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Web Mine Customer Relationship Management

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Abstract - The Internet has become popular because of its low cost, low latency and high bandwidth. Its collaborating nature delivers an association the capability to arrive into a close, modified discussion with separate customers. The concurrent development of data management technologies like data warehousing, and data mining, have formed the ideal environment for creating CRM a much more Standardized effort than it has been in the past. we defined how data analytics can be used to type various CRM methods like customer segmentation, communication targeting, retention, and loyalty much more effective. We briefly define the important technologies required to implement analytical Customer Relationship Mangement, and the organizational problems that must be judiciously fingered to make CRM a reality. Our goal is to reveal problems that exist with present customer relationship management, and how using data analytics techniques can address them. Our hope is to get the data mining community interested in this important application domain.

Key Words: **Customer Relationship Management (CRM), CRM Implementation, Web Crawler , Dom Tree , Customer Communication.**

1.INTRODUCTION

CRM(customer relationship management) has turn into one of midpoint point for several businesses such as Retail, Telecommunication, Insurance and Banking. CRM takes client as the central point and optimizes the business process. But in the real-world application there are major challenges for building high performance CRM classification models. Meanwhile data quality is an important matter for CRM classifications in that several kinds of data anomaly complicate the data preparation and classification function. It is problematic to find one method that fixes all data mining difficulties in the CRM data set such as High dimensional, Heterogeneous, Simple data anomaly and Imbalanced. Normally the data set is not having all the data because of erroneous data by reluctant clients who do not provide all information, misunderstanding and human errors. High dimensional data may contain useless data in large amount which might affect the performance of learning algorithms. Thus, feature selection becomes very important for machine learning tasks. Heterogeneous data is collected from any number of sources, mainly unknown and unlimited, and in many different formats either numeric or nominal. A new feature selection technique is proposed to resolve above issues mentioned in the CRM data set with relevant features by incorporating an efficient data mining techniques to improve data quality and feature relevancy after pre- processing. The projected technique is tested on KDD Cup 2009 data set of Small Challenge. The projected methodology proves its higher performance.

2. INTRODUCTION TO CRM

CRM(Customer Relationship Management) emerge from business processes such as relationship marketing and the increased importance on improved customer retention through the effective CRM. 4

One sight of CRM is the utilization of customer-related data to deliver proper services to customers. 3

Additional view of CRM is technologically orientated. Database technologies such as Mining of Data(Data Mining) and Data Warehousing are critical to the functionality and effectiveness of CRM systems. 1

A study led in a UK-based manufacturing company demonstrates that in real World Customer Relationship Management is a complicated combination of technological factors and Business. CRM is considered a complete procedure of obtaining, retaining and growing customers.

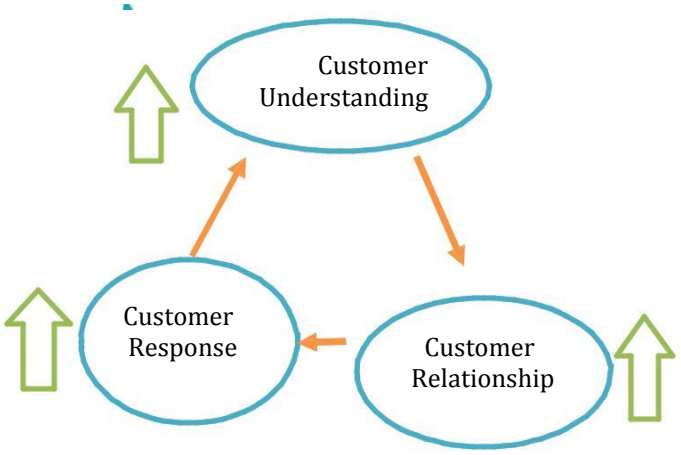

Figure 1. .Overview circle of CRM.

The way a company works so as to build Strong relationships with its customers. CRM is comprehensive strategy and the procedure of obtaining, retaining andI) partnering with selective customers to create superior value for the company and te customer. II)

CRM = Customer understanding + Relationship management

This calculation is old, meanwhile in the traditional neighborhood store. Model of doing business, the store had a highly localized audience, and the store owner knew practically everyone in the neighborhood. Making it in formal for him to encounter the requirements of his customers. It is the large companies, serving a mass customer base, that have trouble in understanding the requirements of specific customers. The realization of this gap of data has been one of the driving issues for the rapid implementation of CRM application by several corporations. However, the initial deployment of CRM application has been for the additional portion of the CRM equation, specifically relationship management. As labeled above, relationship management efforts without an understanding of the customer can be marginally real at best, and sometimes even counterproductive.

3.1 Analytical CRM

The projected profit of modules in this category is enhancing the targeting accuracy. Examples of modules in this category are:

- Assortment optimization
- Customer satisfaction
- Market basket analysis
- Data warehouse
- Data mining

3.2 Collaborative CRM

The expected profit of modules in this category is an enhanced synchronization of personal communication channels. Examples of modules in this category are:

- Webmail
- Call-center
- Fax / letter
- Face-to-face
- Web-conference

4. CUSTOMER COMMUNICATION

A main element of customer relationship management (CRM) is collaborating with the customer. It contains of two components, namely
Determining what message to send to each customer segment, and
Choosing the channel through which the message must be sent.

Message selection for each customer segment depends on the strategy being followed for that segment; The selection of the communication channel rely on a number of characteristics of each channel, including cost, focus, attention, impact, etc.

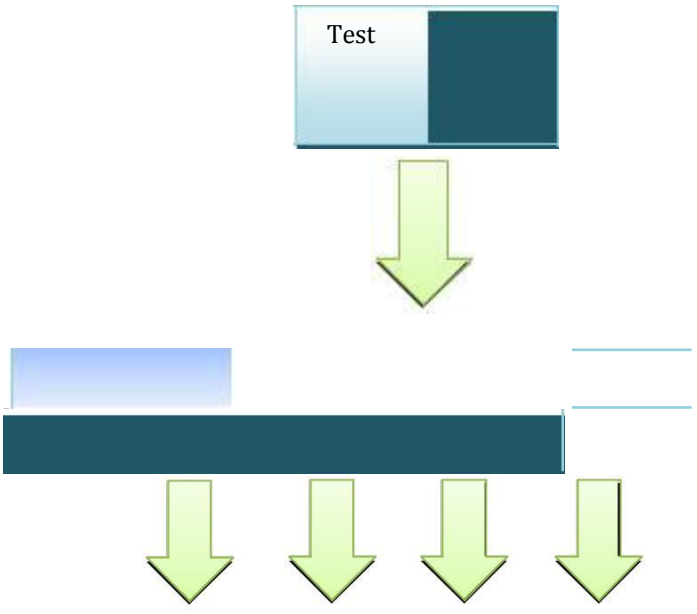

Figure 2. Analyzing the response to customer communications.

5. WEB CRAWLER IMPLEMENTATION

We are using VIPS (vision based page segmentation algorithm) is an automatic top-down, tag tree independent approach to detect web content structure. VIPS algorithm is to convert a deep web page into a visual block tree. A visual block tree is actually a segmentation of a web page. The root block represents the entire page, and each block in the tree resembles to a rectangular region on the web pages. The leaf blocks are the blocks that cannot be segmented further, and they represent the minimum semantic units, such as continuous texts or images. These block tree is constructed by using document object model tree. It is a one important building pillars in the VIPS algorithm that is DOM tree. The DOM tree is used to manage XML data or access a complex data structure repeatedly.

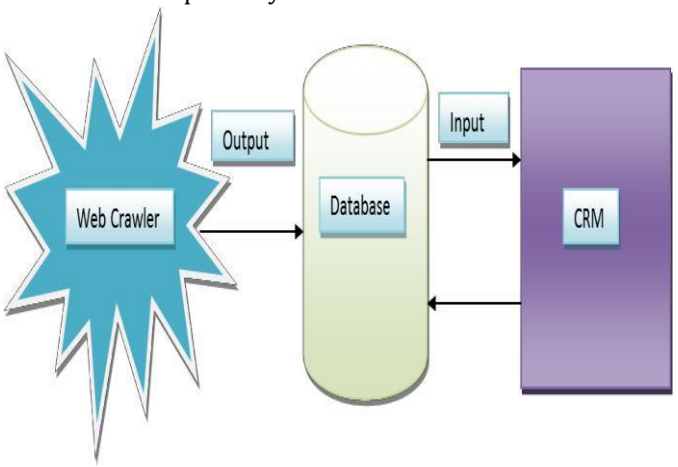

Figure 3. Web Mine Data Transformation To CRM

Based on web structure web crawler implementation can be done by following methods:

- DOM Tree
- Html Dom
- Xml Dom

6. IMPLEMENTAION OF CRM

Each free CRM system will be installed on test systems. Earlier research has shown that trying the installation on a Windows based operating system(OS) and on a Linux based OS use to provide valuable results. For this research the following test systems are used:

Test system

- Windows 7 Installation
- 4 Cores
- 4 GB RAM
- 64 Bit architecture

	Test System
MS SQL Server 8	10
MySQL	5
Apache Server	10
PGSQL	5

Table 1: Installation times for software components

If there is any abnormality due to the installation for an open source CRM-system, it will be documented. To create comparability, the total installation-times will be listed in a table as follows:

	Test System
CRM-system 1	X minutes
CRM-system 2	X2 minutes
...	...
CRM-system n	Xn minutes

Table 2: Installation times table

scheme 7. CONCLUSIONS

The collected information about crawling or mine data is input for CRM systems. CRM system will get information like Company Names, Email ID, Phone Number, etc. Expect for one CRM-system, all other CRM-systems are implementable. This underlines, that the approach of eliminating irrelevant CRM-systems condensed the results in a valuable way.

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