

# SUCCESSFUL IMPLEMENTATION OF CRM: THE ROLE OF DATA MINING

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**Abstract.** Regularly millions of data is being collected and warehoused. These data contains very useful information, such as, ATM transactions, credit card bills, emails, advertising campaigns etc. Competitors always having dream to get extracted knowledge from it. Although, analysis on customer relationship is getting more realistic and interesting factor for the augmentation of every organization similarly, finding the hidden gold is also promoting for the success of organization. The major critical success factor for any Customer Relationship Management (CRM) includes, Relationship Management, Sales Management, Use of Technology, Opportunity Management etc. In this paper we proposed, analyzed and validated that data mining is also a major success factor in the success of CRM. We first proposed the CRM model and then described the main role of each characteristic, further more, we applied data mining techniques for the generation of new rules and patterns. Most of the organization only put their stress on the competitive forces, sales forces, advertising campaign, marketing strategies and management of customer services. But behind of these all circumstances they are storing a huge data in their databases. We discussed and evaluated that after implementation of CRM strategies in a organization why the problem is continuing and what will be the positive effect after implementation of data mining. And in which manner data mining techniques can be applied in the CRM model.

**Keywords:** Customer Relationship Management, Success factor of CRM, Data Mining Techniques

## 1. Introduction

Customer Relationship Management (CRM) is very important for any organization through which the companies wanted to know the relationship between customers and their organization. A good companies need to identify the problems of customers and enhance the cohesion between customers and their organization. In the past years the CRM has become the successful part for every organization. CRM is the utilization of customer related information or knowledge to deliver relevant products or services to customers [1, 2]. Customer satisfaction provides bottom-line business results in the form of increased purchased volumes, repetitive purchases, and generation of new business in the form of references and prospect identification [3].

CRM, is specially for the change of business process to making remarkable growth in an organization, but reaching on the required goal; depends on the leadership, which is going to implement the CRM. Because we know that, Leaders do not command excellence, they build excellence. Excellence is "being all you can be" within the bounds of doing what is right for your organization[4].

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For implementing best CRM, different success factors are available in which most popular includes, sales management, marketing management and technology management etc. But we proposed in this paper that data mining can also play a successful part in CRM. Different data mining tools are available to extract the information from the customer database and analyse the problem of customer to enhance by the organization for attracting more customers for buying and selling of products to their organization.

The first and simplest analytical step in data mining is to describe the data, i.e. summarize its statistical attributes, (such as means and standard deviations), visually review it, using charts and graph, and look at the distribution of values of the field in your data[5].

Using the association rules in data mining techniques to analyze in detail customer transactions can learn which products might be purchased by customers at the same time, and based on the rules for combining popular products, marketing personnel or corporate decision makers can formulate more appealing marketing plan or operational rules and actively offer products that might interest the customers[6]. In Fig.1 *S.C. Hui, G. Jha* [7], presented the scenario of

traditional hot line service center, in which whenever a customer call to the service center for any query, the call will be forwarded to the service engineer. The service engineer then suggest and ask the series of questions for finding the solution by using previous experiences from the database[7].

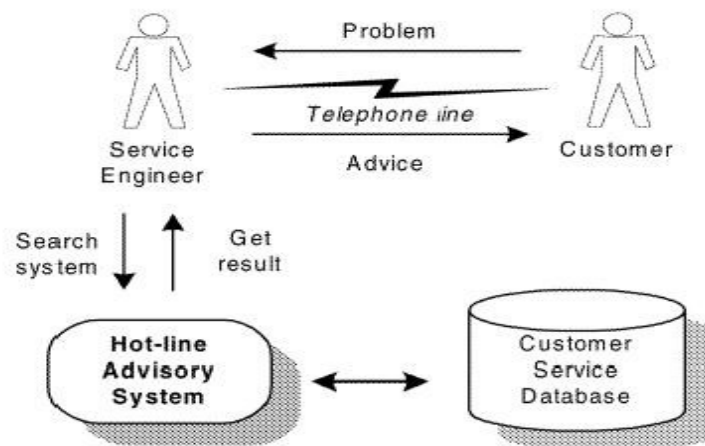


Fig. 1. Traditional hot-line service centre.

## 2. Related Work

*Vince Killen* [8] used data mining tools and find out that these tools are very helpful and faster in data extraction of information for the company. These tools serve as the backbone driving CRM systems and have enabled the measurement frameworks in place today. *James et-al* [9] used the online approach for extracting the data of the customers by using automated software and scripts to download the relevant web pages and extracted the appropriate information from the web pages.

*Herbert Edelstein* [10] described that, data mining makes it possible to achieve this goal, by making sense of large amounts of complex data on customers and transactions. CRM applications that use data mining are called analytic CRM. Analytic CRM makes it easier to select the right prospects from a large list of potential customers. Data mining can help companies offer the most appealing array of products to existing customers or identify customers the company is at risk of losing. The result is improved revenue because of a greatly improved ability to respond to each individual contact in the best way, and reduced costs due to properly allocating resources.

## 3. Success Factors

The business strategy, process, culture and technology that enable organizations to optimize revenue and increase value through a more complete understanding and fulfillment of customer needs. CRM involves all of your organizations "Customer Touch Points" and includes every part of your company that has direct or indirect interaction with your customers and prospects [11].

Finding the key to success for a CRM solution is no different than finding the key to success for the deployment of a technical enabler to any other business problem. You begin by defining what the business wants to improve, what it takes to realize this improvement, and how the results will be measured[12].

## 4. Methodology

The main purpose of this paper is to analyze that data mining is the part of CRM. For the implementation of CRM most of the organization is put emphasis on marketing and business strategies only, but we proposed that data mining is also a successful factor of CRM. We applied data mining techniques on each and every part of CRM, which give us more suitable and steadfast result for the growing organization. We proposed Rule Based data mining technique for this model to generate new rules and patterns by using sales, marketing, IT and customer's data. We clustered the customer's data by using several characteristics of customer to recognize and understand the customers. Every customer need satisfaction within the organization boundaries and limitations as well as every company need that every customer should be deal under the excellent and agreeable environment, for this the respective company implement good tactics and procedures for the customer's satisfaction. We proposed here in this model the association mining techniques for finding loyalty and background of the customer, and making some prediction for the contacting customer.

### 4.1. Description of CRM Factors

The description of successful factors of CRM are given in Table 1, below:

Table 1

Success Factors	Description
Change Management	The changes will be implemented in a systematic manner. Standardized methods and procedures will be used for efficiency. The changes will be managed by the organization's authority. The changes should be clear and for the well of their customers.
Operational Management	Improving the customer satisfaction. Make management decisions faster. Provides better service in delivery of products to customers. More expansion and increase of activities in the same resource.
Knowledge management	The prediction of products is based on previous data. Can attract the customers for their products. Employees can improve their future in the organization. The organization can compete in the market on reliable predictability.
Marketing management	A practical discipline of marketing techniques. Marketing managers are responsible for influencing the level, timing and composition of customer. It is the combination of Customer analysis, Company analysis, and Competitor analysis. Marketing manager identify the desire position they want the company, product to keep in the customer's mind.
Sales Management	Expanding of business is through sales management. The sales team will be organized in such a manner to attract the customer to their products and increase the sale for the company. The organization will grow widely. Software are used to improve the sales management.

Customer support management	<p>A good and polite support to the customer complaints.</p> <p>A manager must have the patience to listen the customer's question.</p> <p>The evaluation of customer's complaints for the betterment of the organization.</p> <p>The customer's complaints will be recorded through the software for future evaluations.</p>
Technology management	<p>Must be simple, easy and known to the customer.</p> <p>No difficulty to the customer in online transaction of products and services.</p> <p>The payment procedure must be easy and simple in case of credit cards transaction.</p> <p>New technologies are critically important for companies to bring new products to market as quickly as possible.</p>
Project Management	<p>Managing smaller projects and keep track of them.</p> <p>Controlling changes to development.</p> <p>No lack of executive sponsorship.</p> <p>Require realistic expectations.</p> <p>The initiation of good decision making structure.</p> <p>Team members are working toward common goals.</p>

CRM Success Factors

**4.2. Description of Figure**

In this model, we presented the whole scenario about the interaction between a customer-to-organization(one-to-many) and organization-to-customer(many-to-one). Whenever a customer or employee contact to the organization the query generator or moderator is here to transfer the query to the concerned department. We described here eight departments which are physically involved for making a role in the success of CRM and for giving support and maintain the level of the organization. But virtually we presented that, behind all of these factors the data mining tools and applications are supporting them by creating rules and providing more extracted knowledge for the better solution of the query. The data mining application has its separated premises in connection with the organization's database, it is based on the data coming from every department or customers, which includes; cash memos, bills payment, penalties, purchasing history, requisitions, urgent requirements and salaries etc.

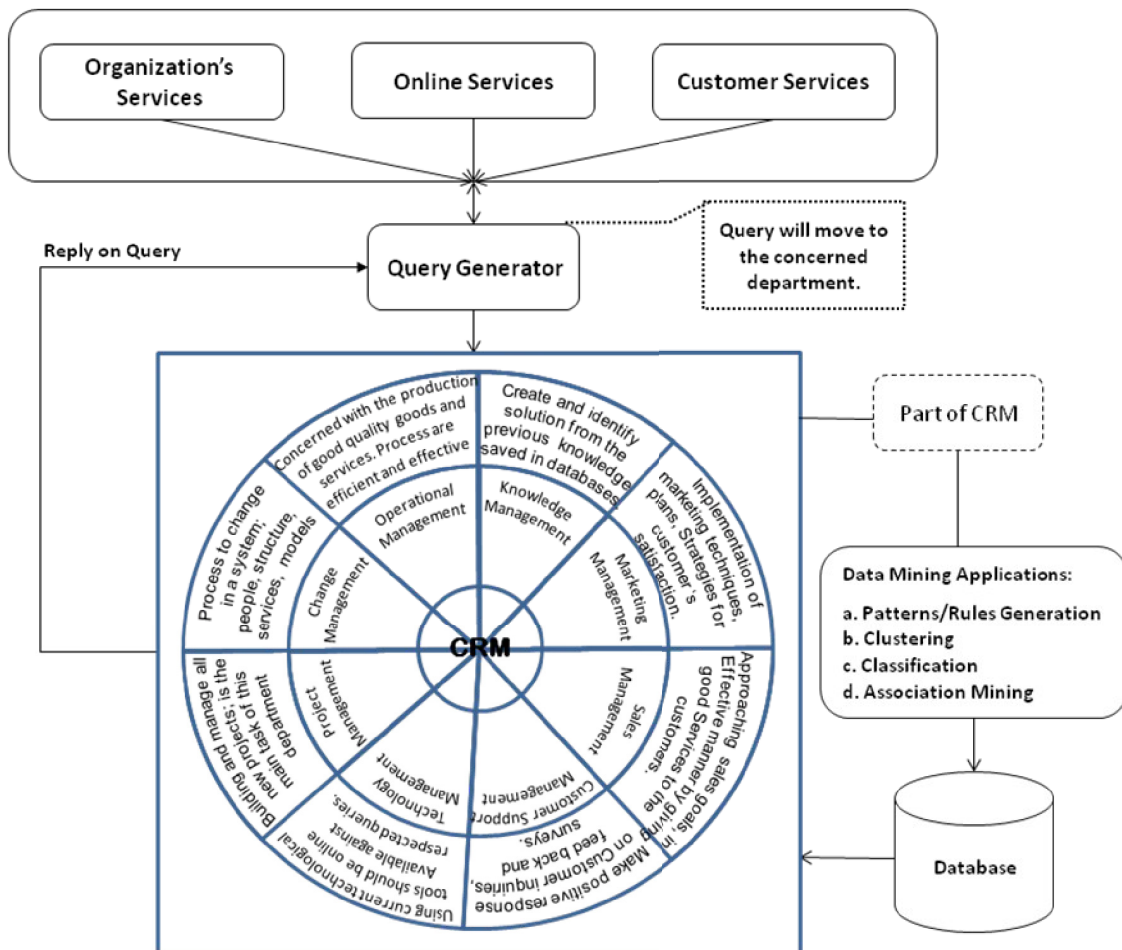


Fig.2 The Role of Data Mining in CRM

Here we can see that, regularly huge amount of data is stored in the database, and ultimately we will have to execute and process this huge data. Fortunately, data mining is the solution to extract knowledge from these databases and which is evaluated for the future purposes. We applied association, clustering and classification techniques for making those data in manipulated form. Whenever a query reach to the appropriate department, the reply will be given with the support of database (mined data) to the corresponding person, and this experience of query will be saved in the databases for future augmentation.

This technique exposed that the knowledge discovery can play a significant and momentous role for the success of CRM. Sometimes organization can't overcome on some problems which are repeating time to time but after involvement of data mining into CRM we can resolve this type of problems.

## 5. Future Work

In this paper we presented a model (The role of data mining in CRM) is very descriptive and helpful for any organization. The same model will be updated in future by new data mining techniques and more CRM factors will be added according to the organization's need. New rules and patterns will be generated accordingly. This idea should be more manipulated and enhanced for more customer services, credit card users and for online purchaser which will help the customer to buy and sell the products and services online.

## Conclusion

This approach will help to facilitate the customer to interact with the organization very easily and friendly. This will enhance the capability of CRM in three types of services: customer services, organization services and online services. All the queries from these three service centers will be evaluated from the concerned department. After finding solution the concerned department will reply to the particular service center and the reply will also be posted in the database for future purposes. The applications of data mining applied on the existing database is generating new rules and patterns from the experienced data. The conclusion is, data mining is the part of CRM.

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