

The application of business intelligence system based on big data in e-commerce data analysis

Xubo Ye^{1, a}, Mababa Jonilo^{2, b, *}

¹ Ph.D candidate, Graduate School, Angeles University Foundation, Angeles, Philippines

² Professor, Graduate School, Angeles University Foundation, Angeles, Philippines

^a ye.xubo@auf.edu.ph

^b mababa.jonilo@auf.edu.ph

* **Corresponding author:** Mababa Jonilo (Email: mababa.jonilo@auf.edu.ph)

Abstract: In the face of the rapid development of modern science and technology, in order to ensure that the commercial level is in line with The Times, we need to change the traditional operation mode, and fully apply the science and technology to the e-commerce data analysis. Nowadays, driven by the era of big data development, social process, bring new changes to daily life, consumption, such as electricity is a new product, as the latest business model in modern society, has an important impact on market development, want to ensure electricity enterprises can meet the demand of social development, then from the perspective of electricity data analysis, effectively grasp the market changes, so as to more effective to carry out subsequent work, to fundamentally improve the comprehensive competitiveness of electricity enterprises in the modern market. In view of this, in order that the article wants to ensure the smooth progress of the e-commerce data analysis work, it should start with the business intelligence system under the background of big data, and combine it to ensure the steady development of the e-commerce industry.

Keywords: Big data; Business intelligence system; E-commerce data analysis.

1. Introduction

With more applications on the network, the amount of data needed is also growing geometrically. At the same time, its data architecture is constantly becoming more complex. Due to the huge economic burden facing the company, the direct data processing technology has been developed rapidly. With the rapid development of the new-generation of information technologies such as e-commerce, cloud computing, mobile social media and IT technology, the traditional business intelligent management system has no longer been adapted to the needs of enterprises. With the personalization and digitalization of scientific and technological data, people have conducted in-depth research on the traditional business intelligence and big data technology, and established a new data processing platform architecture based on big data.

Business intelligence, also known as business intelligence, supports data preparation, data mining, data management and data display, and is an important feature of a company. Its core goal is: to build a business wisdom model, collect relevant data, and analyze it, so as to provide scientific data basis for decision-makers, enhance the decision-making ability of enterprise business activities, and make it have the overall design and decision-making ability, so as to promote its sustainable development. From this level, business wisdom is not a simple technology application, it should according to the problems in the electric business enterprise operations to provide a feasible solution, including a lot of enterprise internal effective information, through the continuous processing of the information, apply it to the actual production of the enterprise, has a good effectiveness and objectivity.

2. Organization of the Text

2.1. The necessity to develop business intelligence systems

In today's society, big data is being used more and more widely. If enterprises want to gain greater competitive advantages in the market, they must pay more attention to the analysis and processing of information. Under the rapid development of modern information technology, the emergence and development of emerging technologies such as e-commerce, mobile commerce, financial media and cloud computing have promoted the reform of enterprise management mode. The development of enterprise informatization has created good conditions and conditions for the future development of enterprises: 1) the management intelligence of the enterprise can improve the scientific nature of the management decision-making, Avoid the objective laws of market development that do not conform to the decision-making of enterprises; (2) Improve the efficiency of information utilization, People today are closely connected to the Internet, With business intelligence, Can effectively analyze all kinds of information, To ensure the scientific nature of the decision-making; (3) Improve the efficiency of cost management work, In order to prevent human error, reduce the amount of labor, reduce expenditure and other purposes, Improve the cost-effectiveness of the company; (4) Improve customer satisfaction, Business intelligence developments that enable an accurate analysis of customer needs, Meet the customer needs, Promote enterprise development.

2.2. Important value of the application of big data technology

According to the connotation of big data, we can regard it

as a data warehouse. In the process of use, it will be targeted and processed according to the specific data types, so as to truly solve the various needs of customers. It contains not only a database of a lot of data, but also the processing and analysis of data, so big data is a huge market. If you want to achieve this goal, it needs to do a lot of technologies to achieve your goals. Smartbi, a one-stop data processing system based on big data, has accumulated rich experience in enterprise wisdom management in the past few years, combining data processing with the function of decision-making. It can meet the needs of customers for data analysis, including enterprise reports, data visualization analysis, self-service exploration and analysis, data mining modeling, intelligent analysis, etc.

2.3. The important value of big data

Big data, as a new information technology, makes full use of the characteristics and advantages of massive information, and applies massive information to the company's business, which can not only improve the speed of data processing, but also better reflect the current market conditions, making the information objective and widely universal. In terms of current practice, the importance of big data lies in: 1) for using big data for precision marketing; (2) for small-scale, service-oriented companies; (3) in the Internet era, enterprises are in urgent need of extensive changes, and the application of big data technology has laid a solid foundation for the transformation and development of enterprises.

Big data is an important force to promote the development of modern enterprises. In the intelligent and hardware environment, how to make full use of big data to achieve the final business goal has become a problem that all companies must seriously consider. Big data can not only support the operation and management of enterprises, but also provide systematic support for various business activities of enterprises. Using big data for business development can achieve good benefits. The main methods are as follows: First, we can fully understand the operation of the company for the problems in the development and operation and the causes of the company's development and problems, so as to reduce operating costs. Secondly, provide relevant information for customers according to their consumer needs, habits and interests, so as to maximize big data. Finally, to provide gold customers with targeted goals, in order to better improve the company's operation and development situation, to facilitate accurate marketing. At the same time, it also introduced click flow and data acquisition technology to avoid some improper transactions. For example, Microsoft, it has used its own technology to develop better applications, reduce the cost, and conform to the development trend of The Times, improved the company's operation capacity, and accelerated the development of the company.

2.4. Design of business intelligence system optimization under big data

(I) System design

Nowadays, with the continuous improvement of big data technology, business intelligence has become the mainstream of today's world, and it has also become the inevitable choice of modernization. Big data business intelligence based on the most advanced commercial voice technology, with good semantic understanding and unstructural data processing function; support data type and sources; support real-time data storage, data storage, OLAP data retrieval; open

intelligent platform based on big data dragging data mining technology; with good visualization performance. Can analyze the general unstructural data, such as telephone center telephone recording, text (such as website and other electronic channel users interactive data), explore the rich data connotation; support sensor data connection; provide open data access services for government departments; provide Internet open data connection; support text, video, voice data connection; widely used in industrial open source scheme, linear expansion; the most comprehensive, the most abundant data mining algorithm and modeling; the most displayed and interactive data, show the value of data. Because the existing BI system is a BI system with data processing, storage and analysis as the main means, it can not well adapt to the needs of the new era of data, and because the data does not have the characteristics of the system, so these data can rarely be fully used. In the future development, the BI system needs to be constantly innovated and developed to promote the upgrading and change of the whole system.

First of all, big data also needs to rely on the power of the Internet, which is designed to collect, store, organize and analyze, and integrate with existing business intelligence systems. In the application of big data, the data source mainly has the structured data, such as various kinds of databases, structured files, message queues, application data, and so on, and then the unstructured data. The new architecture can make full use of the advantages of big data and business intelligence systems to bring more business benefits to the company.

Second, in the Internet hypertext, images, video and other unstructural information, need to give full play to their own technical strength, and requires relevant technical personnel have high cultural accomplishment and technical ability, but also master certain technical knowledge, master the corresponding technical knowledge, master the corresponding information processing technology, to ensure the success of the related work.

In the efficient use of internal and external information, the difference of these information must be fully utilized, so that various information can be better used. When analyzing external data, the information is stored in a structured database with distribution characteristics and integrated, so as to ensure the efficiency of data processing.

(2) DA

Data acquisition is a method to collect specific data in specific regions and scenarios. The quality of data is integrated into the whole process of data, and big data technology is used to obtain and collect data from users, so as to provide data support for various business activities of the company. It has an algorithm and modular foundation, covering data technologies in statistics, mining, feature engineering, deep learning, large-scale machine learning, text, speech, image and other fields, and can be realized by connecting components, data processing components, algorithm components, visualization components, and parametric parameters. The system has various capabilities, including data analysis, data mining, visualization, and data reporting.

Business intelligence is the research field of data structure, and its core work includes data collection, data slicing, data-up-drilling and down-drilling, Cube, etc. Through the extraction and transformation of ETL data, data analysis, and data processing, data quantity is acquired and obtained data quantity for customers. Enterprise intelligence can complete

massive data at the same time, such as business intelligence FineBI, which has the ability of ETL, and can quickly respond to and output the data processing requirements.

RESTAPI is able to access the commercial information effectively, characterized by the virtual simulation using the HTTP protocol, using a standard web positioning device and a Web crawler to complete the access to the web page, ensuring the collection and processing of the system. In order to meet the requirements of big data and big data technology in the era of big data, it is necessary to combine enterprise information and big data technology with the Internet, open all kinds of information to users, and complete the data collection and processing on the interface.

2.5. Application case of e-commerce data

Due to some non-standard and non-standard problems in the processing and circulation of traditional traditional Chinese medicine preparations, there are certain difficulties in their quality. As China's Chinese herbal medicine manufacturers gradually realize the whole process of GMP, their products from the traditional artificial process away from the traditional traditional process, and developed into a new pharmaceutical industry. Therefore, traditional Chinese herbal medicine decoction pieces, Chinese patent medicine and Chinese patent medicine are called the three major elements of traditional Chinese medicine. The implementation of GMP, China's Chinese patent medicine enterprises have fundamentally changed the quality of drugs, and has brought great economic benefits. However, because of its origin, production technology, use methods have certain particularity. This indicator is very different from the demand for GMP. In particular, the 2010 GMP and its accessories have put forward unprecedented high standards for drug quality, making drug management a new topic.

2.6. The K-mean clustering algorithm

K average clustering is a K-Means-based clustering method and an unconstrained learning method, with K representing the number of classifications and Means representing the average, a method of clustering the data using the average. The core of the K-Means method is: first find the invariant K, then take the arbitrarily selected starting point as the center, and then find out the similarity between each sample and the mass core, and finally get which category the different types of samples belong to. In the production practice, each work should be carried out according to their own work procedures. If the conventional method is adopted, the main purpose of KMeans is to divide a known set of data into K groups (K is a super parameter), and then specify the center of each sample, and then according to the existing samples in the group, get a new cluster, so repeatedly, until a specific end state is satisfied. After processing, it is necessary to contact with the data to determine the center of quality tested and read out the relevant data.

Because the concept of K average clustering is different, so when using the method, the relevant staff need to more fully understand the connotation and concept of the concept, and then reasonably use and plan, and take the center of mass as a fixed sample, so that the characteristics of the data are more real. If the data is too different from other data, the staff is likely not able to work normally, affecting the processing and analysis of the data, affecting the data analysis, and thus affecting the data analysis, leading to the invalid data. Therefore, in determining the positioning of the center of

mass, we must be selected according to the data, but not casually, through repeated measurement and analysis of the positioning of the center of mass centroid, to ensure the accuracy, so as to be more scientific and accurate. Due to the determination of the center of quality, the data does not consistent with the actual structure and must be repeated until the final conclusion to ensure the accuracy and accuracy of the data.

2.7. Apriori association rule algorithm

The Apriori association rule algorithm is a classical data mining method used to discover association rules between items in a data set. Its main function is to discover frequently occurring item sets in data and the correlation between them, so as to reveal hidden patterns and rules in data. Specifically, Apriori algorithm can help: Finding frequent item sets: Apriori is capable of identifying frequent item sets in a data set, i.e. combinations of items that frequently appear together. This helps merchants understand which items are often bought together and supports cross-selling and recommendation systems. Generate association rules: By identifying frequent item sets, Apriori can generate association rules such as: "If A customer buys item A and item B, they may also buy item C". These rules can guide merchants in designing promotions and optimizing product layouts. Provide decision support: Based on the association rules generated by the Apriori algorithm, merchants can make more informed decisions, such as adjusting product pricing, improving promotion strategies, and optimizing inventory management

3. The application of e-commerce data of TCM decoction piece enterprises is analyzed

In the era of big data, the value of data itself is not high. The key is to use the existing data to make an accurate forecast of the future development trend, and use the data to find potential information. At present, many Chinese patent medicine companies have adapted to this trend, opened their own stores on the Internet, and conducted a large number of online sales, so that they can accumulate customers' shopping information online, and then carry out according to the shopping habits of customers, targeted marketing. Customer grading is very beneficial for providing personalized customers to different groups of people, but also allows the company to quickly discover the subtle differences between customers and customers, in order to make corresponding strategies. In this case, pharmaceutical companies can fully use the huge amount of background information, and can classify and analyze customers' consumption. From the consumption time, consumption time, purchase times and other aspects of the customer has a full understanding of the customer. In addition, the company can also provide customers with a more comprehensive after-sales service, that is, customers from the purchase date, after a period of telephone consultation and online consultation, to understand the customer satisfaction, and through the form of a questionnaire, the immediate collection of customer needs. The customer data feedback interface is timely connected with the customer database conducted by the enterprise to realize the data processing and data processing, and then reported to the boss after the processing, which facilitates the company's policy formulation. In addition, through consumer

feedback, customers' satisfaction with the company can be improved, and they encourage them to actively buy and continue to buy, so as to improve their economic benefits.

4. Conclusion

In short, in today's rapid development of big data, under such circumstances, enterprises should fully understand the advantages and characteristics of big data, integrate them with the industry, and promote its sustainable development. Therefore, business operators and business decision-makers must timely carry out the joint application of big data and business according to the current development trend.

References

- [1] Fei Wei, Li Shiyun, Lu Xinyang. Empirical analysis of social e-commerce based on data mining [J]. Journal of Hunan Agricultural University (Social Science edition), 2022, 23(04): 104-114.
DOI:10.13331/j.cnki.jhau(ss).2022.04.011.
- [2] Su Haojie. Discuss the application of business intelligence system based on big data in e-commerce data Analysis [J]. Modern Business, 2022(22):16-19.
DOI:10.14097/j.cnki.5392/2022.22.013.
- [3] Ma Guoqin. Research on Data Operation Mode of E-commerce based on Data Analysis and Mining [J]. Volkswagen Technology, 2021,23 (12): 1-4.
- [4] Zhu Xiaofang. Marketing path analysis of e-commerce platform under the background of big data [J]. Science and technology economic market, 2021 (11): 154-156.
- [5] Zhang Rui. The Application of Business Intelligence based on Big Data in E-commerce Data Analysis [J]. Digital Technology and Application, 2021,39(06):37-39.
DOI:10.19695/j.cnki.cn12-1369.2021.06.13.
- [6] Qian Dandan, Zhou Jinhai. The Application of Business Intelligence based on Big Data in E-commerce Data Analysis [J]. E-commerce, and the 2019(04):29-30+96.
DOI:10.14011/j.cnki.dzsw.2019.04.014.