Optimize direct marketing with Association rule

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Abstract **Direct marketing is an effective marketing method considering development of world trade and comprehensiveness of internet. Direct marketing can provide consumers with unique products and services. Data mining and its related techniques including association rules and clustering can be used to enforce direct marketing. In present article customers' preferences concerning their type and methods of purchasing are to be indicated by using data mining which can be used while selling goods and products.**

Key words: data mining , marketing , association rules

1 ITRODUCTION

Nowadays the volume of stored information on diverse subjects is increasing dramatically and there areenormous amount of data stores fromwhich is needed increasingly to be explored and extracted knowledge as quickly and precisely as possible. Furthermore, it is very necessary to design systems enabled to explore information rapidly and to find proper analytical methods of information with large amount of data.

Data mining is a link between statistics, computer science, artificial intelligence, and data bases and …. Thus utilizing power of data

mining process as a means of recognizing models and patterns and linking different elements of data base to find knowledge hidden in data and finally converting data into information can be of a great problem of the day. Helpful patterns among data are often fund by using data mining. Helpful pattern refers to a data model describing relationship between subsets of data which can be used to gain new and logical information.

2 Definitions of data mining

Mine means to find and obtain hidden and precious sourcesfrom land. Data mine means and emphasizes deep searching into available data

with large volume in order to find useful information which was hidden beforehand. Many definitions have been developed some of which are mentioned here as examples:

Data mining is the act of extracting conceptual, unknown and potentially useful information from data base. It includes the process of extracting valid and understandable information out of a large data base and using it in decision making concerning important business activities. Data mining means to search on a data base to find patterns between data and use in different activities.

3 Electronic trade

It refers to do business and transfer business information through phone lines without using paper. Increasing development of technology especially IT minimizes the obstacles and problems dealing with time and place in business affaires and doing trade and business on internet has found its especial position al over the world. Electronic trade has saved time, costs and human forces and increased productivity indexes.

4 Proposed working procedure

Knowledge exploration and learning is a repeating process which can develop a scaffold to manage knowledge by using data diving techniques. As mentioned before, the objective of this paper is to use data diving techniques with the aim of improving the quality of marketing concerning electronic trade. There are different methods of using data diving including classification, clustering, and association rules. By using rules in this paper we are going to obtain useful information about electronic trade

users that may help us with marketing products. In fact we want to find the productswhich different users need them and make a list in order to sell them more rapidly. Data which is a list of previous and recent purchases done by customers is stored on a data base. A list of potential purchases of the customers will be developed by some relations according to available rules then by using especial knowledge we will manage sale and help visitors.
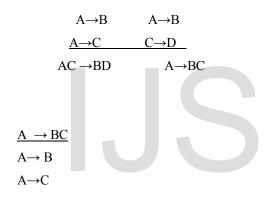
5 Steps of the work

1. There are sets of rules saying that if someone purchases product A,there is the possibility he/she buys product B, too. These rules can be inferred from customers' behavior over time.

2. Other rules can be obtained from personal profile of the users. As we know, among useful information about customers which may help us to know what products they will need is having information about their characters and features. We can meet their needs according to their personal information. Examples may be a list of recent shopping, frequency ofbuying things, and …

Therefore products bought repeatedly, that is, bought only once cannot be accounted, rather the products are to be measured, listed and profiled that frequently and/or recently purchased.

6 Defining relations between the elements

Algorithm for association rulesare mainly for determining the relationships between items and characteristics that occur simultaneously in the database Relational dependence: if A and B are names of two products then we will have A→B, if for all relations in R there is the possibility of purchasing B along with purchasing A. If we have a set of relational dependences then we can name the set of all relational dependences resulted from as "all". Association rules

Therefore we may have following relations:

$$A \to B \qquad A \to B$$
$$\underline{A \to C \qquad\quad C \to D}$$
$$AC \to BD \qquad A \to BC$$

$$\underline{A \to BC}$$
$$A \to B$$
$$A \to C$$

7   Optimizing relational dependence

Many dependencies can be developed by applying above rules some of which could be repetitious or even additional. Therefore, we want to present here optimized set of dependencies:

8 Results

It is clear by experience that a systematic program can facilitate emergence and maintenance of IT in different environments. Data mining knowledge should be applied in combination of different sciences with the aim of exploring rules and powerful data bases. Supported analyses by data mining may result in optimizing many different problems in all institutes an environments.

Use of this knowledge to determine routes,times and days of the year in which the passengers are in demand, what critical and crowded points are and such sort of things will be very useful

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