Analysis and Research of City Contactless Distribution Based on Big Data Background

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Abstract. Intelligent logistics is a new business model in recent years. It is the product of the combination of traditional logistics industry and Internet technology. Compared with the traditional logistics mode, it has several outstanding development advantages: intelligence, automation, informatization, integration and network compared with the traditional logistics mode, its efficiency has been greatly improved. Based on the perspective of supply chain, this paper uses the application of Internet technology such as big data and cloud computing to develop a new development mode of smart logistics supply chain, so as to promote the development balance of logistics industry and its related industries. This paper takes two famous logistics companies as the research object, analyzes and discusses the advantages of intelligent logistics mode compared with the traditional logistics mode under the vision of supply chain, and then the experiment shows that the former can improve the efficiency of the whole logistics work. On the comparison of the two logistics modes, 45% of the participants in the experimental group are satisfied, and 36% of the participants are satisfied. Only 15% of the control group were satisfied. Therefore, the first mock exam is to explain the advantages of intelligent logistics mode under supply chain vision. Based on this, the paper makes some research and Discussion on the development of this mode.

Keywords: Supply Chain; Intelligent Logistics; Collaborative Development; Internet Technology

1. Introduction
In recent years, under the influence of economic globalization and the rapid development of the Internet, the logistics industry is becoming more and more intelligent in the continuous reform and progress. As a service industry involving a wide range of services, logistics industry plays an important role in the development of the national economy, and is also a steelyard in the economic field, affecting the quality of the national economy. Therefore, the relevant government departments attach great importance to the development of the logistics industry, support the positive reform and innovation of the logistics industry under the background of the era of torrent and brave progress, so as to seize the contemporary opportunities and develop well. In response, with the government's strong support, the logistics industry is also responding positively. All of them are committed to combining the Internet technology with the Internet plus development strategy. Through the Internet frontier technology, such as big data and artificial intelligence, which has springing up in recent years, we will
push forward the reform of traditional logistics mode, so as to create a completely new mode of automated intelligent logistics.

With the exploration of intelligent logistics, some of its dominant advantages are gradually revealed: first, with the rapid development of modern information technology, barcode, positioning and other technologies have accelerated the speed of information transmission, classification, identification and processing of logistics industry, and greatly improved the speed of information transmission and the operation efficiency of logistics. Second, because of the computer simulation ability, intelligent logistics can have a certain "thinking" like human beings. It can solve some common logistics problems through learning, judgment, understanding and other simulation capabilities, and no longer need human hands to solve them. This is the convenience brought by the intelligent development of intelligent logistics. Third, because of the wide range of Internet technology, it provides the necessary foundation for modern logistics to be highly intelligent. It can effectively strengthen the connection of various transportation channels, so that the logistics resource information can be shared among various channels, so as to accurately locate the best channel suitable for itself and reduce unnecessary losses. Fourth, smart logistics has invested a lot of automatic mechanized equipment, packaging, sorting, transportation and other aspects of all automatic processing. It is the development of intelligent logistics automation that greatly reduces the cost of time and manpower in the logistics industry [1]. Fifthly, smart logistics makes the integration of various derivative systems improve. For example, in the integration of logistics technology, links and management, it significantly improves the competitiveness of each company and the overall logistics industry. The above is the smart logistics for the traditional logistics mode, some significant advantages.

Although smart logistics can effectively compare with some disadvantages brought by traditional logistics mode, in reality, due to the low coordination in each link of smart logistics and the lack of strong correlation among organizations, the operation cost of smart logistics is much higher than that of traditional logistics mode. Therefore, at present, we still need to derive from the perspective of industrial chain to the perspective of each link, and rationally build a smart logistics that conforms to the development of modern society in all aspects. Zeng Liming believes that at present, China's logistics industry is in the strategic transformation period of slowing down growth rate, improving efficiency, demand adjustment and power conversion [2]. Gaoning and Ning Liming believe that since the development of the logistics industry, there are more and more logistics enterprises and increasingly fierce competition, resulting in the situation of increasing costs and decreasing profits [3]. One of the most important factors affecting the development of logistics industry is the cost of logistics. In a mature industrial chain, transportation, storage, distribution and other links have extremely high requirements on the operation cost of logistics. Whether it is the traditional mode of transportation, or the transportation mode of intelligent logistics, the change of transportation means directly affects the cost of each link mentioned above. Therefore, for the intelligent logistics supply chain, its development goal is to integrate all operation links of the logistics industry, so as to achieve the purpose of cost saving [4-5].

At present, a large number of studies show that: under the systematic management carried out through the supply chain, the workflow of each link can be effectively refined, so as to directly reduce the operating costs [6]. Intelligent supply chain can solve the high cost problem of logistics industry. By strengthening the integration of all links of the supply chain and integrating the data of service flow, material flow and information flow, the efficiency of logistics industry operation can be improved at the same time of saving cost. The advantages of smart logistics supply chain architecture are more than this, for example: first, it can break the information barriers between enterprises [7-8]. Since each enterprise has a supply chain as an information transfer station, we can regard it as an information sharing platform where a large amount of data is stored. The core logistics industry can get more useful information, make optimal decisions, and achieve the purpose of reducing costs [9]. Second, in the aspect of inventory management, supply chain management technology is stronger. Its efficient collaborative ability can reduce the inventory of horizontal and vertical enterprises in the
supply chain system, and achieve balanced development in all aspects. Third, because of the combination of the business model of smart logistics and the supply chain management mode, the structure of the supply chain has become more complex, making the whole industrial chain longer. It also makes the downstream enterprises of logistics industry try to reduce some unnecessary links and simplify the operation process of logistics. Fourth, it is more closely connected with the Internet. Under the high interference of Internet technology, the relationship between them is not a simple superior subordinate relationship, but an accompanying relationship. Each operation link of intelligent logistics overlaps with the Internet once again, and the tightness is significantly improved, and the network structure is more solid [10].

2. Method

2.1. Supply Chain

Supply chain is a functional network chain structure. It refers to the enterprise as the core, starting from the original parts, processed into intermediate products, and then further processed into final products, and then through various online sales channels to deliver products to customers. It plays a connecting role among suppliers, manufacturers, distributors and consumers. In order to seek the optimization of the whole supply chain and give full play to its maximum efficiency, the operators of supply chain management often start from the perspective of consumers, and then achieve the goal through the cooperation between relevant enterprises. For the supply chain management, if it can be well coordinated and make all activities in the supply chain orderly, and finally can be connected into one, then the supply chain management is successful and excellent.

2.2. Smart Logistics

Intelligent logistics is a modern logistics mode, which can improve the operation efficiency of logistics. It is through several intelligent technical means, such as the Internet of things, big data and so on, to achieve the management of all aspects of logistics, including refined, dynamic and visual management. Then through this series of steps, gradually improve the logistics system intelligent analysis and judgment ability and automation operation ability, improve the work efficiency. Intelligent logistics can greatly reduce the cost of related industries and bring more benefits to enterprises. Suppliers, manufacturers and retailers cooperate with each other through smart logistics, sharing information among the three parties and mutual benefit, which can also reduce the cost of logistics industry. Then through the relevant science and technology to achieve intelligent logistics management, orderly logistics work, reduce unnecessary circulation, in order to bring more profits.

2.3. Smart Logistics and Supply Chain

Combining supply chain technology with management and intelligent logistics can further improve the operation efficiency of intelligent logistics mode and accelerate the process of logistics work. How to build an intelligent supply chain system is the primary problem of smart logistics supply chain. To solve this problem, we can start from three aspects. First, we can establish different main divisions according to different smart logistics supply chains, for example, we can use big data technology to establish the relative advantages of smart logistics supply chain. However, we must grasp the core point, that is, to clarify the advantages of each different division, and then combine the different branches, and then connect all the participants of the smart logistics through the cooperation of these divisions, so as to eliminate the internal barriers of the supply chain, solve the problem of decentralized operation of the main bodies of the smart logistics supply chain, and increase the competition of the supply chain. So as to improve the operation efficiency of intelligent logistics mode under the vision of supply chain.

2.4. Calculation Formula

In the following formula, we usually involve in the supply chain:
Financial inventory = \( MovingWeightedaverage \, cost \, of \, inventory \times \, inventory \, quantity \) \hfill (1)

In the process of logistics, financial personnel use all invoices to calculate the purchase order through the moving weighted average method. The moving weighted average method refers to a method that calculates the weighted average unit cost by adding the cost of each purchase plus the cost of the original inventory, and then dividing by the sum of the quantity of each purchase and the quantity of the original inventory, and then calculates the cost of the inventory issued in the current month and the cost of the inventory at the end of the period according to the calculation results.

The second formula involved is:

\[
inventory = Material \, purchase \, cost \times Quantity \, of \, Materials + Balance \, of \, funds
\] \hfill (2)

Or sometimes mathematical formulas are used to calculate the correlation between the data involved, such as:

\[
u = \frac{1}{N} \sum_{i=0}^{N} x_i
\] \hfill (3)

3. Experiment

3.1. Selection of Experimental Objects
According to the previous content, I can know that the logistics industry is developing very fast, and the supply chain technology has played a crucial role in improving the operation efficiency of intelligent logistics. Nowadays, the development of logistics industry is very fast, and even outsiders have heard of it, and the turnover in this area has also increased significantly. Here, we can investigate the performance of two famous local logistics companies in recent years. Company a adopts the intelligent logistics mode under the supply chain technology, and B adopts the traditional logistics mode. A is the experimental group and B is the control group. Therefore, we can judge the impact of logistics mode on the logistics industry under the supply chain technology. And in the context of supply chain technology, compared with the traditional logistics mode, the impact of smart logistics mode on the logistics industry is different.

3.2. Experimental Test Index
In this half a year, we used random sampling questionnaire survey to survey the employees of company a, to investigate their attitude towards the intelligent logistics with supply chain technology and their preference for traditional logistics mode, and combined with the feedback situation to compare and analyze the effect of the two groups of experimental data.

3.3. Processing of Experimental Data
We can use mathematical language to describe the relationship between two variables, and we can also use mathematical formulas to calculate the correlation of two variables:

\[
r(X, Y) = \frac{Cov(X, Y)}{\sqrt{\Var(X) \Var(Y)}}
\] \hfill (4)

4. Result

4.1. Experimental Data
In this experiment, we observed and recorded the performance of a logistics company in recent four years (unit: 10000 Yuan)

| Table 1. Performance of company a in recent four years |
From Table 1 and Figure 1, we can see the performance of the two companies in the four years from 2016 to 2019. We can see that the performance of company a adopting the intelligent logistics mode of supply chain technology is significantly higher than that of company B adopting the traditional logistics mode. Therefore, we can see that the intelligent logistics mode under the supply chain not only brings a new development mode and technology to the logistics industry Technology, not only give enterprises different experience, but also greatly improve the efficiency of the logistics industry. It also shows that the development mode of intelligent logistics under the vision of supply chain is desirable, which is worthy of investment and research.

4.2. Satisfaction Degree of Employees of the Two Companies to the Intelligent Logistics Mode and the Traditional Logistics Mode under the Supply Chain Vision Respectively

In the questionnaire survey, we made statistics and records on the satisfaction degree of employees in company a and company B who used the two logistics modes. The results are shown in Table 2 and Figure 2.

**Table 2. How satisfied are the employees of the two companies with the two logistics models**

|                | Very satisfied | Quite satisfied | Dissatisfied | Unclear |
|----------------|----------------|-----------------|--------------|---------|
| Experiment group | 36%            | 45%             | 8%           | 11%     |
| Control group   |                |                 |              |         |

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Control group | 15% | 30% | 35% | 20%

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From Table 2 and Figure 2, we can see the satisfaction degree of employees of the two companies to the intelligent logistics mode and traditional logistics mode under the vision of supply chain. Among them, 36% of the staff in the experimental group were very satisfied, 45% of them were relatively satisfied, 8% of them were not satisfied, and 11% of them were not clear. In the control group, 15% of the employees were very satisfied, 30% were satisfied, 35% were not satisfied, and 20% were not clear. This shows that compared with the traditional logistics development mode, people prefer the experience brought by the intelligent logistics mode combined with the supply chain structure. In the mode of supply chain and intelligent logistics, the efficiency and accuracy of logistics companies are greatly improved, and the performance of enterprises is also greatly improved, which provides a certain guarantee for the future development of the company. Therefore, the smart logistics development mode of supply chain vision is very popular at present, and the research in this field is also very meaningful, and its development prospects are very broad.

5. Conclusion
With the rapid development of economic globalization and science and technology, the competition trend of no national boundaries and less and less restrictions will become more and more obvious. The enterprise's own system is no longer the main competitive advantage of the enterprise. Its competitive condition mainly lies in the value chain system of the enterprise. If the value chain system of the enterprise has the overall competitive advantage, then the competitiveness of the enterprise will be greatly enhanced. In today's era of Internet development, the rise of various e-commerce industries has led to a very broad development prospect of the logistics industry. The intelligent logistics mode combined with the supply chain undoubtedly brings a great change and great influence to the logistics industry. Compared with the traditional logistics mode, it not only improves the low efficiency of the
traditional logistics mode, but also brings about a lot of problems. Other traditional logistics modes have no advantages. Therefore, the research on the development of intelligent logistics mode under the vision of supply chain has attracted most people's attention and exploration. I believe that with the continuous development of the times in the future, this mode will become more and more mature and more scientific, and benefit the whole society.

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