Research on Intelligent Logistics Management Mode Based on Big Data

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Abstract: With the rapid development of mobile Internet, the informationization degree of logistics industry is deepening, and massive data is generated in the process of logistics operation. How to use big data to carry out visual logistics operation management is the opportunity and problem facing the whole logistics industry. The application of data technology can help logistics enterprises improve their management level, and achieve intelligent decision-making and accurate prediction.

1. Introduction

In the context of big data, smart logistics business data includes bulk commodity data and retail commodity data. The application of big data in commercial management can make intelligent decision-making on commodity management in time and space, scientifically manage the circulation nodes and circulation channels of commercial objects, and control the flow of goods in real time. The flow of goods flows dynamically. The logistics companies use big data technology to capture the producer data, supplier data, commodity market data, commodity flow data, commodity flow data, consumer purchase data, and consumer behavior habits [1].

Find out the indicators that have the greatest impact on the flow of goods and the circulation structure, and eliminate the indicators of interference analysis results, and get the optimal solution to adjust the circulation structure of goods to rationalize them, control the flow of goods, and the core of commodity circulation. Node and flow channel real-time System, in turn, can also predict future product demand, open up new markets, expand the scope of business, to achieve the refinement of commodity circulation process visualization control.

2. The application of big data technology in the management of smart logistics supply chain

2.1 The application of big data technology in logistics supply chain

The application of big data technology in logistics supply chain management can improve the flexibility of logistics supply chain. Through big data forecasting analysis, intelligent and visualized smart logistics supply chain management can be realized which greatly improves customer satisfaction and creates differentiation. Logistics services and can quickly control the possible risks in all aspects of the supply chain, providing customers with safe operation guarantee. As shown in Figure 1 below:
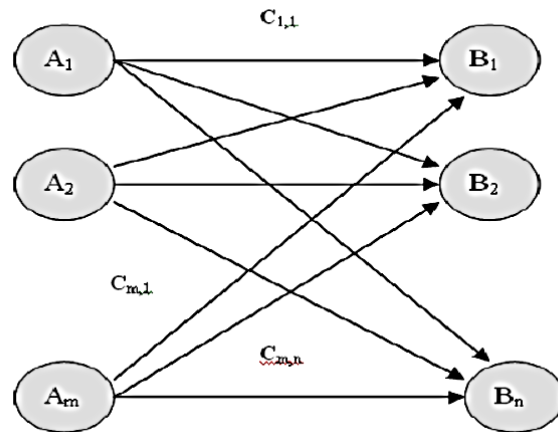
Figure 1: Optimization model of big data technology in logistics supply chain

As shown in Figure 1, smart logistics procurement captures a series of data such as supplier data, purchase batch data, and purchase cost data through big data collection and capture technology, and uses big data calculation processing technology to establish optimal order quantity decision model and risk. Evaluate the indicator system to determine the best ordering plan, realize visual management of various potential risks in the procurement process, enable management to understand and control risk points in an intuitive way, and achieve the purpose of reducing procurement costs; Big data technology can collect and process the data in the production process, and control the entire production process through data, so as to better guide production and reduce unnecessary waste of resources in the production process; use big data technology to collect through the sales process. Consumer behavior data, historical seasonal sales, climate weather, consumer transaction data, useful information from social media, location of user location display, published content, etc., real-time analysis of these data, relevance Promotion, change the pendulum of the product at any time Layout, provide a reference value for the stock of its own kinds of goods [2].

2.2 The Application of Big Data Technology in Intelligent Logistics Business Management

The application of big data technology in the management of smart logistics business is mainly reflected in the three core businesses of transportation business, warehousing business and distribution business. The application of big data can realize the intelligent transportation of logistics operations, optimize the transportation resources, realize the automation of warehousing business, improve the level of warehousing logistics service, realize the dynamic control of distribution, improve the distribution efficiency and provide customers with dynamics.

The use of big data technology in the transportation business to process and analyze the data generated during the transportation process can optimize the transportation resources, meet the individualized needs of customers for the transportation business, realize the informationization and intelligent control of the transportation process, and warehousing business. Zhongda Data Technology can guide the stocking of warehouses, realize refined inventory management, improve the accuracy of forecasting, effectively reduce storage and storage costs, realize visual and transparent management of warehouse logistics operations, and improve the level of warehousing logistics services; Big data technology collects and analyzes the influencing factors such as traffic conditions, price factors, number and distribution of users, and user demand to form a dynamic distribution plan, providing customers with real-time delivery status information services, thereby improving distribution efficiency and improving service quality.

3. The construction of a smart warehouse operation support platform

The smart warehouse operation support platform is a fully functional basic platform. The system architecture is divided into five layers: the perception layer, the transport layer, the data layer, the service layer and the application layer.

◆ Perceptual layer: including RFID reader, laser radar, video terminal, access control intercom, temperature and humidity sensor and alarm.

◆ Transport layer: Connect to the support platform and transmit data by wired LAN or WIFI wireless communication.

◆ Data layer: including equipment information base, business information base, monitoring information base and personnel information base.

◆ Service layer: including RFID middleware, ESB bus and third-party interface modules to provide service support for the operation of the entire system [3].

◆ Application layer: including warehouse business management, security management, personnel management, report analysis and system management.

Through the intelligent warehousing operation support platform, intelligent processing of basic services such as warehousing, warehousing, transfer, and inventory can be realized. Among them, video analytics technology can also realize security management and personnel management functions of warehousing, which not only achieves The intelligent management of the warehouse can also collect the operational data generated in the various production processes and task execution of logistics and warehousing. As an important part of the data source of the big data analysis platform, it provides a basis for enterprises to achieve intelligent analysis.

4. The application of Smart warehousing big data

The intelligent warehousing operation support platform uploads the warehousing and operation data of each place to the enterprise big data platform for classification, and sorts, summarizes, extracts, mines and analyzes scattered and duplicate data to form valuable data of logistics and warehousing, which can be applied. The big data platform architecture is shown in the following figure, which is divided into four layers: data source, big data acquisition, big data processing, and big data service. Figure 2 below shows the length of work in the logistics management department, qualifications and other factors affecting performance appraisal:

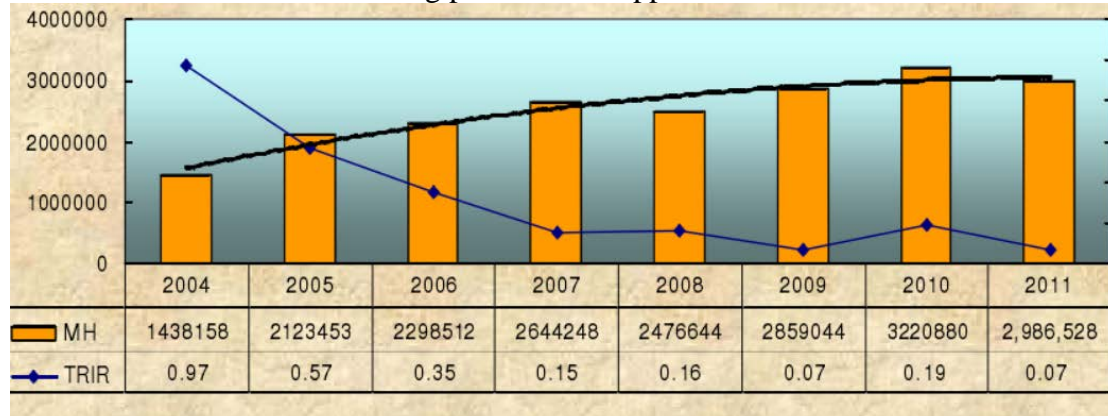|	2004	2005	2006	2007	2008	2009	2010	2011
MH	1438158	2123453	2298512	2644248	2476644	2859044	3220880	2,986,528
TRIR	0.97	0.57	0.35	0.15	0.16	0.07	0.19	0.07

Figure 2: Comparison of logistics time and recordable accident rate based on big data

As shown in Figure 3 above, the data source layer mainly implements various types of sensing the big data acquisition layer implements the import and export of structured data, unstructured data, and semi-structured data. The big data processing layer implements distributed storage and parallel

computing of data, and uniformly provides resource scheduling services, access services, management monitoring services, and rights control services. The big data application layer realizes various intelligent applications such as logistics transportation scheduling, storage management, traceability management, and precision marketing.

5. Conclusions

The intelligent warehousing operation support platform based on big data analysis is suitable for large enterprises with multiple decentralized warehouses. It not only enables warehouse managers to grasp the warehouse operation situation in time, but also applies big data technology to the logistics field. For the construction of intelligent warehousing system, Optimizing the logistics operation process and improving the automation and intelligence level of logistics and warehousing have a positive role in promoting.

References

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