Data Mining – A Boon for the Growth of Service Sector

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Abstract: Service sector is the lifeline for the growth of a country. This industry is one of the major contributor to employment and national income. Apart from producing the quality products, the delivery of the services to the customers is also very important to survive in the era of globalization and cut throat competition. The organizations and individuals having right access to the right information at the right moment of time will be the one to survive. The solution lies in the use of Data Mining tools for customer segmentation and profitability, credit scoring and approval, marketing and customer relationship management. This paper throws light on the underlying technology and the perspective applications of data mining for the growth of service sector.

Keywords: Economic Growth, Data Mining, Risk Management, CRM.

The service sector is one of the fastest growing sector in the economy today. It is considered as the major indicator for the social and economic growth of a country. The globalization and cut throat competition around the globe has further intensified the role of this sector. It is the sector which is employing more people than any other sector. The real reason for the growth of the service sector is due to the increase in urbanization, privatization and more demand for intermediate and final consumer services. Apart from producing the high quality products, the customer orientation is shifting to avail high quality services also. In alignment with the global trends, Indian service sector has also witnessed a major boom and is one of the major contributors to both employment and national income in recent times.

A **service** is the action of doing something for someone. It is largely intangible (i.e. not material). It is that part of the economy that includes individuals and businesses that produce services rather than goods. The service sector consists activities where people offer their knowledge and time to improve productivity, performance, potential, and sustainability.

In today's hypercompetitive scenario, it is a significant challenge to retain existing customers and to attract new customers. The only way to achieve both is to learn what customers want and how well they want to be serviced. The need of the hour is to use analytics solutions to target and attract new customers and to draw some strategy for customer service delivery optimization. All the transactions of the customers with the company must be recorded and analyzed to find out whether the customers are satisfied with the services being provided or not. The sources of poor customer experience that leads to dissatisfaction and attrition must be identified. If you are unable to cater to the needs of the customer before your competitors that means you are dead. Reaching out to the right customer at the right time with a right offer is the rule for the survival these days. The need is to design strategies to touch the hearts of the customers and to create a sense of belongingness, so that they should remain the loyal customers to the organization. With the growth of information technology and the use of this technology for the automation of business

processes has increased the importance of providing tailor made services to many fold. The huge size of customer 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. Business houses are incorporating the concept of Management Information System, through which they are generating various kinds of reports, which are then presented and analyzed for the decision making with in the organization. Due to the vast expansion of the horizons of the data the organizations and the individuals are feeling a need for some centralized data management and retrieval system. The centralization of the data is required basically for better processing and in turn facilitating the user access and analysis. Data Mining enables companies to reach consumers with the right product and the right offer at the right time. In other words, do what other kinds of businesses have been doing for years: Analyze your clients by industry and size of business, the type and volume of services used, the amount billed, how quickly they pay and how profitable their business is to you.

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.

To retrieve the data from these huge data warehouses, the concept of data mining is used by the organizations. Data Mining is defined as a process of analyzing the data from various perspectives and summarizing it into valuable information. Data mining assists the organizations 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 databases*".

Why do we need to mine the data?

- Too much data and too little information, so the relevant information is to be extracted, as per the need of the organization.
- To improve customer acquisition and retention;
- Due to 80/20 rule: Twenty per cent of your customers will provide you with 80 per cent of your profits, then how to identify those 20%. This means a small number of the customers provide a disproportionate amount of the profits.

How the techniques of Data Mining can be applied to Service Sector: The business objectives of using data mining tools and techniques in customer service function are:

- Measuring, monitoring and improving customer experience holistically across all the customer touch points
- Detection of behavioral patterns which customers exhibit prior to terminating relationship with the company early enough to avert attrition.
- Identification of internal organization and technology issues that impact customer experience.

Data mining techniques can significantly improve the level of quality of service by more focused marketing.

1. Association: It is the technique of finding patterns where one event is connected to another event, the association will help to guide the organization to make decisions regarding pricing, selling and to design the strategies for marketing. The association may be direct or in direct. Direct such as purchasing a pen and purchasing paper, That means when the customer buys paper then he/she will buy the pen also, this association will help the organization in designing the layout of store, by placing these two products adjacent to each other, which will lead to convenience to the customer and hence by doing so the organization can provide better services.

2. Sequence or Path analysis: This technique help in finding out the patterns where one event leads to another event, such as the birth of a child and purchasing diapers, with the help of such information the organization can design strategies accordingly. For example, market basket analysis refers to a technique that generates probabilistic statements such as: if customers purchase coffee, there is a 0.35 probability that they also purchase bread. Such information can be useful for store layout, items bundling, discount and promotion decisions, etc.

This technique of data mining will help in predicting the future trends and organizations can offer the products accordingly, like if a customer has availed a home loan, then after some time he/she can be contacted again for loan for buying furniture or refrigerator or TV etc.

3. Clustering: This is the technique of combining the transactions with similar behavior into one group, or the customers with same set of queries or transactions into one group. This technique of finding and visually documenting groups of previously unknown facts is called clustering. For Example: The customer of a given geographic location and of a particular job profile demand a particular set of services, like in banking sector the customers from the service class always demand for the policy which ensures more security as they are not intending to take risks, like wise the same set of service class people in rural areas have a the preferences for some particular brands which may differ from their counterparts in urban areas. This information will help the organization in cross-selling their products, Instead of mass pitching a certain "hot" product, the customer service representatives can be equipped with customer profiles enriched by data mining that help them to identify which products and services are most relevant to callers.

4. Forecasting: This technique of data mining will help in discovering patterns from which one can make reasonable predictions regarding future activities, such as the prediction that people who join an athletic club may take exercise classes. The customers in the bank, who have taken loan for Maruti 800 in year 2000, may be contacted after 5 years for the loan for some latest brand of cars.

From the technological point of view, various software's implementing the data mining tools are available which makes the usage of data mining techniques quiet easy. Some of these tools are:

STATISTICA Data Miner, A venture of StatSoft worldwide, is a revolutionary product in the data mining applications. It enables financial institutions to Detect patterns of fraud; Identify causes of risk; create sophisticated and automated models of risk, Segment and predict behavior of homogeneous (similar) groups of customers, Uncover hidden correlations between different indicators, create models to price futures, options, and stocks.

11Ants Analytics Ltd is a venture of a company located in Hamilton, New Zealand. 11Ants Analytics is committed to making advanced data mining accessible to non-technical users. They have built incredibly powerful data mining software which is deceptively simple to use.

Conclusion: Data Mining techniques can be of immense help to the organization in solving business problems by finding patterns, associations and correlations which are hidden in the business information stored in the data bases. Organizations can use these techniques for 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 services.

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