About Influence of Big Data Technology on Intelligent Logistics System

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Abstract: As information technology has been developed in society, big data has become the main source of information for various industries, and it is important in the development of industries. The traditional logistics industry has been severely hit by some emerging technologies. It has brought both huge challenges and new opportunities to the logistics industry. Under the background of new era and high-technology, it is necessary for the logistics industry to solve the problems such as how to adapt to the trend of the times and use big data technology to further optimize and upgrade the industry to save costs and bring more convenient and efficient quality services to customers. This paper briefly explains the current situation of the traditional logistics industry and analyzes the application of big data technology into intelligent logistics system to develop the logistics industry.

Big data has characteristics of generality, diversity, timeliness, accuracy, and high value. It provides customers in the logistics industry with more diversified needs and real-time information consultation and push to improve customers' trust in the logistics enterprises. The timeliness and accuracy of big data provide accurate orders and other information for logistics enterprises, which can largely avoid the "bullwhip effect" and reduce the cost risk of enterprises. At the same time, with the help of big data, intelligent logistics system (ILS) is able to rationalize the allocation of resources, improving transparency and efficiency of logistics operations. The modern logistics industry should make full use of characteristics of big data to promote the stable development of the logistics industry.

1. Current Situation of the Logistics Industry of China

In traditional logistics industry, logistics management aims to provide services for customers at the lowest level and to meet the needs of customers. But nowadays, with the rapid development of computer technology, traditional logistics management mode can not meet the needs of customers, which will become a huge obstacle to the development of the logistics industry. Moreover, the smooth development of the logistics industry mainly depends on the smooth development of the logistics, information flow, capital flow and business flow. As we all know, at present, the logistics of China has developed smoothly and massively, and has become the development direction that the logistics companies focus on. However, compared with information flow, the development of capital flow and business flow has been paid more attention, while the development of information flow has been ignored. As a result, it will cause an unbalanced development in the industry, stimulate the contradiction of logistics companies and customers, and affect the stable development of the whole company. The most common contradiction caused by the problem of not paying attention to information flow is the loss of the customer's purchase or the post express package. Generally speaking, it is the responsibility of the express company. The owner will not be satisfied with the express company because the demands cannot be solved in time or the satisfactory reply can not be obtained, and will also transmit these bad feelings to more customers, which has a negative impact on the long-term stable development of logistics companies. The dissatisfaction of customers will also affect the related industries of logistics companies, resulting in certain contradictions between logistics companies and these related industries. If the solution is still not
satisfactory, it will lead to problems in the whole production and supply chain. Effective use of big
data technology in logistics management can further solve more problems in time. Therefore, under
the circumstances that people's needs are diversified and the requirements for service quality are
constantly increasing, the traditional logistics industry must adapt to the trend of social
development and actively apply big data technology to ILS, so as to better optimize resources
allocation and better meet the demand of customers and improve service quality.

2. Structure of ILS Based on Big Data Technology

As product of current information age, big data technology is widely used. With support of big
data technology, the structure of ILS is composed of four layers, namely, perception layer, network
layer, cloud platform and application layer. With application of big data technology, logistics
enterprises can collect data through the relevant equipment of the perception layer, then transmit the
data to the cloud platform through the network layer, and then integrate the data by the cloud
platform to provide effective data for the application layer of smart logistics. Then the whole smart
system structure layer is responsible for the application layer of information processing, tracking
and monitoring, vehicle scheduling, intelligent storage, distribution management and market
prediction from top to bottom; then to the platform layer of data storage, efficient computing and
information analysis and processing; and then to the network layer with network connection such as
infinite communication network and sensor network; finally to the lowest-level perception layer
such as code scanning terminals, warehouses, conveyors, shelves, containers, and trucks. These four
levels play their respective roles and are related to each other. Big data technology performs
different operations in these four levels to provide the most powerful system support for ILS.

3. Function of ILS Based on Big Data Technology

3.1 Data Transmission and Sharing

The most common problem in traditional logistics management is the loss of customer articles,
but no information can be found about the lost articles. And now the first problem to be solved is
smooth information flow of logistics enterprises. The solution to this problem is the need to
exchange and share information with the corresponding enterprises, such as suppliers, purchasers,
and logistics transportation departments. The integration of
various information platforms of these
related departments can fully and effectively control the relevant data. However, the data comes
from different platforms, and there are significant differences in data structure, which has a certain
impact on data integration.

3.2 Timely Tracking of Logistics Information

The cloud computing of big data has extremely powerful computing capabilities, which
effectively combines the IoT technology and satellite positioning technology to effectively track
logistics in a timely manner, and it is always clear that the location of the goods and its situation,
which provides a strong guarantee for the transportation of goods. The functions of data collection
and data analysis of big data technology are used to move and track cargo vehicles in time and
monitor vehicles in real time to avoid the occurrence of hidden dangers, improve the transportation
safety of vehicles, and ensure that customers can receive the goods safely.

3.3 Data Collection and Data Analysis

Big data technology can analyze collected network data, and even predict the analyzed data, and
the results can be continuously mined and analyzed from the data, so that different structures can
carry out various possible predictions, providing high development reference for the relevant
enterprises. Today, various online shopping platforms are constantly understanding the needs of
customers through the results of data analysis to automatically recommend a variety of products
that are likely to be purchased for customers and stimulate their desire to buy. The calculation of
big data can even analyze the entire work process for logistics, timely predict the route of logistics
transportation, and save delivery time to provide reasonable advice for logistics companies on site construction, so that logistics enterprises can deliver goods to customers in a shorter time and achieve better service quality.

4. Application of Big Data Technology in Logistics Industry

4.1 Market Forecast

The enterprise cannot develop without market surveys, and a deeper understanding of customers can better make its products depend on customers. However, the traditional market research is generally to understand the consumption preferences in the form of ordinary questionnaires. It has certain feasibility, but also has great delay. Because the company can make the corresponding analysis report after analyzing the content of the questionnaire, and then can complete the corresponding marketing plan, which takes a while to complete. It is in this period of time that a good opportunity for sales or promotion can be missed. And then the next time in the same time period, people's consumption preferences have changed, and the same program is no longer applicable. Thus the timeliness and efficiency of big data technology can solve the problem of the time well. The collection and analysis of data is far more efficient than the analysis of traditional questionnaire. Enterprises can reasonably arrange the inventory of cargo vehicles based on real-time analysis of big data to ensure the normal development of daily work.

4.2 Location of Logistics Center

Many factors need to be taken into account in the site selection of every enterprise, such as enterprise funds, raw materials, and transportation. Reasonable location can effectively reduce operating costs for enterprises and ensure the smooth development of enterprises to a certain extent. Through data collection and data analysis, enterprises can clearly understand the most reasonable distribution route and the point with the largest transit volume, so as to provide logistics enterprises with the best advice on logistics location, better solve the problems of logistics transportation and distribution, and save more costs for enterprises.

4.3 Planning of Warehouse Location and Optimization of Inventory

The logistics warehouse has certain capacity limitation. The reasonable planning of location for cargo storage and the optimization of inventory can promote the efficiency of distribution and sorting. Commodity inspection is carried out through big data technology, and then classified storage locations are assigned, which can scientifically plan limited storage locations. Inventory has always been a huge challenge for logistics enterprises. Only by making clear the optimal inventory quantity of the warehouse can the goods be well protected. Big data technology is used to analyze the inventory turnover rate to determine the optimal inventory of the enterprise.

Conclusion

To sum up, as a service industry, the essence of logistics enterprises should be to serve customers and meet all reasonable requirements of customers. Nowadays, it is necessary to actively apply big data technology to the management of logistics enterprises, give full play to advantages of big data technology, and use various data for scientific and reasonable analysis, so as to constantly improve the efficiency and quality of logistics management, and promote the entire logistics chain to highlight the characteristics of the era of wisdom.

References


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