Data Mining

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ABSTRACT

In modern time, there is a large numbers of business entities exist in the business world for establish their strategies to promote their business and also satisfies their customers needs. For satisfies the needs of their existing customers ,and built a potential customers , business aware about the needs of the customers. Also customers, for satisfies their needs. They bring a knowledge about their corporate sector and their strategies . Then customers and business start gathering information for their own purpose. But in the world of e-commerce, there is a huge number of data available. But which data is valuable and useful for the customers and business they can find their own purposes respectively.

So, DATA MINING is a technique, which can be use by any entity for making a huge data into valuable information.

Keywords:-Importance, Purpose, Applications, Tasks

DATA MINING

Data mining is the process of sorting through large data sets to identify patterns and establish relationships to solve problems through data analysis.

Data mining is a process which is useful for the discovery of informative and analyzing the understanding about the aspects of different elements.

There is a huge amount of data available in the Information Industry. This data is of no use until it is converted into useful information. It is necessary to analyze this huge amount of data and extract useful information from it.

Data Mining is defined as extracting information from huge sets of data. In other words, we can say that data mining is the procedure of mining knowledge from data.

The information or knowledge extracted so can be used for any of the following applications –

- Market Analysis
- Fraud Detection
- Customer Retention
- Production Control
- Science Exploration

WHY DATA MINING IS SO IMPORTANT?

Data mining service is an easy form of information gathering methodology where in which all the relevant information goes through some sort of identification

process.And eventually at the end of this process one can determine all the characteristic of the data mining process.

1. Increased quantities of data

In earlier days, data mining system can be determined with the help of their clients and customers, but in today's date, one can acquire any number of information without the help of those clients.

Moreover, after this kind of revolution in the mining system, it also added one more problem and that is large quantities of work. With the help of these information technology, one can **acquire a large number of information** without any extra burden or trouble.

2 Provides incomplete data

Most of the people provide incomplete information about themselves in some of the survey conducted with the help of data mining systems.

Therefore, people ignore the value of their information and that is why they provide incomplete information about themselves in those surveys conducted for the benefit of the mining systems.

Moreover, these mining systems changed the perspective of people and because of

that, people fear the exchange of their personal information.

3 Complicated data structure

Data mining is a form where in which all the information is gathered and incorporated with the help of information collection techniques. These information collecting techniques are more of manual and rest are technological.

Therefore, most of the understanding and determination of these mining can be a bit complicated than other structure of information technology.

PURPOSE OF DATA MINING

The main purpose of data mining process is to discover those records of information and summarize it in a simpler format for the purpose of others.

Therefore, understanding the purpose of the mining process is a matter of information.

1 Increase customer loyalty

As most of the information about the data mining covers up all the detailing of discovery of information.

Similarly, when it comes to marketing campaign this data mining process handles all the customer satisfaction and customer loyalty regarding issues. Therefore, at the

end of the line these data mining process benefits those who are in a similar field of work.

And finally, marketing industry deals with data mining creating an increased level of customer loyalty.

2 Identifies hidden profitability

At the starting level of this data mining process one can understand the actual nature of working, but eventually the benefits and features of these data mining can be identified in a beneficial manner.

One of the most important elements of these data mining is considered as that it provides determination of locked profitability.

Therefore, this data mining provides a clear identification hidden profitability so that one can **overcome risk factor in their business**.

3 Minimize clients involvement

Most of time while gathering information about certain elements, products and services, one used to depend on their clients for some additional information.

But these data mining processes change everything and that is because of the help of such inclusion of technology in the data mining process.

Therefore, the end conclusion is that all the information discovered through these data mining process is initiated through **information technology**.

4 Customer satisfaction

One of the main nature of working which is involved in the mining techniques are from their informational matters.

Most of the people seek for others help while making some decision. But it is not always easy to follow any one suggestion. And that is why with the help of data mining one can be confident enough to make their own decision.

Moreover, it gains the trust of its customers with such kind of efforts.

What can data mining Do?

Data mining helps in analyzing and summarizing different elements of information. Mining process is a form where in which all the data and information can be extracted for the purpose of future benefit.

1 Helps to identify the shopping patterns

Most of the time while designing some shopping patterns one might experience some sort of unexpected issues.

And to overcome and find out the actual reason behind that data mining can be

helpful. Mining methods discovers all the information about these shopping patterns.

Moreover, this data mining process creates a space which determines all the unexpected shopping patterns. Therefore, these data mining can be beneficial while identifying the shopping patterns.

2 Increase website optimization

As per the meaning and definition of the data mining, it helps to **discover all sorts of information** about the unknown elements. And adding to that data mining helps to increase the website optimization.

As most of the key factors of website optimization deal with information and analyzation, similarly these mining provides such information which can utilize data mining techniques to increase the website optimization.

3 Beneficial for marketing campaigns

Most importantly, all the elements of data mining is dealt with information discovery and also in its summarization way.

Moreover, it is also beneficial for marketing campaigns because it helps to identify the customer response over certain products available in the market.

Therefore, all the working format of these data mining processes identifies the **customer response through the marketing campaign**, which can implement profit for the growth of the business.

4 Determining customer groups

As it is explained earlier, data mining models helps to provide customer response from marketing campaigns. And it also provides informational helps while determining customer groups.

These new customer groups can be initiated through some sort of surveys and these surveys are one of the form of mining where different type of information about unknown products and services are gathered with the help of data mining.

4 Helps to measure profitability factors

Data mining system provides all sorts of information about customer response and determining customer groups. Therefore, it can be helpful while measuring all the factors of profitable business.

As these types of working factors of data mining, one can clearly understand the **actual measurement of profitability of the business**.

Moreover, these data mining processes differentiate key factors between profit and loss elements of the business.

6 Increase brand loyalty

These marketing campaigns use these mining techniques to understand the behavior and habits of their own customers. And it also allows their customer to choose their brand of clothes which makes them comfortable.

Therefore, with the help of the data mining technique one can definitely be **more self reliant** when it comes to decision making as it provide most of the possible information about different type of brands available.

Data Mining Applications

Data mining is highly useful in the following domains –

- **Market Analysis and Management**
- **Corporate Analysis & Risk Management**
- **Fraud Detection**

Apart from these, data mining can also be used in the areas of production control, customer retention, science exploration, sports, astrology, and Internet Web Surf-Aid

1 Market Analysis and Management

Listed below are the various fields of market where data mining is used –

- **Customer Profiling** – Data mining helps determine what kind of people buy what kind of products.
- **Identifying Customer Requirements** – Data mining helps in identifying the best products for different customers. It uses prediction to find the factors that may attract new customers.
- **Cross Market Analysis** – Data mining performs Association/correlations between product sales.
- **Target Marketing** – Data mining helps to find clusters of model customers who share the same characteristics such as interests, spending habits, income, etc.
- **Determining Customer purchasing pattern** – Data mining helps in determining customer purchasing pattern.
- **Providing Summary Information** – Data mining provides us various multidimensional summary reports.

2 Corporate Analysis and Risk Management

Data mining is used in the following fields of the Corporate Sector –

- **Finance Planning and Asset Evaluation** – It involves cash flow analysis and prediction, contingent claim analysis to evaluate assets.
- **Resource Planning** – It involves summarizing and comparing the resources and spending.
- **Competition** – It involves monitoring competitors and market directions.

3 Fraud Detection

Data mining is also used in the fields of credit card services and telecommunication to detect frauds. In fraud telephone calls, it helps to find the destination of the call, duration of the call, time of the day or week, etc. It also analyzes the patterns that deviate from expected norms.

DATA MINING TASKS

Data mining deals with the kind of patterns that can be mined. On the basis of the kind of data to be mined, there are two categories of functions involved in Data Mining –

- **Descriptive**
- **Classification and Prediction**

Descriptive Function

The descriptive function deals with the general properties of data in the database. Here is the list of descriptive functions –

- **Class/Concept Description**
- **Mining of Frequent Patterns**
- **Mining of Associations**
- **Mining of Correlations**
- **Mining of Clusters**

1.Class/Concept Description

Class/Concept refers to the data to be associated with the classes or concepts. For example, in a company, the classes of items for sales include computer and printers, and concepts of customers include big spenders and budget spenders. Such descriptions of a class or a concept are called class/concept descriptions. These descriptions can be derived by the following two ways –

- **Data Characterization** – This refers to summarizing data of class under study. This class under study is called as Target Class.
- **Data Discrimination** – It refers to the mapping or classification of a class with some predefined group or class.

2.Mining of Frequent Patterns

Frequent patterns are those patterns that occur frequently in transactional data. Here is the list of kind of frequent patterns –

- **Frequent Item Set** – It refers to a set of items that frequently appear together, for example, milk and bread.

- **Frequent Subsequence** – A sequence of patterns that occur frequently such as purchasing a camera is followed by memory card.
- **Frequent Sub Structure** – Substructure refers to different structural forms, such as graphs, trees, or lattices, which may be combined with item-sets or subsequences.

3.Mining of Association

Associations are used in retail sales to identify patterns that are frequently purchased together. This process refers to the process of uncovering the relationship among data and determining association rules.

For example, a retailer generates an association rule that shows that 70% of time milk is sold with bread and only 30% of times biscuits are sold with bread.

4.Mining of Correlations

It is a kind of additional analysis performed to uncover interesting statistical correlations between associated-attribute-value pairs or between two item sets to analyze that if they have positive, negative or no effect on each other.

5.Mining of Clusters

Cluster refers to a group of similar kind of objects. Cluster analysis refers to forming group of objects that are very similar to each other but are highly different from the objects in other clusters.

2.Classification and Prediction

Classification is the process of finding a model that describes the data classes or concepts. The purpose is to be able to use this model to predict the class of objects whose class label is unknown. This derived model is based on the analysis of sets of training data. The derived model can be presented in the following forms –

- Classification (IF-THEN) Rules
- Decision Trees
- Prediction
- Outlie analysis
- Evolution analysis

The list of functions involved in these processes are as follows –

1.Classification – It predicts the class of objects whose class label is unknown. Its objective is to find a derived model that describes and distinguishes data classes or concepts. The Derived Model is based on the analysis set of training data i.e. the data object whose class label is well known.

2.Prediction – It is used to predict missing or unavailable numerical data values rather than class labels. Regression Analysis is generally used for prediction. Prediction can also be used for identification of distribution trends based on available data.

3.Outlier Analysis – Outliers may be defined as the data objects that do not comply with the general behavior or model of the data available.

4.Evolution Analysis – Evolution analysis refers to the description and model regularities or trends for objects whose behavior changes over time.

CONCLUSIONS

Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. Data mining tools can answer business questions that traditionally were too timeconsuming to resolve.

Data mining is a process used by companies to turn raw data into useful information. By using software to look for patterns in large batches of data, businesses can learn more about their customers and develop more effective marketing strategies as well as increase sales and decrease costs. Data mining depends on effective data collection and warehousing as well as computer processing.

The key properties of data mining are:

. Automatic discovery of patterns

. Prediction of likely outcomes

. Focus on large data sets and databases
. Creation of actionable information

Data mining is also known as data discovery and knowledge discovery. For segmenting the data and evaluating the probability of future events, data mining uses sophisticated mathematical algorithms. Data mining is also known as Knowledge Discovery in Data (KDD)

REFERENCE

searchsqlserver.techtarget.com
https://docs.oracle.com/cd/B28359_01/datamine.111/b28129/process.htm
https://www.investopedia.com/terms/d/datamining.asp
https://www.datasciencecentral.com/..
https://onlinecourses.science.psu.edu

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