

Scope of Data Mining in Banking Sector

Babita Chopra

Research Scholar

CMJ University, Meghalaya

Abstract: *The organizations today, have invested heavily in information technology to help them manage their businesses more effectively and efficiently and in turn to gain a competitive edge over others. The creation of knowledge base is becoming synonymous to the wealth creation, and it can be considered as a strategy tool to compete in the era of globalization and cut throat competitions. In spite of having ever growing data bases the problem is that the banks fail to fully capitalize the true benefits which can be gained from this great wealth of information. The banking sector has started realizing the need of the techniques like data mining which can help them to survive in the market. This paper is for all who would like to be aware of the perspective applications of data mining to enhance the performance of some of the core business processes particularly in banking sector.*

Keywords: *Data Mining, Banking Sector, Risk Management, CRM.*

Introduction:

The computerization of financial operations, connectivity through World Wide Web and the support of automated softwares has completely changed the basic concept of business and the way the business operations are being carried out. The banking sector is not an exception to it. It has also witnessed a tremendous change in the way the banking operations are carried out. Since 1990's the whole concept of banking has been shifted to centralized databases, online transactions and ATM's all over the world, has made banking system technically strong and more customer oriented. In the present day environment, the huge amount of electronic data is being maintained by banks around the globe. The huge size of these data bases makes it impossible for the organizations to analyze these data bases and to retrieve useful information as per the need of the decision makers. The various commercial organizations are recognizing the need of generating relevant information out of the huge repositories of the data and they are trying to find out the ways and means to provide concise and crisp information as per the

requirements. Working in this direction, the business intelligence systems have played a vital and significant role in making the organizations capable of achieving their business objectives, which includes customer retention, profitability and increase in efficiency.

Since 1980's the banking sector is incorporating the concept of Management Information System, through which banks are generating various kinds of reports, which are then presented and analyzed for the decision making within the organization. However these reports available in the summarized form can be used by the governing authorities. While dealing with banking sector, which itself is an information intensive industry, is quite cumbersome task. The banks at present generate reports from the periodic paper reports and the statements submitted by various constitute units. Such reports have a high degree of error, due to data being recorded and interpreted by various parties at various levels. Moreover the Total Branch Computerization (TBC) software packages being used at various branch levels are transaction oriented, as these were designed keeping day to day transactions in mind. Designing the new MIS or restructuring the existing ones would not be possible by just replacing the existing Total Branch Computerization packages. The solution seems to be in incorporating the concept of data warehousing and data mining.

Data Warehouse and Data Mining:

According to the definition given by Bill Inmon (The Father of Data Warehouse), it is a subject-oriented, integrated, time variant and non-volatile collection of data in support of management's decision making process.

These data warehouses were able to bring in data from a range of different data sources, such as mainframe computers, minicomputers, as well as personal computers and office automation software such as spreadsheet, and integrate this information in a single place. So to facilitate the user to explore the benefits of operational data to its full extent the technique of data ware housing is being used. The

major goals achieved by using data warehousing are:

1. It enables the users to provide an appropriate access to a homogenized and comprehensive view of the organization data which in turn supports forecasting and decision-making processes at the enterprise level.
2. Data warehouse helps to achieve information consistency. By bringing data from disparate data sources into a centralized repository.
3. The data warehouse provides a unified view of the organization's data. Users from across the organization making use of the data warehouse, all view a single and consistent version of the truth.

Data mining will become strategically important in many areas for many business organizations. It is a process of analyzing the data from various perspectives and summarizing it into valuable information. Data mining assists the banks to look for hidden pattern in a group and discover new relationship in the data. *Data Mining* is the process of extracting knowledge hidden from large volumes of raw data. The knowledge must be new, not obvious, and one must be able to use it. Data mining has been defined as "*the nontrivial extraction of implicit, previously unknown, and potentially useful information from data*". It is basically "*the science of extracting useful information from large data sets or databases*". It involves sorting through large amounts of data and picking out relevant information. It is basically the process of using raw data to infer important business relationships. It is collection of powerful techniques intended for extraction of knowledge.

Applications of Data Mining in Banking Sector:

Data Mining can help by contributing in solving business problems by finding patterns, associations and correlations which are hidden in the business information stored in the data bases. The data can be mined to find sequences, periodicity of the transactions and behavior of the customer which will help in better segmentation, targeting a particular set of customers for a particular set of product sale and the organization can come up with a class based product/pricing approach that will help them to earn better revenues and profits. The banking sector can use data mining tools for customer segmentation and profitability, credit

scoring and approval, predicting payment default, marketing, detecting fraudulent transactions etc. The banks who have realized the importance of data mining are in the process of reaping huge profits and considerable competitive advantage. According to the regulations given by Reserve Bank of India, the banks have to:

- Provide Off-site Monitoring Surveillance (OSMOS) reports on regular basis in electronic format only.
- Regulatory requirement of filing of statutory returns such as the one under Section 42 of the Reserve Bank of India Act, 1934 for working out Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) obligations in electronic format.
- Need for timely submission of Balance Sheets and Profit & Loss Accounts.
- Need for Inter-Branch Reconciliation of Accounts within a definite time frame.

According to the Committee formed by Reserve Bank of India Headed by Dr. A. Vasudevan to go through the details of this topic, gave his report on 17th July,1999, the committee highlighted that by the use of data mining techniques, data available at various computer systems can be accessed and by a combination of techniques like classification, clustering, segmentation, association rules, sequencing, decision tree various ALM reports such as Statement of Structural Liquidity, Statement of Interest Rate Sensitivity etc. or accounting reports like Balance Sheet and Profit & Loss Account can be generated instantaneously for any desired period/date. Trends can be analyzed and predicted with the availability of historical data and the data warehouse assures that everyone is using the same data at the same level of extraction, which eliminates conflicting analytical results and arguments over the source and quality of data used for analysis. In short, data warehouse enables information processing to be done in a credible, efficient manner. The Committee recognizes the need for data warehouses both at the individual bank level and at industry level. The broad categories of application of Data Mining and Business Intelligence Techniques in the banking

and financial industry vertical may be viewed as follows:

1. Customer Relationship Management: In the era of cut throat competition the customer is considered as the king and it's the customer only who is ruling the whole show. The concept of selling a product to the customer is updated and obsolete, now the objective is to reach to the heart of the customer and hence to develop a sense of belongingness for the organization. The huge data bases of various organizations are storing billions of data items about the customers. Information can be extracted from these data bases, but it is not feasible to use the information gathered from traditional query languages. Then data mining techniques can be proved to be a boon for the industry. Data mining can be useful in all the three phases of a customer relationship cycle: Customer Acquisition, Increasing value of the customer and Customer retention. Data mining technique can be used to create customer profiling to group the like minded customers in to one group and hence they can be dealt accordingly. The information collected can be used for different purposes like making new marketing initiatives, market segmentation, risk analysis and revising company customer policies according to the need of the customers. The profiling is usually done on the basis of demographic characteristics, life style and previous transactional behavior of a particular customer. Customer profiling is to characterize features of special customer groups. Many data mining techniques search profiles of special customer groups systematically using Artificial Intelligence techniques. They generate accurate profiles based on beam search and incremental learning techniques. Predictive modeling methods are another technique which can also be used. Data mining techniques can significantly improve the customer conversion rate by more focused marketing.

2. Marketing: As we are already aware of cut throat competition prevailing in the market in almost all areas, and banking sector is not an exception to it. The marketing and customer care goes hand in hand. **Know Your Customer (KYC)** is the buzzword these days. Financial institutions are finding it more difficult to locate new previously unsolicited buyers, and as a result they are implementing aggressive marketing program to acquire new customer from their competitors. Moreover the uncertain behavior of the customer is making this

task more tedious. An interesting tool available in marketing and financial institution is analysis of client's data. This allows analysis and calculation of key indicators that help bank to identify factors that affected customer's demand in the past and customer's need in the future. Data mining techniques will help in making customer oriented strategies for their customers in various categories. The data mining techniques can be used to determine that how customers will react to adjustments in interest rates, which customers will be likely to accept new product offers, the risk profile of a customer segment for defaulting on loans, etc. The reaction of the customer for the existing and new products can be recorded, according to which the future strategies can be designed. They can also use the data mining techniques for cross selling. Data mining can improve the response rates in the direct mail campaigns as the time required to classify the customers will be reduced, this in turn will increase the revenues, improve the sales force efficiency from the target group. A record of past transactions can give useful insight to the bank and different locations /branches of same branch can also follow some patterns that when noticed can be used as past records to learn from and base the future actions upon.

3. Risk Management: The customer and the banks while dealing with each other will always try to cover the risk factor. To identify, quantify and control the risk factor is always an area of concern for every business organization. In commercial lending, risk assessment is usually an attempt to quantify the risk of loss to the lender while making a particular lending decision. Data mining technique helps to distinguish borrowers who repay loans promptly from those who don't. It also helps to predict when the borrower is at fault, whether providing loan to a particular customer will result in bad loans etc. Such techniques come under the category of credit risk, where we wish to check the behavior of the prospective customers. Bank executives by using Data mining technique can also analyze the behavior and reliability of the customers while selling credit cards too.

4. Fraud Detection: While dealing with banks, the customers and the banks have the chances of falling an easy prey to the frauds. So both the parties wish to be secure while dealing with each other. The data mining techniques can help them to detect and

hence prevent frauds. The data mining techniques will help the organization to focus on the ways and means of analyzing the customer data in order to identify the patterns that can lead to frauds.

Problems in implementation of Data Mining Techniques:

Following are the hindrances in implementation of data mining techniques:

- Security Issues.
- Lack of required expertise.
- High software cost.
- High training cost.
- Reluctance of employees to learn new techniques.
- Hardware cost.

Conclusion:

Data Mining techniques can be of immense help to the banks and financial institutions in this arena for better targeting and acquiring new customers, fraud detection in real time, providing segment based products for better targeting the customers, analysis of the customers' purchase patterns over time for better retention and relationship, detection of emerging trends to take proactive approach in a highly competitive market adding a lot more value to existing products and services and launching of new product and service bundles.

BIBLIOGRAPHY

- Hillol Kargupta, Anupam Joshi, Krishnamoorthy Siva Kumar and Yelena Yesha, Data Mining: Next Generation Challenges and Future Directions, Publishers: Prentice-Hall of India, Private Limited, 2005.
- Report of the Committee on Technology Up gradation in the Banking Sector(July,1999),Constituted by Reserve Bank of India, Chairman of Committee: Dr. A.Vasudevan.
- Report of Committee on Internet Banking (June 2001), Constituted by Reserve bank of India, Chairman of the Committee: Shri S.R. Mittal.
- Dr.Madan Lal Bhasin, "Data Mining:A Competitive Tool in the

Banking and Retail Industries", The Chartered Accountant October ,2006.

- Rajanish Dass, Data Mining in Banking and Finance: A Note for Bankers, Indian Institute of Management Ahmadabad.
- D. Muraleedharan- PHI Learning private Limited[2009]- Modern Banking: Theory and Practice-
- S. S. Kaptan, N S Chobey, Sarup and Sons, Edition 2002- Indian Banking in Electronic Era.
- S.S.Kaptan, Sarup and Sons, Edition 2002- New Concepts in Banking.