

# Adaption of Customer Relationship Management and Data mining tools in the Data intensive Cloud Computing Environment

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**Abstract:** Much Research popularly adopts the concept CRM application and Data mining statistical techniques in large databases in Cloud Computing Environment in order to achieve Business Analysis. The data mining rules especially Association Rule Mining may be deployed in CRM implementations. These rules aims to establish bridge between the attributes say analyses item in database. In order to study the Customer behaviors, many articles have been proposed and focus on the issues of Classification Techniques in order to predict the significant outcomes and may be achieved in case of Telecommunication Industries. This paper aims to study the issues of Customer Relationship Management through data mining in the Data-Intensive Cloud Computing environment.

**Key Words:-** Customer Relationship Management, Knowledge Discovery in Databases

## I. INTRODUCTION

Cloud Computing environment is an emergent platform of configurable Computing resources, where on-demand Network access is possible. Many Industries today choosing Cloud environment for storing their commercial data. At present CRM is an important module of Telecommunication Industries, where good relationship between customer and business enhances the total profit and managerial efficiency. Data mining is the technique which helps the management to take the crucial decisions by using huge business databases. On integrating data mining with CRM, manager can get better results of predicting profitability, guiding decision making, decision forecasting and make the process proactive. As size of Industry's complex data sets are growing day by day, Integrated CRM with data mining techniques has deployed in Cloud Computing environment, so that both user and supervisor will be beneficial by accessing the service through Internet. Out of different data mining techniques, this paper mainly presented Association and Classification model that provides centralized place to Telecommunication users and supervisors from where they can access the integrated system model in data intensive Cloud environment.

## II. OVERVIEW OF CRM

CRM (Customer Relationship Management) deals with customer issues by configuring, maintaining and hierarchy of customer in order to achieve an efficient management. In

the special response to Telecommunication domain, CRM plays an important role as *Customer aspects*; i.e. customer management, service management, tariff Plan management and customer Interaction management. Other is *relationship marketing*; that it is a process of communicating with our customer and listening to their responses. In case of Customer aspect, management should give special attention towards maintenance of customers their services with Interaction and on the various tariffs Plan. On the other hand in relationship marketing, customer loyalty is an important consideration. Loyalty of customer may be measured on their demographics factor like Business Agreement, Price, value, convenience, product attribute, service, belief, ego and experiences. Accordingly Industries may take prompt actions on Marketing Campaign, New Products, New Channels and New Packaging. The ultimate goal of CRM in Telecom sector are customer acquisition, customer retention, customer development and it will be more effective if customer satisfaction, perception, trust, commitments are positively affects one upon another. For example in highly competitive scenario the survival of Telecom market mainly focuses on Value added services with affordable prices and quality customer Service. Brief History: According to Siebel, "CRM is a path to identify, acquire and retain customers and allows Companies for coordinating through various departments to get better performance". According to Gartner Group "CRM is the business strategy for optimizing Customer satisfaction label, revenue and profit by managing Customer's behaviors and communication from customers through company's client. (Nahshon Wingard, James R. Rasenfield 2002 ) The early version of CRM in 1980 was database marketing i.e. Interaction of Customer Service with Company's client. In 1990, History shows that there is a tremendous improvement in CRM and Company concentrated on their benefits on offering the Perks, exchanged relevant Customer information and improved the CRM Skills through both way communications. In 2000 CRM shown full potential and allowing excellent Customer Service in high Tech Corporation, Telecom Industries in order to maximize their profits in different Customization Software (CRM-based Tools) fitted to a particular business organization. With this Software, Customers enjoyed like Bonus, discounts, loyalty by the Companies. As shown by

CRM History, Customer Relation Management empowered Customers to opt for different Companies for better services so that Customer can switch over to other Service providers for the same service. CRM consists of four dimension i.e. (1)Customer Identification (2)Customer Attraction (3)Customer Retention (4)Customer Development according to (Swift 2001, Parvatiyar and sheth 2001, Kracklauer, Mills and Seifert 2004). Customer management system can be seen as closed loop of all dimensions for sharing a common goal of understanding of Customers to optimize Customer value to the organization(Au & Chan,2003, Ling & Yen 2001, Kracklauer 2004). On analysis of market study during 2005 to till date, it is seen that as Competition is more, addition of new Customer is saturated and churners out of existing Customers are gradually increasing. Hence maintenance of CRM is more essential in the present Competitive scenario. (Ronald E. Goldsmith, 2010) Research shown on CRM practices that management have different independent interrelated goals like Customer acquisition, retention, development, Customer meet and Conversion for achieving business profit. (Hishan Sayed Soliman, 2011) In order to measure the marketing performance of organization, many researcher suggested a common things under CRM i.e. (1) Retention of Old Customer (2) Attraction of new Customer (3) Customer Satisfaction.(C.J.Pdmavathy, V.Sivakumar 2012) Major dimensions of CRM & their effectiveness depends on Customer Satisfaction, Trust and Commitment. (Mohammad Behrouzian Nejad, Ebrahim Behrozian Nejad, Ali Karami, 2012) Preliminary researches of CRM based on Independent Companies Structure. Accordingly Companies should (1) Improve capabilities for profitable Customers (2)Improve the marketing and business skills of sales force (3)Concentrate on pricing capabilities (4)Concentrate on quality Customer Services. (Arun Kumar, Deepali Singh 2013) For effective business performance, development of CRM is quite essential through no. of factors like reliability, reputation, support, technology and quality.(K.Saiprasad, Sita Mishra 2014) A loyal Customer in Telecom Industry always maintain good relationship with management by their demographic factors.

### III. DATA MINING

Data mining is the process for finding knowledge and knowledge is represented through certain patterns or trends through large amount of data. For simplicity Data mining is the process of extracting interesting pattern (previously unknown) and correlation from huge data. It is also called as knowledge discovery process (KDD) which discovers useful patterns or relationships in a group of data. Finally Data mining is the “mining knowledge from large volume of data”. The process of hidden knowledge extraction from stored data or database information is the essential components for business and marketing organization because it helps for analyzing the business to generate the hypothesis only. Data mining and KDD process consists of five interactive sequence methods those are: Selection: Selected relevant data for analysis from database. Preprocessing: Removal of noise and inconsistent data,

combining multiple data sources. Transformation: Transformation of data into appropriate form for performing data mining. Data mining: Selection of appropriate data mining algorithm to extract the pattern. Interpretation/Evaluation: Translating the useful patterns into human understandable form through interpreting and removal of irrelevant redundant pattern. Several data mining techniques developed and used in various data mining projects. Out of which following techniques are used for (KDD) PROCESS.

Association: Find rules associated with frequently co-occurring. It is used in Market Basket Analysis to identify what products that customers frequently purchase together.

Classification: For classifying each item in a set of data into one predefined set of classes or groups. It is used for predicting the specific items. Clustering: It is the process of organizing objects into groups whose members are similar in same way. It is used in CRM for finding new customer segments.

Prediction: Discovery of relationship between dependent and independent variable, relationship between only independent variable. It is used for predict the profit for future or lifetime value of customer.

Sequential pattern: It discovers similar patterns in data transaction over an entire business period. Brief History: (Fayyad 1996) Data mining is the 4<sup>th</sup> step in KDD which produces useful interesting patterns from huge volume of data by suitable algorithm according to six functions like Classification,

Regression, Clustering, dependency modeling, deviation detection and summarization. Berson (2000), Lejeune (2001), Ahmed (2004), Berry and Linoff (2004) provided definition regarding data mining that it is the process of extracting or detecting hidden patterns or information from huge databases. (Berson .A, S.Smith, K Thearling 2000)

Discovery of hidden knowledge is the main function of data mining from new scientific research in the field of statistics, machine learning. (Taghavi & Naviri 2006 , Jiawei Han, Micheline Kamber 2006, Shahiabi and Shakoornia 2007)

As volume of data are rapidly increasing, powerful analytical tools required for extracting hidden information from numerical databases which was previously unknown data. (Behrouzian Nejad 2011) Process of KDD from data warehouse help the organization for quick decision making.

(Mrs. Tejaswini Abhijit Hilage, R.r.Kulkarni 2012) Data mining techniques used for different application area for finding out interesting pattern from data warehouses. (S. Hameeta Bayum 2013, Bhoi Raj Sharma, Daljeet Kaur, Manju, 2013)Data mining has lot of advantages and disadvantages. Advantages are useful for Finance, Banking, Marketing, Government, Manufacturing. Disadvantages are Privacy and Security issue & misuse of information. Also data mining faced many challenges like scalability, streaming data, complex & heterogeneous data, data quality, ownership, distribution & dimension. (Xindong Wu, Hefei, Xingquan Zhu, Gong Qing Wu 2014) Big data are now expanding in all science & engineering fields. From data mining perspectives, HACE Theorem characterizes the features of Big data, mining, analysis & user internet modeling, security, privacy and proposes a data driven model in the revolution of Big data.

### A. *Integration of CRM and Data mining in Data intensive Cloud environment*

CRM is the way with no. of layers and data mining is the important one. Data mining is a tool that can explore from large amount of data to discover meaningful interesting patterns and rules to become more "Customer oriented". As CRM is the relationship between a customer & business, it is very essential to study the "Customer life Cycle". Customer life Cycle consists of four stages. (1)Prospects: At present not our Customers but located in target market. (2)Responders: Customers in the target market interested in a product or Service. (3)Active Customer: Recently using our products & services. (4)Former Customer: "Bad Customers" or not appropriate Customers not paying the bills & they are no longer part of the target market. For effective CRM, Companies uses their data mining assets by identifying the needs of customer throughout the life cycle. As Customer's life Cycle is for understanding customer behavior, marketers always say that there is a relationship between customer revenue & customer profitability. Both increases by (1) Increasing purchases(use) (2)Products (3)High Selling (4)Retaining Customer for longer period. In order to improve competitive advantage, new trend is developed i.e. Integration of CRM with data mining, where one side of data mining is the Customer life Cycle that tells about Customer information & other side, Customer life Cycle that tells about interesting behavior of Customer. In the past, data mining interact with data warehouse in the CRM process and also interacts with Campaign management manually. Now new technology is the Integration of data mining with CRM for predicting the profitability changes in specific event of the Customer. In the context of CRM, data mining is used for guiding decision making & forecasting the effect of decisions. Further "Cloud environment" is the style of computing, where scalable and elastic IT enabled capabilities are delivered as configurable resources like Networks, Servers and Storage for providing on-demand accessible services. Those services are categorically divided into three models. i.e. Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS), where CRM has deployed on SaaS model on any IT-Technology Independent device. It can be accessible by user from anywhere, anytime at any place through Internet at low cost. Also Integrated CRM with Data mining tools in Data intensive Cloud environment can help the developer/Supervisor for extracting the valuable customers and future customer behavior for optimizing the managerial efficiency. Each of CRM dimension, supported by different data mining technique/model like Association, Classification, Clustering, Forecasting, Regression, Sequence discovery and Visualization. Out of all the techniques Association & Classification is common techniques/models used for CRM process discussed below.

*Association:* Association is the descriptive process, where pattern is discovered basing on an interesting relationship of a particular item on other items in the same record. Association relationships among huge amounts of data are mainly useful in selective marketing, decision analysis and Company management. Market Basket analysis is the

popular area of application, which shows Customer's buying habits by selecting for item sets that are purchased together sequentially. Common tools are Statistical analysis & Apriori Algorithms. Association will be interesting if the transactions do not contain any of the items set being examined.

*Classification:* It is a two step process. In the first step, we build Classification model (Learning step) based on previous data. And second step is the classification step (where the model is used to predict class labels for given data). It is a common learning model for predicting the future Customer behaviors. Common tools are Decision tree, Neural Networks, Linear Programming. As Customer's buying habits & prediction of future Customer behavior are very important components, mainly Telecommunication Industry applied both two models on integration with CRM. Brief History: (Freeman M. 1999) Prediction of Active Customers and their lifecycle with respect to profitability can be achieved through data mining.(Chris Rygielski, Jyun Chery Wang, David C. Yan 2002) Data mining technique answer all the questions of Business Organization for making CRM possible. Today's data mining technique is quite necessary for accomplishing the aim of today's CRM. ( S.Arumuga Perumal 2005) Without CRM there are no chances of improvement in the e-commerce. On integration of CRM with data mining tools, e-commerce will be more successful. (E.W.T. Nagi, Li Xiu, D.C.K.Chau 2009) Two commonly used models i.e. Association & Classification in CRM provides the roadmap for Customer retention & Customer behavior. (Gordon . S.Linoff,Michael J A Berry, M.R.Farooqi, K.Raza, 2011) For discovery meaningful patterns or rules data mining is applied in Business Organization from huge Business data History.(Mohammad. Behrouzian Nejad, Ebrahim Behrouzian Nejad, Ali Karmi , Manigandan .E., Shanthi .V. 2012)On integration of CRM with data mining, Organization will get effective response of Customer & accordingly Organizations will develop the quality of products & Service in order to achieve more profit. Companies will be more benefited if CRM & data mining combined. Because on integration, Companies will predict the valuable, significant & more profitable Customer from hiring of data. ( Niketa Singhal, R.K.Samal , Pallavi Dubey 2014) Algorithm is developed for integration of CRM, Business Process Management & data mining for Small & Medium Enterprise in Cloud Computing atmosphere. On integrating the CRM with data mining techniques process will be automated and developers can predict valuable Customers. Association Rule Mining is the very popular well researched model for extracting interesting relation between variables in huge databases. It has greater performance with respect to improved response time in distributed data environment.

### B. *Advantage*

Data mining technique adopted by many Industries say Banking/Finance, Marketing/Retail, Government, Telecommunication and Manufacturing to extract favorite and useful knowledge about Customer's behaviors for better development of business. Advantage of integration of

CRM with data mining helps for reducing information overload and improving decision process. Identification of pattern can be developed by the current business problem. More no. of advantages of integration of data mining with CRM are retain old Customer & attract new Customer, Improve Customer's Satisfaction, Quick changing of Business environments, Customer needs & their responses, Prediction of future value of Customer & calculation of overall percentage value, Integration of data and advanced data analytical tools for reporting purpose, Improve loyal Customer and Elimination of duplicate data through refined data.

### C. Disadvantage

Privacy issue is the main disadvantage of CRM. Because due to privacy some Customers fear Internet Transaction, which interrupts CRM & subsequently data maintenance from Customer database interrupts & pattern extraction not successful. Security System is more important to protect the data & information available on line. Similarly trends obtained through data mining intended to be used for company's marketing purpose may be misused. Some unethical people may use the information obtained through data mining to take advantage of vulnerable people or discriminated against group of people. Technique of data mining is not 100% accurate. Brief History: (Basiri 2007) Customer questions can be answered quickly & accurately by integrating the CRM with data mining. Also integration helps extraction, management & top down access for Customer retention & profit. (Ngai 2009) Customer retention is the central component of CRM where data mining entered in addition to all other components of CRM. (Mohammad. Behrouzian Nejad, Ebrahim Behrouzian Nejad, Ali Karmi 2012) Researcher believes that data mining answers all questions of Customers by integrating CRM with data mining to improve CRM efficiency & rapid response to customer needs. (William McKnight 2010) Most of the Business analyst generally not aware about the techniques deployed by data mining tools as tools are generally designed by well statisticians in the science of predictive analysis. So that is the main disadvantage of CRM analysis with data mining.

### D. Application

Applications of data mining for CRM divided into no. of categories i.e. financial data analysis, Retail analysis, Banking Sector, Telecommunication Industry. Financial data analysis: For facilitating systematic data analysis or data mining, high quality reliable financial data required for finance Industry. Construction & design of huge databases for multidimensional data analysis through (1) Viewing the changes of debt & revenue by month, region, sector & other factors (2) Accessing all statistical information .Loan payment prediction or Credit policy through attribute relevance ranking, feature selection, loan payment performance & Consumer credit rating. Customer classification, identifying violations through classification & clustering operations in targeted marketing by nearest-neighbor, decision tree algorithm of data mining. Detection of money laundering, financial crimes is possible through data visualization, linkage analysis, classification &

clustering operations. The some of the application discussed below. Retail Industry: Application of data mining in retail Industry through identifying Customer buying behaviors, discovery Customer shopping patterns & trends, improving quality of Customer Service, better Customer retention & satisfaction, enhanced Consumption ratios, designing effective transportation & distribution policy.

Telecommunication Industry: In high Competitive scenario, data mining is highly essential for understanding business, various telecommunication pattern, catching fraudulent activities, improving quality of product & Customer care Service. Data mining may improve Telecommunication Services such as fraudulent pattern analysis & identification of unusual patterns, market analysis, multidimensional analysis, sequential pattern analysis & use of visualization tools in telecommunication data analysis. Similarly for other areas like Health Care, Insurance Industry, application of data mining is quite essential. Brief History: (Chris Rygielski, Jyun Cheng Wang, David C yen 2002) Data mining application is necessary to accomplish the goals of CRM philosophy in almost all the sectors. (Lavrac 2007) Classification, Clustering models can be applied for Public Health for predicting medical status, out-patient status provided by Health Care Service. (Hwang 2008) Dependency Modeling can be applied for Clinical Diagnosis of Health Care Service. (Liao Chen & Wu 2008) Clustering & Dependency Modeling can be used for Customer knowledge extraction to product line & brand extension through Association, k-means Cluster Analysis in Retailing. (D.Camilovic 2008) Customer Segmentation & Churn Prediction are two most valuable data mining applications for CRM Telecommunication for building pattern. (Cheng, Lu 2009) In Finance Sector Classification & Clustering can be applied for Knowledge-Sets strings of data models, parameters & reports (Li, Zhu & Pan 2010 ) Small & Medium Businesses like Food Company uses Classification technique through Extension Theory for Knowledge Seeding & Knowledge Cultivating. (Li, 2010) Classification techniques can be applied for Food Supply through Decision Tree, Neural Network. (Liu & Lai 2011) For Collaboration & Teamwork Task, Clustering Model can be used by Knowledge Sharing, Knowledge Graph & Knowledge flows through Process Mining Technique. (Ur. Rahman & Harding 2012) Construction Industry can use Dependency Modeling, Clustering technique by Textual Databases through Apriori Association Rule. (Raghda M. Nasr, Sahar Nagaty, Mohammed B. Senousy 2014) During Survey of Mining for CRM on the Customer data set it is found that Classification & Clustering Algorithms are more fit models for all four dimensions of CRM i.e. Customer Identification, Customer Attraction, Customer Retention & Customer Development. (P.Salman Raju, Dr. V.RamaBABU, G. Krishna Chaitaiya 2014) For retailers, data mining can be applied for providing information on product, sales, Customer buying trend and enable better decision making throughout the retail industries.

### E. Challenges

The Integration of issue is not free from challenges. Some challenges are pointed as follows.

Collection of CRM data for data mining is the biggest challenge, where some Company did not allow the analyst to access Customer transactions from highly sensitive data. Before data mining there is a strong requirement of integration. The philosophy & objectives of CRM must be spread all over the Organization so that they will face the common challenge of traditional CRM or business Strategy not CRM Software. Requirement of integrated mining of diverse & heterogeneous data as diverse data types are often encountered. Sales, Marketing & Customer Service should be sufficiently trained by workforce of the company to handle the CRM Software. Data acquisition must be in low cost, non-intrusive & highly accurate for deeper understanding for right Customer prediction. In SCRM (Social Customer Relationship Management), selection of social media is very important so it is very essential to decide to choose the social media for Customer. To predict the Customer behavior, development of deeper model in data mining is the great Challenge. Researcher should work with sufficient amount of data for Customer. As Trust is the very top Challenge, researcher works with less than minimum required data. Unavoidably duplicated & noise data in every department must be dealt with the customers by saving many times in different ways.

Discovered patterns of CRM in data mining are often treated as hypothesis & that need to be treated through rigorous statistical tests for validation of the results i.e. in high risk application like Finance & Medical. Brief History: (Thearling 1998) Sometimes after analyzing the data by the data mining tools pointed out about the legal issues. That is one of the important limitations. (Baragon, Andersen, Bayerl 2001) The main challenge of applying data mining techniques for Customer Segmentations is that proper variable should be chosen for segmentation process. (Seifast 2004) Data mining does not tell the user value or pattern significance but helps reveal pattern relationship. (S.Hameeta Begam , 2013) Scalability, Streaming data, Complex & heterogeneous data, Data quality, Dimensionality, Data ownership are main challenges in data mining for CRM. (Dileep B Desai, Dr. R.r.Kulkami 2013) Future research of data mining is to find the hidden data sets by adopting various models for helping managerial decision. (S.Fanakiraman, K Umamaheswari, 2014) For future research, data mining will be major challenges for CRM as data mining techniques in CRM improves the efficiency of CRM for providing better prediction ability to the Organization.

#### IV. EXISTING MODELS

Before integration of data mining with CRM, we should know about CRM model. CRM model Consists of seven basic blocks & each block have its own importance as shown in fig. 1. First stage is the Customer database creation, which contains Transaction (Complete Purchase History) ,Customer Contacts(Sources). Second stage is the data Analysis for defining Customer Segments. Basing on similar Behavioral pattern & descriptive data, various statistical methods implemented for customer segmentation. Life time Customer value helps for analyzing the current & future profitability of firms & what products are often

purchased together (Market Basket Analysis). Third stage is the selection of Customer basing upon the current profitability (Customer with high life cycle value). Fourth stage is the targeting selected customer through direct marketing method such as Telemarketing, direct mail etc. Fifth stage is the Customer Relationship program through Satisfaction, retention, Customer Care Service, loyalty, Community Building, Rewarding programs which facilitates repeat purchasing of customers. Sixth stage concentrates on the use of personal information contained in the database after database creation, analysis, effective targeting & relationship program. Last stage is the updating of success of product and services in the market place managed through four dimensions like Customer acquisition, attraction, retention & development.

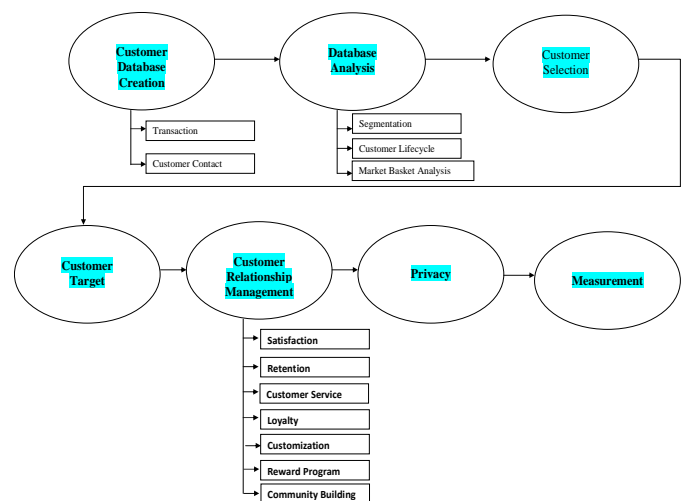


Fig.1 Schematic diagram of CRM

#### A. Proposed data mining model for CRM:

Clear methodological framework guides successful data mining project for CRM. A standard process of data mining model for CRM consists of several phases. Understanding Business: Understanding of Business objective with current situation assessment starts data mining project and business objective should be translated into data mining goals for success of project. Data Understanding: This phase involves initial data collection and exploration with summary statistics & visualization tools to understand the data with identification of potential problems in available & quality. Data Preparation: Identification of data to be used selected & prepared for inclusion in data mining model. This stage involves acquisition, Integration & formatting of data as per needs of the data mining project. Finally data should be cleaned & transformed to requirements of algorithm with enrichment of customer information to enhance the performance of the model. Modeling: This phase involves appropriate modeling techniques for the particular business objectives. Examination of alternative modeling algorithms and parameter settings and a comparison of their fit and performance in order to find the one that yield the best result. Evaluation: In the context of business success criteria, the generated models are formally evaluated & project team should decide whether results of a given model properly address the initial objective of business. If so, the

model is approved prepared for deployment. Deployment: Last phase involves the deployment for enabling the distribution of the model results throughout the enterprise and their incorporation in the organization's database & operational CRM System. Finally whole process should be reviewed with designing of whole plan. Proposed Integrated model designed for Telecommunication Industry that can be deployed in commercial data intensive Cloud environment.

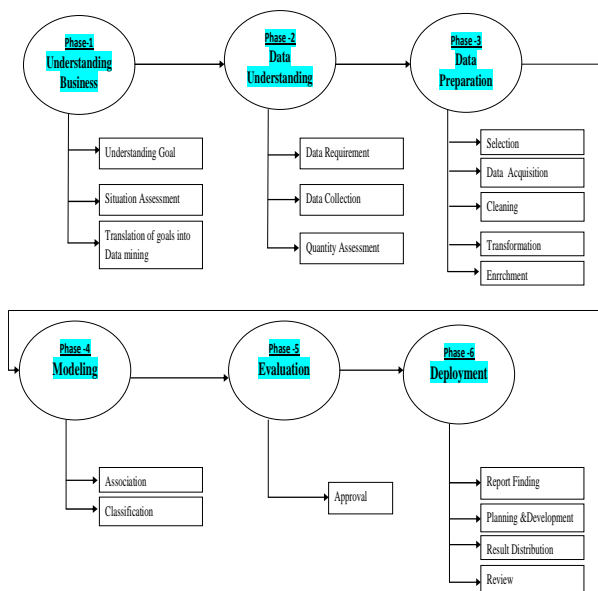


Fig.2 Adaption of CRM and Data Mining for Telecommunication Industry

Brief History: (Paul D Berger & Node I. Nasar 1998) In order to define Customer segments, Customer databases have been analyzed by using multivariate statistical methods such as Clustering. (Michel Wedel and Wagner, A Kamakura 1999) Construction of Customer database & information is the complete CRM solution of 1<sup>st</sup> stage CRM Model. (Jim Nail 2000) First selection of Customer basing on highest purchasing rate, greatest brand loyalty should be business target. (Chris Rygielski, Jyun-cheng Wing, David C. Yan 2002) Data mining is used to build six types of models for solving company problems like Association, Classification, Regression, Prediction, Clustering and Sequence discovery. Classification, Regression for making prediction. Association, Sequence discovery for describing behavior and Clustering can be used for forecasting. (Gaurav Gupta, Himanshu Aggarwal 2012) In today's world & Competitive scenario, CRM is more important. The more efficiently you can understand your business, Customer & use their information, more profitable you will be. Operational CRM with analytical CRM and implementation of data mining builds a good model for CRM. (R.Senkamalavalli, T.Bhuvaneshwari 2013) Data mining guided the CRM effectively for successful business. (Ahmed M.E.Zehery, Hazem M. Elbakry, Mohamad S. Eiksast 2014) In order to develop an integrated model, it is important to know about existing CRM & Data mining model. Data mining can be applied in all dimension of CRM according to their fitness in integrated form.

## V. CONCLUSION

Data mining technologies provided through cloud computing environment is an absolutely necessary characteristic for today's business to make proactive, knowledge driven decisions for target marketing as it helps them have future trends and customer behaviors predicted under CRM. As the need for data mining tool is growing every day, the ability of integrating various data Mining technique on analyzing past data in cloud environment becomes more & more stringent. Application of Data Mining techniques in CRM is an emerging trend in the industry. Research on application of data mining in CRM will increase significantly in the future based on past publication rate & increasing interest in the area. These articles could provide insight to Telecommunication Industry Policy makers on the common data mining practice used in all dimensions. From huge database, proposed model will take the inputs from customer profiles and options and decision will be taken accordingly for satisfaction through CRM.

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