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Critical Success Factors for Implementing CRM Using Data Mining*

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Abstract:

The paper presents the Critical success factors for implementing the Customer Relationship Management (CRM) in a firm using the Data mining (DM). The use of the data mining in CRM is widely accepted by the firms. The success of proper implementation of CRM using Data mining in firms is mixed. This is due to the fact that investment involve in this implementation requires planning regarding the factors which need to be considered before going for the new innovative technology. These factors may vary from firm to firm but the general factor for effective implementation of the CRM using data mining is essential. This factor termed as Critical success factor (CSF) decides the failure or success of the implementation.

The paper demonstrates the key factors which need to be considered before automating the process of searching the mountain of customer's related data using Data mining to find patterns that are good predictors of behaviors of the customer which help achieve successful CRM. The paper gives an idea of how proper planning and effective management can lead to increased customer satisfaction and profit for the firms.

Key Words: CRM, Data mining, Critical Success Factors, Predictors.

1. Introduction

Customer relationship management has emerged as one of the most demanding way for the firms to come close to demand of the customers. The CRM provides the way for the firms for effective customer satisfaction and retention. [22] defines CRM as management approach that manages the relationships with the customers. The ability to identify and attract customers allows for the retention and identification of profitable customers. [18] defines CRM as an evolving process that requires a shift in attitude away from the traditional business model of focusing internally. It is an approach a company takes towards its customers backed up by thoughtful investments in people, technology and business process. Retaining the customer in today's competitive atmosphere is a challenge for the firm's.

A customer's continuing business is no longer guaranteed. Hence the companies have found that they need to invest in the CRM for the better understanding of the customers and respond quickly to there demand. [15:64-77] described the database of customer service as repositories of invaluable information and knowledge that can be utilized to improve customer service. Data mining has evolved as a process which helps CRM in finding the useful patterns which are hidden from the database of the customers.

To retain in the competitive atmosphere, the firms are investing in CRM software based on data mining. But the effective implementation of the software depends on the Critical success factors considered before opting for the software. Many firms ignore the important CSF require for the better implementation. This results in loss for the company.

The objective of the paper is to describe the key Factors which need to be considered for the successful implementation of the CRM using data mining. We believe that the proper planning which involve the consideration of CSF will lead for the effective and proper implementation of CRM using Data mining.

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The paper is organized as follows: Section II presents the related research. Section III discusses customer relationship management. Section IV explores Data mining. Section V discusses about the Critical success factors. Section VI addresses the Critical success factors for effective CRM implementation in any firm using data mining. Section VII concludes by urging the firms to consider the CSF before investing in CRM using data mining.

2. Motivation and related work

The Data mining application in CRM business has been realized by the business world but the factors for effective implementation of CRM using data has not been explored. This is the motivation for our paper.

Saarevirta [23] explores customer data mining. Da Silva and Rahimi [24:3-15] examine a critical success factor model for CRM implementation. Flynn and Arce [12:311-321] discuss the case tool to support critical success factors analysis in IT planning and requirement determination. Chang [5] discusses the CRM suits for medium to large enterprise. [26] examines intelligent Data Mining for CRM. Berson, Smith and Thearling [2] explain about building Data Mining application for CRM, Siragusa [25] argues about implementing Data Mining for better CRM. Mukhopadhyay and Nath [19:185-192] emphasized on importance of measuring the efficiency of CRM systems and proposed an efficiency model for the same.

[10] talks about the use of Data Mining for customer Relationship for timely decision. [9:44-47] emphasized setting priorities with CSFs. [6] find out the Data Mining application in CRM of credit card business. [7] gives an overview of Data Mining from the database perspective. [17] discusses data mining for the enterprise.

3. Customer Relationship Management (CRM)

Customer relationship management (CRM) has been widely regarded as a process related to building and retaining customers through better interaction and service. Changes in the type of customers, their behavior and response to the product manufactured are likely to have immediate effect on the performance

of a company and also have implications for decision making relating to strategy setting for improving the relationship with customers in the future. It is recognized that not every customer is equally important to an organization in terms of his/her lifetime value, thus, customers need to be segmented in order to identify strategically important customers. . [16] describe CRM as acquiring, analyzing and sharing knowledge about and with customers. [3] is of opinion that CRM aims at leveraging investments in customer relation to strengthen the competitive position and maximize the returns. The reason for the attrition of the customer needs to be identified and effective measures to be taken to solve the problem. This requires information about customers' preferences and behavior patterns. Customer Relationship Management is a broad term for managing business interactions with customers for improved relationship and loyalty.

Effective CRM is about acquiring, analyzing and sharing knowledge about and with your customers for the quick and timely service to the customer. CRM provides an integrated view of customer interactions starting with software applications that capture these interactions and with the effective analyses of the data to reveal the hidden and important information required for improving the relationship of firms with the customers. The core idea of CRM rising in recent years is to view customers as the most important resource of companies. By deep customer analysis, retailers can satisfy the demand of their customers and realize the maximization of benefits. [4:33-34] examines about customer Relationship Management (CRM) as a business strategy that utilizes the power of technology to tie together all aspects of a company's business with the goal of building long-term customer loyalty. [14] explores business benefits through CRM. Customer relationship management (CRM) is a symbol of information and modernization of enterprise management.

4. Data Mining

Data Mining has found its application in every sector of the business. Its application is widely used in the service sector. Data mining [13:213-228] is the

nontrivial extraction of implicit, previously unknown, and potentially useful information from data. Data Mining is the process of extracting information from large data sets through the use of algorithms and techniques drawn from the field of statistics, machine learning and database management systems [11:271-281].

The techniques of data mining like Classification, Prediction, Clustering, Association, Genetic algorithms and Neural network help achieve the goal of the data mining to extract the hidden, unknown patterns from the database. Ahmed [1] points Classification as the way to discover the characteristics of customers who are likely to leave and provides a model that can be used to predict who they are. The cluster detection algorithm searches for groups or cluster of data elements that are similar to one another. K-means is one of the major methods of clustering. It aims at partitioning the data that have similarity and distinguishing it with other different one. Decision tree methods provide a set of human readable, consistent rules, but discovering small trees for complex problems. Prediction tasks in insurance helps in finding the likely customers to churn and also help in planning the strategy for the future. The usage of the above said techniques results in the extraction of the hidden and useful pattern form the database which helps the firms improve their relationship with the customers that resulted in the increase in the profit for the firm.

5. Critical success factors

Critical Success Factors (CSF's) are the crucial factors or parameters required for ensuring the success in any firm. Critical Success Factors have been used significantly to present or identify a few key factors that firms should focus on to be successful. Critical success factors refer to "the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department, or organization". Identifying CSF's is important as it allows firms to focus their efforts on building their system to meet those CSF's and it even allow firms to decide if they have the capability to build the requirements necessary to meet critical success factors (CSF's).

The idea of CSFs was first presented by D. Ronald Daniel in the 1961[8:111-121]. It was then built on and popularized a decade later by John F. Rockart, of MIT's Sloan School of Management in 1979[21:81-93], and has since been used extensively to help businesses implement their strategies and projects.

Rockart defined CSFs as:

"The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired."

[Determine The Critical Success Factors for your Company, 2008][20] describes about four basic types of CSF's. They are:

- Industry CSF's resulting from specific industry characteristics;
- Strategy CSF's resulting from the chosen competitive strategy of the business;
- Environmental CSF's resulting from economic or technological changes; and
- Temporal CSF's resulting from internal organizational needs and changes.

Each CSF should be measurable and associated with a target goal. Critical success factors may change over time, and may include items such as product quality, employee attitudes, manufacturing flexibility, and brand awareness. Critical success factors are identified as vital for successful targets to be reached and maintained. Critical success factors are normally identified in such areas as production processes, employee and organization skills, functions, techniques, and technologies. Critical Success Factor (CSF) or Critical Success Factors is a business term for an element which is necessary for an organization or project to achieve its mission. While implementing a CRM project by application of Data mining the firms need to consider the CSF's for proper and effective implementation.

6. The Critical success factors for effective CRM implementation in any firm using data mining

The Critical success factors for the CRM of any firm using data mining may vary from firm to firm. The general considerations for the effective implementation are:

- **CRM customer centric approach:** The approach for the implementation of CRM using Data mining should be customer centric. The customer centric approach revolves around the customer. In this approach the customer is the core element and whole firm move around that.
- **Top management commitment:** The top management of the firm should be committed toward the successful implementation of the project. This involve the management should be aware about the pros and cons of the implementation.
- **Skilful personnel:** The implementation requires the skilful trained staff to work on the software so that the necessary information which comes through the hidden pattern could be used for the effective customer relations.
- **Project schedule and plan:** As the implementation process may take time , it is required that the schedule and plan of the whole work is made in advance so that the actual picture regarding the time when will the project be complete is clearly known to all concerned personnel's.
- **Monitoring and feedback:** As the plan is a long term implementation so it require that each time some phase is complete , the official take the feedback of the system. It is also required even after the completion so that the personnel will be aware about the result we are getting and what was accepted.
- **Communication:** The communication of the revealed pattern through the software should be circulated through the whole system as per the importance to the various departments. This requires that the communication should be considered in advance to check whether the setup has proper communication facility through the LAN and WAN setup. Even some information is required to send through some other mean like manual method.

- **Privacy and security:** This issue is very important as the data mining reveals some secret and personal information also. This has what affect to the firm and its relationship with the customer and how risk of privacy hindrance can be minimized should be taken care in advance.

- **Creating a link between the existing information systems and the new CRM system:** The new setup always is beneficial if it create a link between the existing setup and the new one. This is very well needed in our system which needs an effective relationship between the data warehouse and database already in the system. Also the check need to be made regarding the existing hardware and software and what is actually needed for the new setup.

- **An understanding that the process has a long-term effect on the organization:** The effect of the implementation of the CRM using Data mining has some mixed affect as far as output is concerned. To get the output in the form of improved relationship with customer, this may require some time which should be planned at very beginning. The implementation can not provide the immediate result.

- **Cost involved in the project:** Every project has got some implementation cost. Same is true with this also. But the Top management should be analysis and calculate the cost involved and the output they accept from the implementation of CRM using Data Mining.

7. Conclusion

The authors tried to present the CSF's for the application of the Data mining in CRM for the better result. The paper attempts to present the parameter which firms should consider before investing in the CRM based on Data mining.

Organization should try to plan the implementation of the CRM using Data mining to remove the shortening in their companies. As the process of implementation require the technical and non-technical points, firms need to make a review of the existing setup to check the feasibility of the project. We have seen through this paper that CSF's if considered properly can lead to the successful implementation of CRM using Data

mining. We conclude that Data Mining in CRM of any firm gives a better understanding of customer relations and improved customer satisfaction, higher profitability for the company and higher probability of attaining competitive advantage if the critical success factors are taken into consideration.

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