Application of Computer Data Mining Technology in E-Business

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Abstract. At present, computer data mining techniques have been widely used in the field of E-business in various trade and capital analysis process. Its use has also made a good market effect for many enterprises. E-business is the main modern commercial trade exchange mode[1]. With the development of E-business, the technology of data mining for business will be a promising field. Data mining can effectively use the network information to find the scope of customers' hobbies and the corresponding value of commercial products. It can promote the further prosperity of E-business. The field of E-business will also promote the updating and further improvement of data mining techniques.

Keywords: Data Mining, E-business, Application

1. Introduction
Since the emergence of data on the Internet, the problem of excessive storage of information has become the trouble that everyone needs to face every day. How can we not be submerged by the vast ocean of information and find useful knowledge from it has been the main problem of scholars. Similarly, an E-business website collects and processes a large amount of data every day. For a technician, improving the utilization of business information has become the most urgent problem. In order to effectively alleviate or even solve this problem, people put forward data mining technology. Moreover, experts have also found that data mining techniques have shown more and more powerful vitality.

In the beginning, data mining is just an ideal data processing skill in people's mind[2]. People can only simulate some functions and functions of data mining through imagination. However, after the unremitting efforts of people, this technology came into being. Today, the field of E-business has received strong support from the state. It can be imagined that the organic combination of data mining technology and E-business will be a major change in the field of business.

2. Common techniques and methods of data mining
2.1. Pure artificial neural network technology
This technology generally uses the nonlinear prediction model of the structure of physiological neural
network to identify the learning mode. If this statement is abstract, we can think of data mining as the process of extracting data from human brain. On this basis, the context and clues of data mining is the neural network of the brain.

2.2. Fuzzy rule reasoning
According to the knowledge of computer, we may think that the order of the knowledge system inside the network is chaotic. However, for data mining system, this order is in line with certain rules. Of course, this rule is also the law of computer language that is difficult for normal people to understand. In short, computer data mining can calculate the approximate position of information through fuzzy rule reasoning and find information as soon as possible (see Figure 1).

![Figure 1. Data mining and E-business.](image)

2.3. Search algorithm of classification
In fact, there is a big difference between the data mining information retrieval mode and the normal computer Baidu retrieval mode. The retrieval of data mining is realized by the search engine after the integration of mathematical statistics theory. Search engines can scramble and reorder data in a certain way. According to these new arrangements, the computer will mine and search them in turn.

3. Concept and classification of computer data mining

3.1. The main idea of data mining
In short, data mining technology can be called data extraction technology. It can extract unknown and potentially useful information from large and incomplete data. This technique combines theories and techniques from multiple fields of database, artificial intelligence and machine learning. People also like to use data mining technology to analyze various problems in life and work\(^3\).

3.2. Content mining of data
Content mining can be classified as web page content mining and search results mining. The former refers to some website information mining. The latter refers to the information extraction of search results based on a certain search engine. Relatively speaking, the accuracy of the latter is higher than that of the former (see Table 1).
Table 1. The main application and meaning of data mining in E-business.

| Application            | Meaning                                      |
|------------------------|----------------------------------------------|
| Analysis of access path| Information collection of website access path|
| Association rules      | Information exploration of website structure |
| Sequence model         | Extract customer information                 |
| Division rule          | Information search of decision tree           |
| Cluster analysis       | Collection of customer information            |

3.3. Mining network structure of data
Structure mining can be classified as hyperlink mining, content mining and URL mining. According to the theory of computer, useful knowledge not only exists in the content of web pages. It may also exist in the structure of web pages. Based on these statements, we can also infer that structure mining refers to the mining of the structural patterns of potential links in the network, the hyperlinks of the network, the internal structure of documents and the information structure of directories.

3.4. Data usage mining
Usage mining generally includes the mining of access patterns and personalized service patterns. The mining of access pattern refers to the information query of computer's daily access records. Personalized service pattern mining refers to the mining of different information according to different uses of computers.

4. The main research and application of data mining in computer based E-business

4.1. Analysis of computer access path
Path analysis is usually used in the most frequently visited path in a website. The data mining system will think that the information on this path is the most. Of course, the most important thing is that through the operation of path analysis, data mining can search out the information related to the content and structure of web pages.

4.2. Discovery of associated rules
For the way of computer data processing, association rules is to find the relationship between the meaning of various things and the main rules. In order to mine the network data and construct the relevant organization stronghold, we can use the association rules from the network mining to improve the structure of E-business sites.

4.3. Discovery of computer sequence model
The focus of sequential pattern analysis is to analyze the cause and effect relationship in the data at a specific time. Sequence models can also help computers discover the access patterns of E-business organizers. It can provide customers with more useful information about E-business.

4.4. Discovery of splitting rules
In fact, in the application of E-business, there are many methods of data classification. The most typical is the data classification method based on decision tree. After getting the classification method of corresponding rules, enterprises can carry out corresponding E-business activities for different types of users. Enterprises can also plan to provide customers with more personalized service content.

4.5. Applied cluster analysis
The purpose of clustering analysis is to reasonably divide the user information set of E-business enterprises according to appropriate rules. Data mining can divide customers into different categories according to the characteristics of these sets. In E-business, users with similar characteristics can be found by clustering analysis, which can help the administrator of business website to understand the
consumption characteristics of customers more deeply.

5. The decisive role of computer data mining in E-business

5.1. It can reduce the operating costs of enterprises
Cost saving is the key to improve the profit value of business enterprises. The application of E-business based on data mining technology can comprehensively and punctually grasp the enterprise's resource information and financial data in historical stage. Through the data extraction, enterprise managers can better grasp the enterprise information. It can help enterprises maximize the use of human resources, material resources and information resources[5]. This can help to reduce the operating costs of enterprises to achieve the maximum profits of enterprises.

5.2. It can retain old customers and tap new ones
We know that different customers have different views on E-business. Similarly, their values of E-business consumption are different. However, data mining techniques can extract the consumption characteristics and hobbies of old customers. It can better retain the enthusiasm of old customers. With the extension of time, when old customers recommend their products to new customers, enterprises can tap new customer resources.

6. Conclusion
With the rapid development of computer network and business trade, the market share of E-business in the field of business and business trade is becoming more and more large. In order to stabilize the position of E-business, we must improve its market adaptability[6]. Therefore, it is necessary to study the application of data mining based on computer in the field of E-business.

References
[1] Feng D , Zhang Z , Zhou F , et al. Application study of data mining on customer relationship management in E-business [C]// Computer-Aided Industrial Design and Conceptual Design, 2008. CAID/CD 2008. 9th International Conference on. IEEE, 2008.
[2] Faculty, of, Science, et al. Application of Data Mining in E-business [J]. Journal of Information Technology Research, 2015.
[3] Liu Z , Wang L . Study of Data Mining Technology Used for E-business [C]// Intelligent Networks and Intelligent Systems (ICINIS), 2010 3rd International Conference on. IEEE Computer Society, 2010.
[4] Yan L . The Application of Data Mining Technology in E-business [C]// International Conference on Education. 2015.
[5] Mei L , Cheng F . Overview of Web mining technology and its application in E-business [C]// International Conference on Computer Engineering & Technology. IEEE, 2010.
[6] Diliber E , Kudrat R . Application of Data mining Technology[J]. Computer Programming Skills & Maintenance, 2009.