International Journal of Advance Research in Science and Engineering
Vol. No.6, Issue No. 05, May 2017
www.ijarse.com
IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

VEHICLE SALES ANALYSIS TO UNDERSTANDING THE CUSTOMER BEHAVIOR WITH THE HELP OF CLASSIFICATION TECHNIQUES

Swarnim Singh Chandel[1], Shrikant Tiwari[2], Shruti Chandrakar[3]

[1,2,3] *Department of Computer Science and Engineering*
Shri Shankaracharya Technical Campus,
SSGI (Faculty of Engineering and Technology) – Bhilai (Chhattisgarh)

ABSTRACT

Sales analysis can be defined as gathering, classifying, comparing and studying sales data which helps to convert raw data from various sources in to actionable information. It also helps in non-marketing functions like production planning, cash management, inventory management etc. The ultimate aim of the data mining process is to generate the information from the raw data and to discover the pattern and analyze it, based on the organization data. This analysis helps the organization to prepare marketing strategy based on discovered information and pattern. There are many techniques are available to mine and analyzed the raw data. Sales analysis helps to organize their products, after analyzing the behavior of customer based on their age and gender.

Keywords: Data Mining, Sales Analysis.

I INTRODUCTION

Data mining is the step to generate some useful identical and strategic information. The generated data is very crucial for every organization, it consist a lot of private and confidential information. To extract and analyze the data from data warehouse there are many tools and techniques are available. The terms sales analysis plays a vital role for every organization to plan their business strategy to increase the revenue and sales. The data mining and analysis is generally referred to as Knowledge extraction or information extraction or pattern discovery from raw datasets. The data mining and analysis is not limited to particular area and organization. The range of data mining is very broad.

The analysis of sales reports to determine various sales metrics is known as Sales Analysis. The various metrics like: inventory stock, effectiveness of sales force, company's performance against the set goals etc. Sales analysis examines sales reports to see what goods and services have and have not sold well. The analysis is used to determine

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

how to stock inventory, how to measure the effectiveness of a sales force, how to set manufacturing capacity and to see how the company is performing against its goals [1].

Sales analysis bring out the details which otherwise remains dormant. It provides data as well as information which enables company to allocate the resources optimally and distribute sales efforts effectively. The sales analysis identifies the following:

1. Strong and weak territory
2. High and low volume product
3. Satisfactory and unsatisfactory "Customer Accounts" etc.

For mining the raw data, the concept of data mining is used. Data mining outline the method of mining the knowledge or extracting data from giant repository. The data mining is usually referred to as Knowledge extraction from data or data discovery. It is the strategy for analyzing information from entirely unexpected point of view and counting it into accommodating data.

Used Techniques:

Here to analyze the customer purchasing habit the classification technique is used. There are different parameters are used to analyze the customer behaviors like their age, gender, location etc. Data are sorted and classified based on the parameters. The algorithm generate automatically the grouped of data based on the classification rules and parameters. After completion of the process the patters will be generated to analyze the sales matrix.

The organizations learn their customer's behavior through personal relationships with each of them [2]. It helps to improve the relationships between customers and organization. To learn and analyze the customer data there are many existing tools are available.

II LITERATURE REVIEW

The author 'Anurag Bejju' gives the methods to "sales analysis of e-commerce websites using data mining techniques" It help to understand and analyze the customer buying habits and searching behavior on e-commerce site [3]. It helps to determine the price strategy and based on different criteria. The Internet will lead to increased price competition and the standardization of prices. It also helps the organization to compare the prices from different sites across all the suppliers. It Analysis also helps to increase the productivity and profit by increasing revenue though stronger sales analysis. in today's world The internet is one of the most revolutionary technology that changed the business style and strategy, the best example is e-commerce sites. The e-commerce industry is the one of the largest industry that deals world-wide. The data mining techniques to analyze the customer behavior based on their location, season, habits and festivals, are performed by the all e-commerce site. This help to plan for

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

the productive strategy based on the customer data. It also helps to learning the buying habits and the relationship between the customer and the business.

The most challenging part of sales analysis is to understand the customer behaviors based on their buying habits. The analysis can be performed in many ways with the help of different parameters like their age, gender, location, festival and many others parameters. It helps to establish the relation between customer and organization. The authors analyze and prepare and algorithms to learn and establish the relationship between customer and organization based on their behavior of purchasing goods [2].while visiting the online shopping site, customer perform a lot of searching, while searching customer leave their interest to that site. These information are very important for organization. On the basis of customer page and product searching the organization know the interest of the customer. There are many data mining methodologies are available to analyze the data like Artificial neural networks, Genetic algorithms, Decision trees, Nearest neighbor method and many others. The mining process is depending on the size of data and the complexity of data.

The Automobile industry is boom in today scenario. Every one wants a luxurious life and one of the part is automobile. To analyze the behavior of customer while using automobile passenger car the author publish a paper 'Analysis of research in consumer behavior of automobile passenger car customer' [4]. With help of this analysis the organization can know the customers vehicle habits, based on their different rides. Also the status and professions of the customers can help to recognize the customer’s interest on vehicle. The models of the car, size, capacity, look and style leads a very important role to attract the customer. Today vehicle market is very competitive and very tuff task to get the position in market. The analysis also refers to new launched car with old one.

III NEED OF VEHICLE SALES ANALYSIS

As the ultimate aim of the sales analysis is to understanding the customer behavior and to plan the marketing strategy for the product to increase the business revenue. The analysis is fully depends on the customers. To analyze the behavior of customer habits there is need to understand and analyze the different parameters like their age, gender, profession, status and many other things. In this analysis the algorithm used the age and gender parameter to classify the customer and their behavior.

Sales trend analysis is the review of historical revenue results to detect patterns. Sales trend analysis is a useful budgeting and financial analysis method that can indicate the onset of changes in the near-term revenue growth rates of a business. It is rarely adequate to simply plot the total sales of a business on a trend line and expect to obtain any significant information from it. Most organizations sell many products to a variety of customers, and in many regions, which means that sales can be broken down into a number of sub-groups and then reviewed on a trend line.

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

On the basis of customers visited pages of different site and by recognizing their search, the organization can determine the customer behavior. Product rating system also helps the customer to choose the right product based on their rating and reviews.

IV CLASSIFICATION TECHNIQUES TO ANALYZE THE CUSTOMER BEHAVIOR

The proposed system is worked based on the classification and grouping the data into similar type of groups. The complete description and the algorithm part are described in chapter-4 of proposed methodology. In this proposed work classification and the grouping in nothing but creating a cluster based on the customer parameter to analyze the customer behavior. Based on the parameter of the customer data the algorithm will efficiently perform the grouping process of same type of data. To create a group here the classification rule are defined.

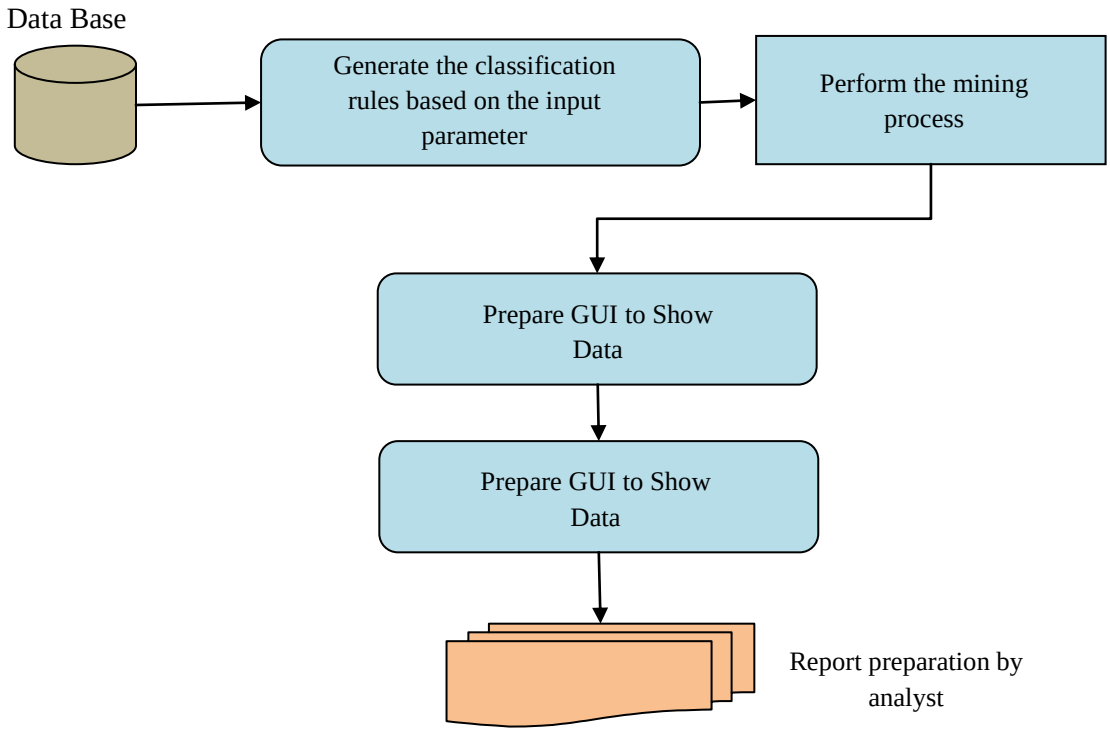

Figure 1: Flow of generating the classification rules and creating the cluster.

The ultimate goal of classification is to predicting or preparing some output based on some predefined conditions. The grouping means group the data into single cluster which have the common behavior or have some common properties.

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

Here the proposed algorithm first classifies the each row of data based on the some predefined rules and then grouping them which have the common properties. The classification or rule is generated based on the age and the gender of the customer.

To prepare rule here the age_range is defined with the gender, condition like if age between min_age and max_age, and gender, condition satisfied then add the data to group. Here the group is generated based on the total number of age_range and the gender.

So here the rules applied like

```
if((min_age>=xx &&max_age<xx) && gender=Male) then
        add the data into Group_A
else if(.....)
        add the data into GroupB.
.....
.....
else
        add the data into GroupN.
```

Here the total number of group = (number of age_range) * 2

After completing the above steps the data are display to the user based on some GUI form, like tabular form or in chart form for better understanding and analyzing. Here, the classification rules are created based on the age and the gender.

V CONCLUSION

Every data mining techniques and mythologies lead a very crucial and important to the business analyst. The sales analysis is one of the emerging fields of data mining. The proposed work is based on the concept of classification and grouping the data, based on the applied classification rules. On the basis of comparison rules the customers data is append into the associated cluster or can say group. On the basis of this analysis, the market strategy can be planed for specific location and for specific age group.

REFERENCES

[1]S. HanumanthSastry and M. PrasadaBabu, "Analysis & Prediction Of Sales Data In Sap-Erp System Using Clustering Algorithms", International Journal of Computational Science and Information Technology (IJCSITY), vol. 1, no. 4, pp. 95-109, 2013.

[2] Adeleye, V. H., Olakunle, A. O., Folasade, M. O., Olasunkanmi, E. O., & Patience, E. I. (2014, October 30). Customer behaviour analytics and data mining. American Journal of Computation, Communication and Control , 66-74.

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

[3] Anurag, B. (2016). Sales Analysis of E-Commerce Websites using Data Mining Techniques. International Journal of Computer Applications , 5 (133), 36-40.

[4] Vikram, S. (2014). Analysis of Research in Consumer Behavior of Automobile Passenger Car Customer. International Journal of Scientific and Research Publications , 4 (2), 1-8.