Week 9 – Data Mining

Introduction

The purpose of this paper is to present the illustration of different aspects, which are associated with data mining. In the current era, businesses mainly focus on different methods and techniques, in order to attain the information of their customers. It is due to the fact that customers' information is one of the greatest sources of business revenues and competitive advantages. In this regard, data mining can be considered as the most appropriate methods of acquiring customer's information (Tsiptsis &Chorianopoulos, 2011). It is because; data mining of repetitive information of customers, through surveys, sweepstakes, loyalty cards, credit cards, etc. plays a vital role in providing competitive advantages to the businesses.

These techniques or approaches assist the businesses in analyzing the travel, entertainment, and shopping habits of its customers. According to Linoff and Berry (2011), data mining helps in understanding the buying behavior of the potential and existing customers, but

this technique also pose different threats and risks to the businesses, in terms of privacy and security of customer's information. Proceeding paper incorporates the analysis of different advantages and concerns, which are associated with data mining.

Discussion

Businesses are continually starving to adopt integrated and sustainable technique, like data mining, in order to gain competitive advantages. It is because; data mining enables the organizations to identify different facts about their customers, including purchase history and demographics. This information plays an inevitable role in understanding the needs and demands of the customers; hence results in the formulation of suitable products and services (Wu, et.al, 2014). It has been assessed that different techniques of data mining have been used by the businesses, which have considerably facilitated them. Some of the techniques, along with their advantages and disadvantages, are discussed in the proceeding paper.

Answer 1

Data mining can be referred as the process that uses mathematical, statistical, machine learning, and artificial intelligence techniques, in order to identify and extract useful information from large databases, such as data warehouses (Gupta, 2011). In this regard, different techniques of data mining can be employed by the organizations. Benefits of those techniques are briefly elaborated in the proceeding section.

a. Predictive Analytics to Identify Customer Behavior

The deployment of predictive analytics enables the organizations to identify the behavior of its customers, in a more feasible manner. It is due to the fact that predictive analytics evaluates and structures information, in order to find patterns, which highlights certain behaviors of the customers. According to Tsiptsis and Chorianopoulos (2011), predictive data mining utilizes some fields or variables in the data set, in order to identify or estimate unknown variables, which are valuable for the businesses. It has been established that predictive analytics inevitably improves the profitability and repute of the businesses. More so, these mining techniques also allow the companies to build specific marketing models and campaigns, like online marketing, direct email, etc., after analyzing customer's needs.

b. Associations Discovery in Products Sold to Customers

In data mining approach, association discovery enables the companies to predict and recognize the behavior of their customers. Associations discovery play a crucial role in product clustering, basket data analysis, and store layout and catalog design. This technique of data mining offers great opportunity to the businesses and organizations to find out the relationships or correlations amid different variables in large databases (Linoff & Berry, 2011). This analysis supports the process of predicting customer buying or purchasing behavior; hence results in the attainment of competitive advantages and higher revenues.

c. Web Mining to Discover Business Intelligence from Web Customers

Web mining is one of the integrated techniques of accumulating useful information or data from different websites. Afterwards, this collected information is merged together, in order to perform profound analysis; hence results in the development of a new website (Gupta, 2011). Web mining plays an indispensable role in keeping the businesses updated about current trends of market, customer demands, and intensity of competition.

d. Clustering to Find Related Customer Information

Data mining technique also deploys clustering, in order to identify related information of the customers. Clustering collects information and designates clusters of similar objects and products. In data mining technique, clustering helps in recognizing valuable information, for further analysis. One of the major examples of clusters includes customer demographics and other information of the customer (Wu, et.al, 2014). This feature supports the formulation of different strategies, regarding the development of different products and services.

Answer 2 - Reliability of the Data Mining Algorithms

Data mining paradigm is reliable, if it creates same type of predictions or discovers the same general patterns, apart from the type of test data. It is significant to notice that not all patterns, which are identified with data mining algorithms, are reliable. In this regard, the reliability of the algorithm can be measured on the basis of three variables (Gupta, 2011). These variables may include usefulness, reliability, and accuracy.

Accuracy determines the capability of the model to correlate the final results with the characteristic in the provided data. However, reliability emphasizes on the functions of the mining model, which are being performed on different data sets. Usefulness evaluates the capability of the model to examine different metrics or set of data. According to Tsiptsis and Chorianopoulos (2011), the technique of data mining utilizes different algorithms, in order to identify and predict patterns of customer behavior. Therefore, it is essential to ensure the reliability and validity of the data mining algorithms.

Answer 3 - Privacy Concerns

It has been examined from previous discussion that data mining offers great opportunities to the businesses, in terms of collecting customer's information. This information helps the businesses to formulate appropriate and suitable business strategies as well as products, in order to fulfill the demands and needs of the customers. Apart from all benefits, data mining also incorporate various issues and challenges, in terms of privacy and security of customer's information (Linoff & Berry, 2011). Proceeding section incorporates the analysis of three major privacy concerns, which are associated with data mining.

Identity Theft

Identity theft is one of the major issues and privacy concerns, which are associated with data mining. In data mining, personal information of the customers pass more freely through offline and online sharing; hence results in information leakage or misuse. Freely available information often results in the identity theft, which affects the integrity of customer's personal information; hence lead the customers towards ruined credit histories, default and fake payments, etc. (Wu, et.al, 2014). Thereby, it can be stated that identity theft is one of the most valid concerns, which are related to the data mining.

Online Data Collection

Online data collection is another greatest privacy concern of data mining, which is a valid concern. It is due to the fact that the data, which is collected through websites and online resources, are often at high risk of exposure, misuse, and unauthorized use (Gupta, 2011).

Safety Concerns

Data mining may affect the overall safety and integrity of the personal information of the customers. It has been established that such incidents may considerably impact the reliability and repute of the company, as well as the integrity of the customers. It is because; hackers may obtain the personal information of the customers, from databases, and use them for malicious activities, like physical harm to the customers, etc. (Wu, et.al, 2014). Therefore, it can be affirmed that the concern in valid.

Conclusion

The preceding paper has incorporated the brief yet in-depth and thorough analysis of different benefits and concerns, which are related to the technique of data mining. It is a fact that data mining approaches have considerably facilitated the companies, in terms of attaining customer's information, but this technique also comprises different concerns. Therefore, it is essential for the companies to ensure the reliability of information, which is collected through data mining.

References

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