation, increase in productivity and enhanced services19.

2.2.4 Conceptual Framework

2.2.5 Implication of the Model

From the conceptual framework [Figure 2] it can be ana- lyzed that financial institutions like banking industries faces several challenges in handling huge variety, volume and velocity of data in day to day life. Risk Management, Customer Segmentation and Fraud detection are the fac- tors which has the greater impact over the management of big data management in banking industries. The big data analytical software tools and techniques helps the business organization to detect the occurrence of frauds from the exact sources, reduce the risk factors and helps in customer segmentation to facilitate financial services based on the priority and target customers, since banking industry is said to be a customer centric organization. Big
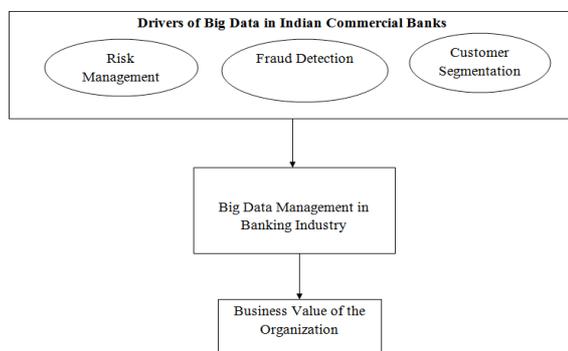

Figure 2. Factors having greater impact on commercial banks for handling big data.

data analytical tools satisfy various scenarios of banking industry therefore it creates new business opportunities for an organization which in turn increases the value for the business organization.

3. Analytics Creates Business Value for the Organization

Big data analytics provides value to the business organization especially the financial institutions like banking industries by supporting customer service, increasing the range of profits and revenues, managing the risk factors and supporting the regulatory compliances. Banks could utilize the huge volume of unstructured data and get the competitive advantage that helps the organization for finding business opportunities thereby creating values to the business organization[20]. Financial Institutions like banks could also create value added solutions based on the structured as well as unstructured data to analyze the customer behavior regarding the habit of payment done through POS machines and prioritizing the customers to guide them[21].

4. Conclusion

Banks now a day's have started to utilize big data analytical tools and technology to increase the business value of the organization and for the new business opportunities to facilitate financial services to its loyal customers. But according to Capegemini only 37% of the bank customers believe that their bank understands and satisfies their financial needs and very few banks are invested in analytical tools and technologies to organize and manage big. Banks need to revamp their software architecture for managing the big data and adopt the new technologies which in turn increase the business value of the organization.

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